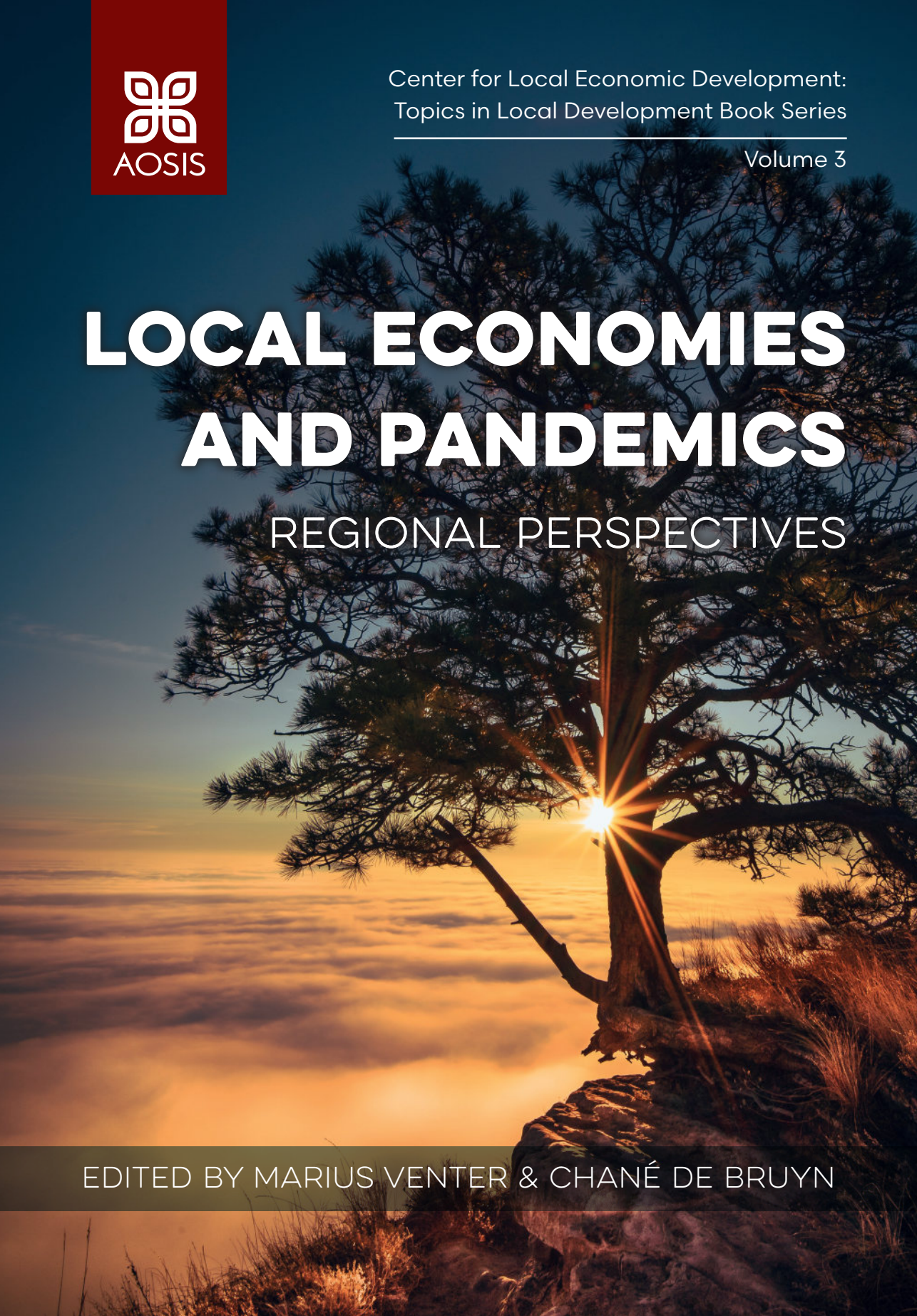
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LOCAL ECONOMIES AND PANDEMICS
REGIONAL PERSPECTIVES
EDITED BY MARIUS VENTER & CHANÉ DE BRUYN

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Volume 3

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REGIONAL PERSPECTIVES

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Volume 3

LOCAL ECONOMIES AND PANDEMICS

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EDITORS
MARIUS VENTER
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AOSIS

Peer-review declaration

The publisher (AOSIS) endorses the South African 'National Scholarly Book Publishers Forum Best Practice for Peer-Review of Scholarly Books'. The book proposal form was evaluated by our Social Sciences, Humanities, Education and Business Management editorial board. The manuscript underwent an evaluation to compare the level of originality with other published works and was subjected to rigorous two-step peer-review before publication by two technical expert reviewers who did not include the volume editor and were independent of the volume editor, with the identities of the reviewers not revealed to the editor(s) or author(s). The reviewers were independent of the publisher, editor(s) and author(s). The publisher shared feedback on the similarity report and the reviewers' inputs with the manuscript's editor(s) or author(s) to improve the manuscript. Where the reviewers recommended revision and improvements, the editor(s) or author(s) responded adequately to such recommendations. The reviewers commented positively on the scholarly merits of the manuscript and recommended that the book be published.

Research justification

Local economic development (LED) is at the core of developing a sustainable, inclusive and resilient local region. Local economic development aims to involve all role-players (local government, private sector and community) in the decision-making process in order to create a participatory environment where social and environmental concerns are balanced with economic pursuits. Achieving this is a challenge for local governments in developed and developing regions. The global coronavirus disease 2019 (COVID-19) outbreak has brought about an entirely new set of challenges for local governments, businesses (formal and informal) and policymakers. This book aims to highlight how local economies are impacted during times of a global pandemic from global perspectives.

The outbreak of the global COVID-19 pandemic has presented unprecedented challenges to developed and less-developed local economies. The book aims to uncover the best practices in responding to a pandemic from regional perspectives and from a trans-disciplinary point of view. Scholars from various spheres in the arts, culture, education, health, environment, business and the public sector present their perspectives on the impacts, responses and consequences for local economies and communities. As a fundamental part of LED, the arts, culture, education, health, environment, business and public sector domains were some of the hardest hit by the pandemic, and the pandemic has certainly exposed the weaknesses of current development policies and calls for new, innovative measures in developing resilient local regions. This book forms an essential part of the development series of the Centre for Local Economic Development (CENLED) as it offers insight into how a global pandemic (COVID-19) impacted LED in various regions and the different responses from different spheres.

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List of abbreviations and acronyms

ACT	Arts and Culture Trust
ADF	Augmented Dickey–Fuller
AFF	Agriculture, forestry and fishing
AI	artificial intelligence
ANC	African National Congress
ANOVA	analysis of variance
ANT	Actor Network Theory
APPETD	Association of Private Providers of Education, Training and Development
AR	augmented reality
AsgiSA	Accelerated and Shared Growth Initiative for South Africa
ATRAMI	Artisan Training and Recognition Collective Agreement for the Metal Industries
BA	Bachelor of Arts; bachelor's degree
BBC	British Broadcasting Corporation
BIS	Bank for International Settlements
BLUE	Best Linear Unbiased Estimator
BPO	business processes outsourcing
CAC	Cotation Assiste en Continu
CANRAD	Centre for the Advancement of Non-Racialism and Democracy
CCI	Centre for Community Impact
CENLED	Centre for Local Economic Development
CEO	chief executive officer
CEPD	Centre for Education Policy Development
CIPPT	Chartered Institute of Professional practitioners and Trainers
COE	City of Ekurhuleni
COIDA	*Compensation for Occupational Injuries and Diseases Act 130 of 1993*
COJ	City of Johannesburg
COSATU	Congress of South African Trade Unions

COT	City of Tshwane
CoST	Culture-Oriented Science and Technology
CPD	continuous professional development
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSP	community, social and personal services
DA	Democratic Alliance
DAX	Deutscher Aktien IndeX
DDM	District Development Model
DoD	Department of Defence
DOW	Dow Jones
EDCSA	Economic Development Council of South Africa
EDHE	Entrepreneurship Development in Higher Education
EGW	electricity, gas and water
EHEA	European Higher Education Area
EPW	Expanded Public Works
EPWP	Expanded Public Works Programme
EPWPs	Expanded Public Works Programmes
ERRP	Economic Reconstruction and Recovery Plan
ESRC	Economic and Social Research Council
EU	European Union
FDI	foreign direct investment
FET	Further Education and Training
FIRB	finance, insurance, real estate and business services
FJS	FUDMA Journal of Sciences
FTSE	Financial Times Stock Exchange
GDP	gross domestic product
GEAR	Growth, Employment and Redistribution
GFC	global financial crisis
GFCF	gross fixed capital formation
GG	general government
GOLD	gold price (in US$)
GVA	Gross value added
HANG	Hang Seng
HDI	human development index
HEI	higher education institutions
HET	Higher Education and Training
Hons	Honours degree

HR	human resources
HSRC	Human Sciences Research Council
IAEA	International Atomic Energy Agency
ICCE	International Coaching Council for Coaching Excellence
ICT	information and communication technologies
IGR	intergovernmental relations
ILC	International Longevity Centres
IMF	International Monetary Fund
IoT	Internet of Things
IPET	Implementation Plan for Education and Training
IT	information technology
JSE	Johannesburg Stock Exchange
KPSS	Kwiatkowski–Phillips–Schmidt–Shin
KST	Knowledge and Smart Technology
LDA	Latent Dirichlet Allocation
LED	local economic development
LEDA	local economic development agencies
LMS	learning management system
LQ	location quotient
M&E	monitoring and evaluation
MA	Master of Arts degree; master's degree
MFMA	*Local Government: Municipal Finance Management Act 56 of 2003*
MINMEC	Minister and Members of the Executive Council
MLA	machine-learning applications
MQ	mining and quarrying
MR	mixed reality
MSA	*Local Government: Municipal Systems Act 32 of 2000*
MSCI	Morgan Stanley Capital International
MSCIE	Morgan Stanley Capital International for the Emerging
NCD	National Coach Developer
NCEA	National Coach Education Advisor
NDP	National Development Plan
NEPI	National Education Policy Initiative
NESET	networks of experts working on the social dimension of education and training
NF	National Forum
NFT	non-fungible tokens

NGO	non-government organisations
NGP	National Growth Plan
NIK	Nikkei 225
NLP	natural language processing
NP	Nationalist Party
NPO	non-profit organisation
NQF	National Qualifications Framework
NSA	National Skills Authority
NSD	national skills development
NSDP	National Skills Development Plan
NSDS	National Skills Development Strategy
NSF	National Skills Fund
NTSI	National Training Strategy Initiative
NUMSA	National Union of Metalworkers of South Africa
NWU	North-West University
OBE	outcome-based education
OECD	Organization for Economic Co-operation and Development
OLS	ordinary least squares
PASCAL	Place, Social Capital, and Learning Regions
PB	professional body
PBE	performance-based education
PCC	Presidential Coordinating Council
PFMA	*Public Finance Management Act 1 of 1999*
PhD	Doctor of Philosophy degree; doctoral degree
PoE	portfolio of evidence
PoPIA	*Protection of Personal Information Act 4 of 2013*
PPPs	public-private partnerships
PSC	Public Service Commission
PSET	post-school education and training
QC	Quality Councils
QCTO	Quality Council For Trades and Occupations
RADLA	Research and Doctoral Leadership Academy
RDP	Reconstruction and Development Programme
RPL	recognition of prior learning
SACO	South African Cultural Observatory
SAQA	South African Qualifications Authority
SARB	South African Reserve Bank
SARUA	Southern African Regional Universities Association

SASCA	South African Sports Coaching Association
SASCE	Southern African Council on Continuing Education
SD	Sedibeng district
SDA	*Skills Development Act 97 of 1998*
SDGs	sustainable development goals
SDL	Skills Development Levy
SETA	Sector Education and Training Authority
SHANG	Dow Jones Shanghai
SLA	service-level agreements
SME	small- and medium-sized enterprises
SMME	small, medium and micro enterprise
SMMEs	small, medium and micro enterprises
SRSA	Sport and Recreation South Africa
TSC	transport, storage and communication
TUT	Tshwane University of Technology
TVET	Technical and Vocational Education and Training
UIL	UNESCO Institute for Lifelong Learning
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
USA	United States of America
VADER	Valence Aware Dictionary and sEntiment Reasoner
VAE	validation of experiential learning outcomes
VAR	vector autoregression
VET	vocational education and training
VR	virtual reality
WEF	World Economic Forum
WHO	World Health Organization
WIL	work-integrated learning
WRCA	wholesale and retail trade, catering and accommodation
WRD	West Rand district

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Preface

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Local economic development (LED) is at the core of developing a sustainable, inclusive, and resilient local region. Local economic development aims to involve all role-players (local government, private sector and community) in the decision-making process in order to create a participatory environment where social and environmental concerns are balanced with economic pursuits. Achieving this is a challenge to local governments in developed and developing regions. The global coronavirus disease 2019 (COVID-19) outbreak has brought about an entirely new set of challenges for local governments, businesses (formal and informal) and policymakers. This book forms part of a series of books by the Centre for Local Economic Development (CENLED), based at the University of Johannesburg, South Africa. Endorsed by the PASCAL International Observatory and the Economic Development Council of South Africa (EDCSA), this book forms an important part of the development series of CENLED as it offers insight into how a global pandemic (COVID-19) impacted LED and the different responses from different spheres. The PASCAL (Place, Social Capital, and Learning Regions) International Observatory (Africa) aids regional policy- and decision-makers in the design and implementation of strategies promoting the sustainable development of local economies. What sets PASCAL apart is that it brings together various regions, organisations and universities, which allows for the sharing of new knowledge and best practice principles aimed at promoting sustainable environmental, social and economic development.

The outbreak of the global COVID-19 pandemic has presented unprecedented challenges to the developed and less-developed local economies. This book has the objective of uncovering the best practices in responding to a pandemic from a trans-disciplinary point of view. Scholars from various spheres in arts, culture, education, health, environment, business and the public sector present their perspectives on the impacts, responses and consequences of the pandemic on local economies or communities. The book consists of ten chapters wherein the authors critically assess how these aforementioned spheres were impacted by the

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pandemic and discuss lessons learned from within these domains to inform future decision-making on developing resilient local economies. There are five themes emerging from the chapters. Chapter 1 provides an introductory review to the turbulent futures facing local economies in the wake of a pandemic. Chapters 2 and 3 look at the impact of COVID-19 on entrepreneurial businesses and possible response strategies, such as the provision of mentoring processes. Chapters 4, 5 and 6 investigate the profound impact that COVID-19 had on higher education and skills development both locally and internationally. Chapters 7, 8, 9 and 10 use quantitative measures to analyse the impact of the pandemic on local economies in terms of art markets, resilience, structural change and investment. These chapters cover a diverse spectrum of topics, all of which provide insight into local economies and how the pandemics have altered the way in which development takes place. The findings could prove useful for other researchers, policymakers, business stakeholders and other key stakeholders within the local economic setting by providing new perspectives towards the process of recovering from the COVID-19 pandemic.

Chapter 1

Local economies preparing for a turbulent future[1]

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic has impacted local economies in numerous ways, both negative and positive. While local economies must respond to these impacts, there is a broader context of major structural changes that must also be taken into account in the quest for a just, sustainable future. United Nations Educational, Scientific and Cultural Organization (UNESCO) (UNESCO International Commission for the Futures of Education 2021) recently drew attention to these imperatives in its major report, *Re-imagining our Futures Together,* which pointed to this disruptive world of large overlapping crises. The survival of humanity, human rights and the living planet are at risk. Local economies and pandemics must be seen in this broader context of critical challenges. In addition to the impact of the COVID-19 pandemic, the disruptive changes

1. This chapter represented a substantial reworking of Kearns (2021).

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include a demographic revolution with ageing populations and the impact of the technologies of the Fourth Industrial Revolution (4IR) on jobs, particularly artificial intelligence. Local economies must adapt to this broader context of disruptive change in the quest for a just, sustainable future. North and South perspectives need to be brought together in this quest. The PASCAL International Observatory has been addressing these issues for some years under its EcCoWell programme directed at integrated, holistic development. The EcCoWell Community Recovery Programme, in 2020, was directed at recovery from the COVID-19 pandemic, while the subsequent PASCAL EcCoWell 3 report (2022), titled *Connecting People and Planet for a Sustainable Future*, took up these broader imperatives that need to be addressed for a sustainable future. This chapter builds on the PASCAL EcCoWell experience, as well as other international experiences, in the approach to local economies and pandemics.

Introduction

Local economies are confronted by a disruptive socio-economic challenge from the impact of COVID-19 with the prospect of future pandemics that require that we rethink, in a fundamental way, how to prepare for a future with more crises resulting from a globalised, connected world.

This challenge has been described by Conway, Hadem and Probst (2022) in the following terms:

> We are facing an irrevocable humanitarian and economic crisis that will permanently change our world. As societies around the world confront the pandemic, it has magnified the pre-existing vulnerabilities and inequities of our social system. (n.p.)

The critical feature of the present situation is that the COVID-19 pandemic has brought to light and exacerbated inequities across a range of fronts. The impact of this chain reaction means that local economies are confronted by a situation requiring fresh, innovative thinking. As networking across the world continues to increase, bringing regions closer together, this critical challenge will increasingly exist. Historian Niall Ferguson (2022) has described this effect in the following way:

> Moreover, the world we have built has, over time, become an increasingly complex system prone to all kinds of stochastic behaviour, nonlinear relationships, and 'fat-tailed' distributions. A disaster such as a pandemic is not a single discreet event. It invariably leads to other forms of disaster – economic, social, political. (p. 8)

In the context of a pandemic, local economies are also challenged by an environment with significant mega-structural changes. According to a recent UNESCO International Commission for the Futures of Education (2021) report, *Re-imagining our Futures Together*, we need to rethink all

aspects of our traditional practices. This set of chain reactions means that local economies need to carefully consider the impact of other mega-developments, such as the demographic revolution with ageing populations and the impact of the 4IR, particularly artificial intelligence and its surrounding uncertainty (Barrat 2013; Bostrom 2014; Tegmark 2017). In addition to these challenges, local economies will also have to contend with the uncertainties of climate change. Overall, these challenges require strategic, holistic, future-oriented thinking, drawing on the best available information and research.

A recent report on 'global megatrends that will change the way we live' by the Australian Government Research Organisation (Commonwealth Scientific and Industrial Research Organisation [CSIRO]) (2022), titled *Our Future World*, provides an example of the research that will support organisations and enterprises navigating a turbulent, disruptive world. The CSIRO (2022) assessment of the future is produced every 20 years, based on the best available knowledge of the time. The 2022 investigation is based on six interlinked megatrends that run across the world, comprising the planet and environment, future economic dominance, as well as demographic and social changes (CSIRO 2022). While all are relevant to strategic development for local economies, some, such as 'experience rather than products', point to new future opportunities. The significance of these megatrends, in the context of recovery from the pandemic, means that, for local economies to be sustainable, they must find ways to be flexible in a changing world and to connect their economic, social, environmental and cultural objectives in the form of holistic strategies that build a just, sustainable future. Fostering lifelong learning is a principal tool for building a learning culture and a flexible future able to adjust to change (Kearns 2022a, 2022b; UNESCO Institute for Lifelong Learning [UIL] 2020). This chapter provides a review of the difficulties that local economies face following the COVID-19 pandemic and presents various approaches that could aid in developing a more sustainable future.

A review of approaches dealing with pandemics in local economies

The subsequent section elaborates on approaches that could aid local economies in recovering from global pandemics, such as the COVID-19 pandemic.

The PASCAL EcCoWell approach

The PASCAL International Observatory has been innovative in its quest to develop a holistic, integrated, comprehensive approach to building learning

cities and neighbourhoods. This has been achieved over the past decade through the EcCoWell initiative. The latest EcCoWell paper in this series (Kearns 2022a) places the focus on connecting people and the environment for a sustainable future. This chapter draws on the sequence of EcCoWell thinking, proceeding over the decade, in arguing for a broad, integrated approach across economic, social, cultural and environmental objects that together construct a sustainable future for local economies in this turbulent world of disruptive change.

Other recent reports that address these issues include the UNESCO International Commission for the Futures of Education (2021) report, titled *Re-imagining our Futures Together*, and recent strategic initiatives by the UIL in seeking to adapt the work of learning cities to a rapidly changing environment. Such a broad cross-sectoral approach, advocated by these sources, is imperative for local economies in the era of pandemics. This imperative has been recognised by leading international organisations, such as Organization for Economic Co-operation and Development (OECD) and the World Bank. The OECD (2022) described this challenge in the following terms:

> The COVID-19 pandemic has brought into sharp focus the inter-relationships between health and the environment, and then between public health and a well-functioning economy and society. Government can tackle climate change, environmental degradation and public health simultaneously by phasing out fossil fuels, improving waste management, greening cities and reducing individual car use. (n.p.)

Such a role for governments will provide a framework for local communities and their economies. These are complementary actions that local economies, in a quest for a just, sustainable future that will survive pandemics and threats, need to follow. Further comments on some of the features of such an approach are elaborated further in the text. This approach recognised the fact that pandemics are not only critical health issues, but that they also lead to large-scale restructuring of global economies. The next section discusses ageing populations and the impact of the technologies of the 4IR as two of the megatrends that need to be considered along with pandemics in determining strategic policies and work plans for a sustainable future.

The impact of ageing populations

As noted earlier, the impact of the COVID-19 pandemic is taking place in a context marked by several other megatrends. One of these, the demographic revolution with ageing populations, will change the way we live and work. Populations are ageing around the world. While Africa has been less impacted than the rest of the world up to now, this will

TABLE 1.1: Number and distribution of persons aged 60 years and over by region in 2017 and 2050.

Region	Number of persons aged 60 years or older in 2017 (millions)	Number of persons aged 60 years or over in 2050 (millions)	Change between 2017 and 2050 (%)	Distribution of older persons in 2017 (%)	Distribution of older persons in 2050 (%)
World	962.3	2,080.5	116.2	100.0	100.0
Africa	68.7	225.8	228.5	7.1	10.9

Source: UN (2017).

change, as noted in United Nations (UN) statistics for the period up to 2050 (see Table 1.1).

Long-term strategies will be required for dealing with the ageing African workforce. Kearns and Reghenzani-Kearns (2021) were commissioned by the UIL to examine the implications of ageing populations. This report, with its recommendations, may be read in the UIL book (UIL 2020) on inclusion policies and practices. The recommendations of this report range across actions that learning cities can take in response to their ageing populations. However, most of the proposals relate to steps that local authorities could take to support their economies. These recommendations include promoting intergenerational understanding and collaboration, giving particular priority to vulnerable groups, recognising the key roles of community learning centres and building overall community in local neighbourhoods in cross-sectoral partnerships.

Actions specific to maintaining the skill levels and motivation of an ageing workforce are taken up in a discussion of the transition to future work environments. It needs to be recognised that the ageing of the population has implications for other sections of society, with the transition to a sustainable society in the era of the 'hundred-year life' requiring the re-imagining of work, education and society overall (Gratton & Scott 2017; UNESCO International Commission for the Futures of Education 2021).

Adapting to the new map of life

One of the most significant innovations in exploring the implications of ageing populations for society overall has been undertaken by the Centre on Longevity of Stanford University in San Francisco in a project named *A New Map of Life*. The metaphor 'a new map of life' has been used by Stanford to signify the change in the era of the 'hundred-year life' from the traditional three-stage life to a multi-stage life marked by a number of life transitions (Milivinti & Rehkopf 2021). The Stanford Centre has followed up

this concept in their New Map of Life project, which has examined four key areas with reports in 2021 by the following scholars:

- Jonas – Health and technology
- Johfre – Report on intergenerational relations
- Milivinti and Rehkopf – A new map of life: work
- Horwitz and Stevens – Re-imagining education for a new map of life.

Kearns has explored the implications of this research for learning cities in a paper covering these key areas for rethinking the emerging longevity of society (Kearns 2022b). He confirmed that these themes addressed by the Stanford report are essential in adapting society to the 'whole-of-society' implications for ageing populations. The UN (2020, p. 1) has recognised the overall significance of population ageing: 'Population ageing is poised to become one of the most significant social transformations of the 20th century – with implications for all sectors of society'.

There is considerable research around the world on this topic, with the network of International Longevity Centres (ILCs) playing a key role. There would be significant value in the South African Centre for Local Economic Development (CENLED) exploring actions that could be taken to enhance the employability of ageing populations.

Impact of the technologies of the Fourth Industrial Revolution

A second megatrend that is interacting with the effects of the COVID pandemic is the technologies of the 4IR, which raises a multitude of critical issues for local economies and their communities (Tegmark 2017). The COVID-19 pandemic highlighted the significance of digital technologies across a broad range of sectors, such as work, education, health and travel. The importance of digital technologies across industries will most likely continue to increase. South African workforces will need to be fully prepared for the digital era. While there are contested issues, particularly with respect to machine superintelligence, there are strategies and policies that local economies can implement in preparing for an uncertain future while taking advantage of the opportunities that new technologies offer. The founder and chairman of the World Economic Forum (WEF), Klaus Schwab (2017), explained the technology dilemma in the following terms:

> The Fourth Industrial Revolution has the potential to robotize humanity, and then compromise our traditional sources of meaning – work, community, family, identity. Or we can use the Fourth Industrial Revolution to lift humanity into a new collective and world consciousness based on a shared sense of identity. (p. 114)

While digital technologies clearly play a role in recovery from the pandemic and preparation to respond to future ones, this role needs to be seen in a broader context, involving fundamental objectives with respect to people, their communities, culture, values, learning and aspirations. Such a framework should guide and engage policy in the transition to the 'next normal'. This broad approach has been adopted in the PASCAL EcCoWell search for a sustainable future where ecology, community, lifelong learning and well-being objectives are balanced in an integrated approach. Schwab (2017, p. 106), in his work, recognises this reality in his plea for a multiple theory of intelligence, which includes a broadening of understanding intelligence around four pillars:

1. Contextual – the mind
2. Emotional – the heart
3. Inspired – the soul
4. Physical – the body.

Such an approach to intelligence will require a significant change in vocational education and training (VET), with the transformative effects of these multiple forms of intelligence being applied. There are opportunities to use digital technologies to create a better future post-pandemic(s).

The transition to the new normal

The complexity of the cascade of chain reactions in the impact of the pandemic means that a staged transition to the next normal is inevitable. Singhal et al. (2021), in an article for McKinsey on *The Path to the Next Normal,* envisage this in five stages, which are:

- Resolve – an unprecedented effort from all stakeholders is required
- Resilience – business leaders need to prepare for a rapid succession of financial challenges
- Return – returning business to operational health
- Reimagination – local economies will need to re-imagine how they are structured and operate in a post-pandemic environment
- Reform – emerging from the COVID-19 crisis will be a fundamental reshuffling of the relationship between government, business and individuals.

During the throes of the pandemic, it was difficult to re-imagine the future and plan reforms. In the transition to the next normal, this becomes essential. It will be useful to draw on strategic forecasts of the future, such as CSIRO's *Our Future World* proposals. While a strategy such as that set out here provides a framework for thinking about the transition to the next or new normal, it needs to be recognised that this will be substantially

different from the present arrangements in a number of respects. These include:

- The ageing of older people, with an impact on overall society
- Shifting intergenerational relations
- A changed approach to education and learning, including the key role of digital technology.

The emerging longevity is likely to be built around stages reflecting transitions rather than ages of youth, adulthood and retirement, as at present. Schuller and Watson (2009), in their report on a lifelong learning policy proposal for the United Kingdom (UK), identified the following four stages:

1. Up to 25-years-old
2. 25–50-years-old
3. 50–75-years-old
4. 75-years-old and onwards.

While this framework is useful for thinking about shifting intergenerational relations, the reality is that the emerging future is likely to be marked by diversity in the life stages taken by people in a society with more open choices. Local economies will need flexibility and considerable imagination in developing their workforce and retaining people in a third-age lifestyle, in part-time or full-time employment. The extended years in the era of the 'hundred-year life' will require new tools for thinking about longer lives, to maintain skills and employability and to have a healthy lifestyle (mental, intellectual and physical) well into the productive later years. Some examples are given:

- The concept of 'health span', defined as the period of life spent in good health, free from chronic disease and the disabilities of ageing, will be a key tool in developing a healthy workforce.
- Systems thinking will be a core tool in re-imagining education for the future in connecting education systems to the many related areas of life, such as the environment, on the path towards a sustainable future.
- Ecosystems that acknowledge the value of the 'wider benefits' of learning throughout life that encompass explorations and fulfilment from continued learning in one's personal interests.
- Policies that view older age not only from a debilitating burden or drain on the public-purse perspective but also one that pursues vital engagements and supports all.

These examples point to the need to build a more connected society with tools such as those listed, which are used in integrating the strands of a sustainable society in an era of turbulent change.

Supporting people navigating the transitions in their lives will be a key area for policy in the ageing society. While Africa has been less affected by the demographic revolution up to now, this will change, and as Africa's population and workforce age, the options discussed earlier will need to be given serious consideration.

Seeing things differently

The mega-changes discussed in this chapter will most likely require a capacity to innovate when adapting to the conditions of a different world. A key instrument for making the development process creative lies in the capacity to shift perceptions and see things differently, often stimulated by innovative overarching concepts, such as:

- The doughnut concept of sustainable development
- The circular economy approach to linking the great natural cycles to economic and social development
- The virtuous circle of economic expansion, growth and productivity.

The doughnut approach

The doughnut approach to economies brings planetary objectives together with social objectives so that the space between them is seen as 'a safe and just space for humanity' (Raworth 2012; Time 2021). While the doughnut approach is an example of systems thinking applied to economic development, it is also deeply connected to social justice and equity. 'A systems perspective makes clear that the prevailing directions of global economic developments caught in the twin dynamics of growing social inequality and deepening ecological degradation' (Raworth 2012, p. 154).

This innovative way of connecting social and economic development within planetary boundaries to provide a safe and just space for human development is being tested by Amsterdam and Rotterdam with the support of C40, a network of 97 cities focused on climate action. Amsterdam drew up an interrelationship strategy combining the doughnut's goals with the principles of a 'circular strategy'. This approach involves policies to protect the environment and natural resources, reduce social exclusion and guarantee good living standards for all. Overall, doughnut economics represents a new and sustainable way to regard economic development. It has links to the EcCoWell approach for learning cities developed by the PASCAL International Observatory (Kearns 2022b).

The circular economy

The circular economy concept connects the great natural cycles – carbon, water, oxygen, nitrogen, phosphorus and sulphur – to economic and social development in a sustainable way, as espoused by the Australian Circular Economy Hub. This approach requires that we see systems as a whole rather than focusing on a particular part, such as manufacturing, farming, design, materials or products. This builds cross-disciplinary perspectives in fostering a holistic, sustainable approach. There are many community projects that can be undertaken to develop this awareness, as may be seen by learning city projects, such as the Datong Eco-City and Happy Farm and the New York Seedbed project. Environmental projects offer a good starting point in exploring sectoral connections in systems terms.

Liveable cities

Liveability, capability development and major urban solutions in approaching the future differently are key to showcasing the Singapore Centre for Liveable Cities. This local economy aims to maintain a dedicated balance between a high quality of life and competitive economic outcomes in a sustainable environment. The centre draws learning and initiatives together with other world-class cities through its research and training programmes, as exemplified through real-time practice. It is significant that city mayors are involved in embracing and appraising the work of the centre.

Transformation is modelled through a 'liveablilty framework', which can be applied to suit the conditions of diverse private and public spaces. Cross-sectoral and actor partnerships are a hallmark for integrating leadership with policy-making and legislation to implementation. Built into this is an essential flexibility to move with changes in future orientations or iterations.

China innovates for an ageing population

China is confronted with the challenge of a rapidly ageing population. President Xi Jinping recently announced that China is establishing a national university for the aged, which will comprise a network of elderly universities across the country, linked to the Open University of China. There are 30 provincial-level universities for the aged and more than 40,000 education sites in China. The number of online users has exceeded 6.3 million, with more than 5.7 million taking offline courses. Eventually, every one of the 2,843 county-level districts should have at least one university for the elderly. Chinese policymakers say that elderly education

will lead to job opportunities, as reported in *The Global Times* (17 November 2022) and followed up in *The Australian* (22 November 2022).

This leads to a broader and more targeted responsibility in providing higher educational services than what has previously been available to elderly scholars. Universities within major cities with a focus on the elderly have been found to be a contributing factor to personal, social and economic returns. One such example is the provisions and modern facilities of Beijing's Shijingshan Community College (especially through 'part-time/spare' university courses, worker service courses, community education and strengthening traditional enrichment crafts for potential employment and citizenship reinforcement). Seniors participate across three campuses, nine different community branches and informal courses designed for residents in their neighbourhoods with the mission to be a university inside a community.

Maintaining and enhancing the skills, motivation and health of the workforce

A core challenge for local economies and their communities in the post-pandemic era will be maintaining the skill levels of their workforce during a time of ongoing change. This will require rethinking learning and skills strategies in the context of the megatrends discussed earlier. UNESCO offers some guidance from its 2021 international commission on education futures, which asserts that a new approach is required to education and learning.

While this will need fundamental changes and requires a new social contract to guide relationships, there is much that can be undertaken locally to develop, maintain and enhance skill levels in an era of turbulent and disruptive change. Case studies by Taylor, Mthimkhulu and Mpanza (2021) point to the issues and barriers to be addressed in local economic development agencies' (LEDAs) and non-profit organisations' (NPOs) initiatives in the South African context. Such a localised approach would benefit from regarding local communities as learning neighbourhoods with broad partnerships based on learning built into economic, social and cultural activities in integrated ways. This is particularly important when the future of jobs depends on the ongoing impact of artificial intelligence, maintaining self-sufficiency and independence in an era when the possibility of a future of machine superintelligence is a looming threat.

Such an integrated socio-economic, ecological and cultural approach is illustrated by PASCAL's work on EcCoWell (Kearns 2022a, 2022b). This approach involves:

- Systems thinking in connecting action across the pillars of the EcCoWell 3 approach

- Strengthening collaboration and partnership, including new forms of public and private partnerships
- The key role of imagination and empathy in fostering innovation
- Giving priority to well-being and mental health
- Increasing the importance of neighbourhoods and networks in facilitating change.

This approach is based on long-term perspectives with a clear vision and with an incremental approach in practice to building a culture of lifelong learning to support maintaining the skills of the workforce in a context of lifelong learning. This is likely to require the social partners to negotiate a new social contract.

The significance of resilience

A crucial requirement in the world of pandemics with unpredictable change and risk is to build a capacity for resilience in organisational planning and development. Resilience may be seen as a capacity to withstand threats such as pandemics and, eventually, emerge stronger and better. The components of resilience are the topics discussed in this chapter, including, in particular, the social aspects of development that build coherence and capital.

Resilient organisations build business models that can adapt to significant changes in their environment, whether from pandemics, other threats or disasters or a major shift in customer demand. Embedding resilience in business plans should be an ongoing process of learning and adaptation. The Rockefeller 100 Resilient Programme involved most of the major cities of the world with a model incorporating the main features demonstrated by research. The model showed the complexity of the considerations that make for resilience in urban structures.

Building a culture of lifelong learning

A major lesson from the COVID-19 pandemic is that learning needs to be ongoing even in an unpredictable environment of change.

The UIL (2020, p. 12) set out this message in its book *Embracing a Culture of Lifelong Learning.* Foremost is the need to rethink lifelong learning beyond the bounds of education, which makes it possible to connect learning with larger societal spheres. Creating an enabling environment with a strong social fabric and multiple spaces for learning will benefit local economies in adapting to the pressures of change, including the impact of future pandemics (Venter & Hattingh 2021). Creative uses of digital technology will extend the settings for learning, with home

and community locations becoming increasingly important. Building a culture of lifelong learning as a creative learning process was the key theme of a paper written in response to the UIL book (Kearns 2021). Like the UNESCO book, this chapter builds a framework to drive cultural change. There is, perhaps, a difference in the importance placed on developing active lifelong learners who are imaginative, inventive and creative, placed within a key role in local communities, networks and organisations (Kearns 2021). This takes us to the important role of learning cities and communities in the process of change and building an innovative learning culture. Cultural institutions such as museums, theatres, galleries and libraries, as well as educational institutions, can play key roles in this process of change.

The more local enterprises are connected to these developments, the better the outcomes are likely to be. Overall, connecting and consolidating institutions (both commercial and social) and governments in the art and practice of building a creative learning culture will result in better outcomes (Kearns 2021, pp. 21–22). The conclusions of the UIL and Kearns' approaches to building a learning culture confirmed the observations of a study of strategies adopted by five OECD countries: Germany, Sweden, United States of America (USA), UK and Singapore (Kearns & Papadopoulos 2000). This creative process of change involved in building a learning culture is described by Charles Landry (2000) in the following terms:

> The Creative City balances a dynamic and occasionally tense equilibrium since when the old and the new come together there is a creative rub. The stability is provided by an ethical framework that provides the overall guiding principles to the evolving creative city. (p. 23)

While Landry's subject is a creative city, the same principles apply in a local economy subject to the challenge of a pandemic or similar threat. Resilience in this situation is a creative process in which social aspects that make for social coherence and capital play a major role in the outcomes.

The key university role in innovation

The focus on innovation in this chapter in preparing for a future marked by mega challenges brings with it an enhanced leadership role for universities in exploring the features of the emerging sustainable society and in building partnerships that connect civil society, universities and government – particularly the local government – in supporting local innovations. It is pre-empting and preparing for the future and having an active part in it. These features may be seen in innovations involving several of the leading universities in the world, for example, Oxford, MIT and Stanford. The support for continuing education and institutes of modern languages in many university and college environments have remained valid if self-sustaining on a user-pays approach. This can undermine inclusivity and

intentions to be learning societies for ultimate economic progress. However, the auditing approach of free online programmes can become pathways that building potential economic benefits.

An on-campus model for 'retirement with purpose and meaning' at the largest public university in the USA (Arizona State University, Phoenix) provides residential infrastructure for older people to interact with faculty and students through university activities and to share advice and intergenerational exchange, becoming a living laboratory for care and research. This approach is seen as ascribing to social responsibility and mutual benefit, as well as being a revenue raiser.

The Oxford Institute of Population Ageing

Researching changes in demography, health and related societal and environmental sectors provides the foundation for studying the implications and economies of the population ageing at this institute. Various multidisciplinary foci examine how societies are adapting, how global labour markets transform, ways that intergenerational family relationships and roles are impacted, implications for long-term health and care, interventions of climate change with rapid movement in population structures and investigating solutions through a Design Age partnership.

Collaborative work is being undertaken on a programme with North-West University (NWU), South Africa, which is seeking to take people forward from 'precarity to capability to optimal functioning' through its Optentia Research Unit. Alliances are also forged with other universities and foundations across the world, noting that economic success and productivity will increasingly depend on older workers and significant improvements to support this.

The MIT AgeLab

MIT in Boston is notable for its innovations across a number of sectors and is regarded as one of the top universities in the world. The MIT AgeLab was established in 2012 to examine issues thrown up by ageing populations. The founder of the AgeLab, Joseph Coughlan, recently published a book on *The Longevity Economy,* which he regards as the world's 'fastest-growing, most misunderstood market'. Coughlan was also involved in the establishment of Boston Bridge in 2012 as a non-profit professional development organisation in the field of ageing, with a close association with MIT AgeLab. The close association of the MIT AgeLab and Boston Bridge illustrates the university's role in community innovations in examining and responding to the challenges in the transition to a sustainable society and economy.

The flow of innovation across local government may also be seen in the city of Boston, which has various firsts in the field of innovation in ageing. For example, in 2020 and 2021, *The Boston Globe* released a series of articles highlighting aspects of Boston's role in a 'longevity hub'. The local government role may also be seen in the role of the Massachusetts Executive Office of Elder Affairs, which plays a key role in responding to issues thrown up by Boston's ageing population. Overall, the Boston developments show the connected roles of a leading university, a linked civil society initiative, the local government role and a community newspaper role in articulating community views. This is a good model for innovation in a changing society. These alliances also play an advisory role directly linked to specific public needs.

The Stanford Longevity Centre

The Stanford Longevity Centre in San Francesco provides a further example of a top university fostering innovation in a key area of social change in the transition to a sustainable society and economy (Stanford Center on Longevity 2021). The Stanford research on ageing led to a conceptual shift from the traditional view of ageing to a longevity approach. The extent of the demographic change will require a shift from an ageing society narrative with a focus on the end of life to a longevity approach that addresses the whole life course in the era of the ten-year life (Coughlin 2017, p. 3). Stanford has described this shift in the following terms (Barry et al. 2019; cf. Jonas & Shah 2021, p. 2):

> A longevity perspective recognises that development is a recursive process with many interconnected stages that require a broad range of interventions and measures covering education, work, finances, health, community, environment, and relationships. We must not only care for the elderly, but prepare children for century-long lives. (p. 4)

The Stanford research on the emerging longevity society has led to innovative concepts such as 'the new map of life', with research following up on this concept in selected areas, such as health, work, intergenerational relations and education.

Conclusion

The quest for sustainability in a turbulent era of disruptive changes points to the need to find holistic and fluid models that connect the various components that, in their interactions, open the path towards a just, sustainable future. Various models and tools discussed in this chapter, such as the doughnut approach and systems thinking, illustrate this requirement. This is essential learning that opens the path to a sustainable future.

Universities and local government can play a key role in this search for fresh ideas, as may be seen in the Singapore Liveability Centre, Oxford Institute of Population Ageing, MIT AgeLab and Stanford Longevity Centre. Resilience is, at best, a collaborative feature that marks a sustainable future. As local economies continue on the path of recovery and adapting to a new way of living, the need for new measures and approaches will require development practitioners to continuously research and implement innovative strategies aimed at sustainable development. Future studies could investigate the various approaches discussed in this chapter in a practical setting, which could aid in expanding the current knowledge surrounding local economies and their response to pandemics.

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Chapter 2

Applying causation, effectuation and crucible tactics to the COVID-19 pandemic's consequences on startups[2]

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Abstract

Companies worldwide have been challenged by the unprecedented crisis caused by the coronavirus disease 2019 (COVID-19) pandemic. Although several studies have been conducted to understand how companies survive these challenges, little attention has been paid to survival strategies among startups. This research intends to address this gap by exploring how startups have put into practice causation, effectuation and crucible strategies in attempting to secure the survival of their businesses. Applying an inductive approach, this research uses descriptive and comparative case studies from three Brazilian startups. The main findings reveal that: (1) the startups have been able to create positive effects from the COVID-19 pandemic after adopting different sets of causation, effectuation and crucible strategies; (2) the emergence of the *Reborn Epidemic Company* concept has developed as startups started generating revenue following changes implemented because of the effects of the pandemic; and (3) crucible strategies have been successfully implemented by startups in entirely redesigning their businesses and reorienting their products towards completely new market niches. The findings corroborate the emergent Low-Touch Economy paradigm. Theoretical and practical contributions and suggestions for future research are addressed.

Introduction

The COVID-19 pandemic is currently a global concern in numerous nations because of its widespread effects, both known and unknown (Wenham, Smith & Morgan 2020). Governments and companies are struggling with the economic crisis that has followed the health crisis, and several studies are being conducted to support and better identify successful public policies (Baker et al. 2020; Bozorgmehr et al. 2020), as well as to guide businesses through these difficult times (Syriopoulos 2020).

The economic effect of COVID-19 on businesses such as restaurants, hotels, service providers, stores, et cetera, was felt immediately because of the social distancing and lockdown measures implemented across the world (Gössling, Scott & Hall 2020). These measures are because of the transmission of COVID-19 through droplets or aerosols, leading to the spread of the virus (Asadi et al. 2020). Subsequently, traditional businesses based on business-to-customer (B2C) social interactions or business-to-business (B2B) transactions were immediately affected by lockdowns (Fernandes 2020; Hartmann & Lussier 2020). Moreover, companies from various industries also suffered impacts on their supply chains because of the destabilization of demand during this period (Jabbour et al. 2020). Business owners attempted to implement palliative solutions to ensure

their survival, such as delivering orders, introducing protective measures and even reinventing their business model as a whole by migrating to e-commerce, digital platforms and social media, that is, through digitalisation (Beliaeva et al. 2019).

The effects of COVID-19 on economies have given birth to the 'Low-Touch Economy', which is characterised by restrictions on social interactions, behavioural changes, higher levels of health security and adaptations in several industries (De Ridder & De Mey 2020; De Jesus et al. 2020). The new paradigm of the Low-Touch Economy requires equally new strategies for business survival (Bucaciuc, Prelicean & Chașovschi 2020) or radical business model innovations oriented towards features of the Low-Touch Economy (Baghiu 2020).

Although the most drastic measures implemented have tended to be related to traditional businesses based on trading and providing services directly to customers (Donthu & Gustafsson 2020), little attention has been paid to high-tech businesses such as startups (Verma & Gustafsson 2020). Davidsson and Gordon (2016) emphasise the importance of further studies to analyse how small samples of startups respond to crises in specific locations or sectors. Holland and Shepherd (2013) highlight the need for more research exploring the persistence of entrepreneurs in making strategic decisions for emerging businesses in adverse situations. Additionally, empirical studies looking at possible entrepreneurial opportunities in international contexts have also been recommended by Alvarez and Barney (2014). Therefore, the importance of this study is justified when analysing how high-tech businesses managed during the COVID-19 pandemic, as their business models were already 'Low-Touch Economy' even before the pandemic, assuming greater adaptability in crises such as the COVID-19 pandemic.

This research intends to address these gaps in the literature by shedding some light and identifying the impact of the COVID-19 pandemic on startups' strategies in the Brazilian context of these intertwined health, political and economic crises. The data were collected during the months in which Brazil became the second largest epicentre of the pandemic globally, behind only the United States of America (USA) (April to August 2020), with the country later recording 500,000 deaths by June 2021 (British Broadcasting Corporation [BBC] 2021). Moreover, the Brazilian context was chosen because of the fact that emerging economies face greater risks associated with health, economic and social crises when compared with established economies (Arellano, Bai & Mihalache 2020). Beyond struggling with the immediate effect of the pandemic, business owners and managers have been faced with various medium- and long-term effects on their companies. The pandemic has forced them to react

strategically, to adapt or to choose among planned strategies in order to survive. As a theoretical approach to the analysis of the cases in this study, the causation (planned strategies) and effectuation (emergent strategies) theories were selected (Sarasvathy 2001).

Additionally, we have considered a new strategic approach, which we have termed 'crucible strategy'. We consider 'crucible strategies' as those strategies developed when business owners and managers are forced to deal with risky and hazardous situations and contexts that they have never faced before faster than they would be in normal conditions. In these difficult contexts, decisions must be made even more rapidly by business managers aiming to ensure their companies' survival. The establishment of crucible strategies is based on previous experiences that have shaped business managers' skills in strategic planning despite their bounded rationality (Ferasso & Bergamaschi 2020). Each manager's experience is produced through a lifetime of trial-and-error situations, which allow for profound self-reflection on what failed and what succeeded, improving the manager's competencies (Bennis & Thomas 2002). In unpredictable circumstances, a company's survival can depend on quickly conceived strategies that must be implemented rapidly by business managers, in which context their competencies become critical.

Crucible strategies go beyond the normal process of causation and effectuation strategies, as standard processes may not respond to the company's urgent needs in difficult and hazardous situations where the company requires quick action to avoid bankruptcy. In this situation, a crucible strategy can contribute to the business' survival and, therefore, to the business manager being better prepared to deal with tough situations in future. This research aims to address the identified research gaps by exploring how startups have been affected by the COVID-19 pandemic and how they are putting causation, effectuation and crucible strategies into practice in attempting to ensure business survival. Accordingly, we were guided by the following research questions:

- (RQ1) To what extent has the COVID-19 pandemic threatened startups' survival?
- (RQ2) What strategies are being selected in attempting to ensure startups' survival?
- (RQ3) How are the managers of startups putting their chosen strategies into practice, and at what speed?

This study provides contributions for academia and business managers as follows. We explore the effects of the COVID-19 pandemic on startups in the context of the most critical stage of the pandemic's effects on Brazil. This specific period was chosen for data collection in order to understand

how companies were dealing with this unprecedented crisis and in a country that was facing its worst pandemic scenario. We identify *what* strategies are being put into practice as well as *how* startup managers are dealing with the current precarious business context. We also identify how startup managers put causation and effectuation strategies into practice. Finally, we identify the emergence of the 'crucible strategy' in the studied cases.

This article is structured as follows. The 'Literature review' section presents a contextual background on the COVID-19 pandemic and its effects, as well as discussing the causation and effectuation strategies and proposing the fundamentals of the crucible strategy. In the 'Methodology' section, we describe the research design adopted in this research. The 'Presentation of cases and empirical findings' section presents the cases studied and empirical findings. The chapter ends with a discussion as well as concluding remarks and references.

Literature review

The COVID-19 pandemic and its crisis effects

Since the confirmation of COVID-19 as a pandemic in March 2020 by the World Health Organization (WHO), several social distancing measures have become widely accepted as recommendations for the prevention of the spread of the disease (WHO 2020). Different countries have adopted different preventative measures; however, the rapid advance of the disease has depleted medical resources, overburdened health systems and led to thousands of lives being lost (Cohen et al. 2020).

In addition to the health crisis, the global economy has also suffered severe consequences. Distancing measures have prevented companies from running their businesses as usual in many countries, decreasing economic activity and resulting in an unprecedented global crisis (Baker et al. 2020). The Global Economic Perspectives pointed to a 3.5% contraction of the global economy in 2020 (World Bank 2021), and the International Monetary Fund (IMF) suggests a slow recovery, especially in emerging economies (IMF 2020).

This slowdown in economic activity has reduced companies' revenues, leading decision-makers to adapt their activities, cut investment and reduce expenses. Many workers have moved into remote working, although teleworking/working from home is generally more common among higher-skilled workers and is not applicable in many sectors (Bartik et al. 2020). In many cases, layoffs were inevitable, which has raised unemployment rates to historic levels around the world (Coibion, Gorodnichenko &

Weber 2020). Supply chains have also suffered from deficiencies in product delivery because of travel restrictions and border closures (Hartmann & Lussier 2020; Jabbour et al. 2020). Service-oriented industries such as tourism, aviation, sports, entertainment, retail, hotels, restaurants and local services (hairdressing, dentistry, restaurants, etc.) have been the worst affected and have consequently been the industries in which the unemployed figures have increased the most (Fernandes 2020). Emerging economies also face the limitation of limited fiscal space, allowing for little public support for the citizens most affected by the pandemic (Arellano et al. 2020). Considering these factors, competent leaders in the areas of health, business and government are needed, combined with stimuli for entrepreneurship, to seek effective strategies to overcome the crisis (Nicola et al. 2020).

Effects of the pandemic on companies' survival strategies

In an attempt to adapt to the context of the pandemic, companies have sought new strategies. Abubakar (2020) indicates the need to re-evaluate productive capacities, technology and customer feedback to drive strategies in turbulent moments. Focusing specifically on small businesses, such as startups, systematic strategies to reduce the impacts of the pandemic have so far been little explored and implemented (Fabeil, Pazim & Langgat 2020). In this sense, because of the constraints of distancing, digital solutions and strategies have become a priority (Beaunoyer, Dupéré & Guitton 2020). Digital transformation enables the redesign of traditional business models and the introduction of new technologies (Beliaeva et al. 2019; Fitriasari 2020), and the COVID-19 pandemic has imposed and accelerated this process of technological use in the adaptation of business models (Guitton 2020). Despite the vast range of strategies available in the Business Management domain, in this study we analyse a few specific strategies that may be considered by startups in critical moments, such as this current pandemic, as presented in the following sections.

Causation and effectuation strategies

Sarasvathy (2001) argues that companies guide their strategies in two different ways for decision-making purposes: causation and effectuation. Causation refers to a specified effect that is taken for granted as a requirement; in this approach the focus is on decision-making from among various options in order to select a strategy that will produce the desired effect. In this case, the decision-maker deals with predictive strategies. On the other hand, effectuation refers to the process whereby a set of

means is taken as the foundation, with the focus being on selecting from among the possible effects that can be created with that set of means; that is, the rationale of the effectuation strategy is in exercising control over what can be done with the available resources to meet a new demand (Sarasvathy 2001).

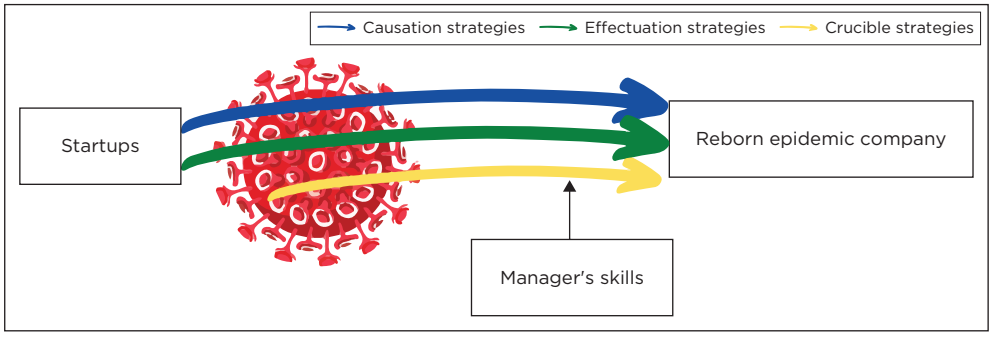
Sarasvathy (2001) suggests that the causation process supports the concept that companies should analyse their internal and external environment in order to create a strategic plan, which is later implemented and controlled. However, the effectuation process occurs when strategies emerge without a clear intention (Mintzberg 1991). In short, causation is related to planned strategies and effectuation to emergent strategies (Gabrielsson & Gabrielsson 2013).

Crucible strategy

With the term 'crucible', we refer to strategies that are created by business owners or managers when faced with risky or hazardous situations that require significant speed in the formulation and implementation of strategies. The term crucible comes from the field of chemistry, where it refers to a ceramic container used in laboratory activities for melting chemical compounds at high temperatures (Weber et al. 1957). In choosing this term, we considered the pressure and temperature that the crucible is subjected to and how it resists them, as companies in such situations face uncommon pressures, which they also need to resist and deal with.

These strategies are those related to business survival; they are formulated to address urgent environmental threats and are largely based on business managers' previous working experience, shaped by the trial-and-error situations they have encountered during their careers (Bennis & Thomas 2002). Thus, crucible strategies are considered only when causation and effectuation strategies would not give the required results, in which situation crucible strategies are rapidly formulated and adopted by company managers and owners.

In the leadership field of study, a leader deals with tough decisions that need to be taken and can undergo self-improvement based on the analysis of failures and lessons learned from what succeeded (Bennis & Thomas 2002). In alignment with these precepts, when a business manager faces unpredictable situations that can be considered a threat to the business's survival, the business manager must create a strategy at speed in order to save the business. Creating and implementing crucible strategies depends on the business manager's previous experiences because of the need to decide quickly. In the context of the COVID-19 pandemic, business managers have been challenged to rethink part or all of their business



Source: Authors' own work.
FIGURE 2.1: Research framework.

strategy in trying to ensure survival. The pandemic has had the direct effect of a decrease in sales and, consequently, decreased revenue, threatening business survival. Thus, business managers have been forced to adopt crucible strategies in order to deal with such risky and hazardous contexts.

Crucible strategies may also take the form of strategies that the business manager finds unfavourable or would not normally choose but is forced into by the emergent threat. Thus, crucible strategies are not characterised as a set of pre-defined strategies (causation), nor emergent strategies (effectuation), but as strategies that business managers are forced to use in challenging scenarios or under extreme necessity or imminent threat to the survival of their business. Considering the literature presented, the research framework is now presented in Figure 2.1.

As observed, startups are struggling with the effects of the COVID-19 pandemic, and causation and effectuation strategies can help with the survival of businesses. Moreover, the pandemic has specifically stimulated the emergence of new crucible strategies, which are largely based on managers' specific skills and experiences. These three strategies may be used to achieve the emergent concept of the *Reborn Epidemic Company*.

Methodology

This inductive research was developed based on empirical evidence (Sainsbury 1991) and can be characterised as a multiple descriptive comparative case study (Collis & Hussey 2005; Yin 2014), conducted using a qualitative approach (Yin 2014) with both primary and secondary sources. The unit of analysis selected is startup companies, along with their environment or context in the COVID-19 pandemic. The multiple comparative case studies methodology has been chosen for several reasons. Firstly, it contributes to our understanding of phenomena of interest, that is, Low-Touch Economy on strategies for high-tech startups. Secondly, multiple

comparative case studies provide a suitable research method to analyse the causation, effectuation and crucible strategies. Finally, the crucible strategy of Low-Touch Economy lacks established theoretical models.

Regarding qualitative data (primary sources), we conducted semi-structured interviews with three CEOs (as described in Table 2.1) and the interviews were complemented with data from secondary sources such as Deloitte, *Órbi Conecta* and reports from the Dom Cabral Foundation. We targeted CEOs because they tend to have critical information about the companies they manage and because strategies tend to be developed by such strategic staff members (Usunier, Easterby-Smith & Thorpe 1993). Regarding the quantitative data used (secondary sources), we retrieved information from startups' Internet webpages, social networking profiles (Facebook, Instagram, YouTube and LinkedIn), entrepreneurship incentive programme websites and promotional materials made available by the startups, such as folders and reports.

The pilot case study was conducted in order to identify how the COVID-19 pandemic was affecting startups in the Brazilian context and to adjust the interview-guiding questions appropriately. This case was excluded from the subsequent analyses. Following social distancing guidelines, we adopted the precepts of cyber research (Weible & Wallace 1998), specifically through the use of the Google Meet platform. The interviews were conducted in August 2020 by the second and third authors and were recorded and subsequently transcribed.

The data were analysed by following the thematic content technique (Joffe & Yardley 2004), which was applied to both the primary and secondary data analyses (Ravitch & Carl 2016). After careful analysis of the cases' datasets, we selected representative excerpts for a detailed analysis (Evrard, Pras & Roux 1997). The selection of key findings allowed for cross-case comparisons (Usunier et al. 1993), with these excerpts characterised according to the strategies used and their features, as retrieved from the literature. These original excerpts were categorised accordingly, for examination through an interpretive analysis approach (Dobson 2001).

We followed the validity and reliability considerations set out by Drucker, Ehlinger and Grenier (2002). The collection and analysis stages were

TABLE 2.1: Interviewee characteristics.

Company	Industry	Foundation year	Interviewee's role	Interview duration
Pilot case	Digitalisation	2018	Head Sales	17:00
Startup 1	Stock Control	2018	Founder and CEO (S1)	85:13
Startup 2	Education	2018	Founder and CEO (S2)	48:39
Startup 3	Education	2013	Head Sales (S3)	28:35

Key: CEO, chief executive officer.

supervised by the first author in order to guarantee their validity (Yin 2014), while external validity checking was carried out by the fourth author. The authors declare their ethical commitment to impartiality vis-à-vis the research outcomes (Miles, Huberman & Saldaña 2014).

Presentation of cases and empirical findings

The Brazilian startup ecosystem

The startup sector generated US$2.8 trillion globally in 2019, representing 10% growth over the previous year, according to the Global Startup Ecosystem Report (Startup Genome 2019). Specifically, in Brazil, the startup market showed exponential growth of more than 200% between 2015 and 2019, increasing from 4,000 to more than 12,000 startups, along with the foundation of the Brazilian Startup Association (ABStartups).

According to StartupBase (2020), the largest database on the Brazilian startup ecosystem, the country currently has more than 13,200 startups, which are located mainly in the Southern and Southeastern regions. These startups are operating in a variety of industries, including education, finance, Internet, health, well-being and agribusiness. In addition, 47.9% of such companies are working in the B2B model, and the main business models used are Software as a Service (SaaS) (41.15%), Marketplace (19.42%) and e-Commerce (7.23%). Therefore, the Brazilian ecosystem is a relevant empirical research field for investigating the impacts caused by the COVID-19 pandemic on Brazilian startups, especially during its spread through Brazilian territory.

Case study company profiles

Startup 1: Stock control

Startup 1 offers digital solutions for filing electronic tax documents, simplifying business management for small and medium-sized enterprises (SMEs). This company operates across four areas of business management: inventory control, corporate accountability, construction monitoring and product pricing. The interviewee from this startup is one of its founders and has taken part in the formulation of the company's planning, control and commercial activities.

This is a young company, founded in 2019, which began its operation by constructing platforms, developing prototypes, conducting research and consolidating its target audience. In early 2020, Startup 1 had no revenue. With the spread of the pandemic within Brazil by March 2020 and the

beginning of social distancing and lockdown, this startup needed to adapt in order to survive. The development of its construction monitoring platform was interrupted because of the pandemic and requiring on-site observation of activities, such as interpersonal interactions, which were avoided under social distancing rules. The corporate accountability platform was also interrupted because of requiring employees to travel for business, a practice which is also now avoided. The pricing platform has also been discontinued because of strategic decisions considering the present context.

Despite the interruption of these activities, this company's inventory management platform became its main product during the pandemic period. The company launched this platform as a smartphone application, with a starter version available free of charge and the option of a paid full version via monthly fees. The interviewee reported that these services were launched during the pandemic, and he noticed positive sales growth because of the pandemic.

Startup 2: EdTech

Startup 2 is an EdTech (educational technology) company dedicated to children's education, which provides educational materials for coding experiments, games and robots. This company trades content and educational robotics kits for teachers and schools through both franchising and direct sales. The educational content is developed using a programming platform that is compatible with the Internet of Things (IoT) technology, toy parts, interconnections with other market platforms, connections to sensors and additional modules, providing multiple options for use. The interviewee from this company is one of the founding partners and develops the educational materials and the company's programming tools.

This company was founded in 2017 when its founders participated in the creation of a 'maker environment' in a children's school, helping to train teachers to work with technologies, programming and robotics by stimulating creativity, innovation, critical thinking, problem-solving, communication and collaboration among their young students. Since its foundation, this startup has regularly demonstrated positive revenues and worked with the micro franchising of its solutions in elementary schools. The company has also participated in incubation and acceleration programmes and has participated in an international innovation ecosystem. With the arrival and spread of COVID-19 in Brazil, all educational institutions were closed, and this company had no active revenue by June 2020, forcing its CEO into the decision to migrate to another market area.

Startup 3: EdTech

Startup 3 is a company that is oriented towards the Brazilian private education market share. This company offers optimisation and automation for student enrolment processes at elementary and high school levels, converting contacts into contracts. Startup 3 was founded in 2014, initially focusing on regulated degrees, such as undergraduate degrees and professional courses. Among its first main clients were representatives of private universities, such as the third and the nineteenth largest[3] Brazilian universities.

Analysing the market and finding that non-regulated or short courses had an income equivalent to regulated courses (such as BAs) in 2018, Startup 3 opted to migrate to this market of non-regulated short courses, such as courses in languages (English), communication skills and project management, among others. According to the interviewee from this company, revenue from non-regulated courses exceeded revenue from regulated courses in Brazil in 2019, the year in which Startup 3 acquired its first investment. Currently, non-regulated courses represent 90% of Startup 3's revenues.

Before the context of the COVID-19 pandemic, Startup 3 concentrated all its activities on face-to-face courses for both non-regulated and regulated courses, which were highly affected by social distancing measures. However, this same obstacle led the company to anticipate such strategies and launch its distance learning platform.

Empirical findings and cross-case comparisons

The three selected cases were demonstrated to be rich sources of data and provided detailed information. These three startups provided a variety of evidence about the three strategies analysed in this research (causation, effectuation and crucible strategies). The following results were retrieved from this field research, and in this section, we analyse the strategies implemented by these startups. Startup 1 originally had four products in its portfolio, but because of the conditions of social distancing, the company strategically redesigned itself, as three of these products required the physical presence of consumers. Therefore, the focus of Startup 1 shifted to only its inventory control app, as users can use this platform remotely.

This type of product repositioning is aligned with the causation strategy, as the interviewee's decision-making was based on the analysis of the new conditions imposed by the environment, characterised by predictive

3. According to the *Ranking Universitário Folha* for the year 2019, available at https://ruf.folha.uol.com.br/2019/ranking-de-universidades/principal/.

strategising (Sarasvathy 2001). Gabrielsson and Gabrielsson (2013) argue that the causation strategy is a planned strategy and, as demonstrated in the decision made by Startup 1, their focus changed to a product that can be used remotely, based on the environmental circumstances. Therefore, the causation strategy is observed in organisations' analysis of their internal and external environment to determine decision-making (Sarasvathy 2001).

The causation strategy is also related to the continual search for partners who possess desirable resources that the company does not have (Prashantham et al. 2019). This is also evident with Startup 1, as a new partnership was established with a product advertising company during the pandemic in order to leverage sales of the inventory control app as well as brand awareness.

According to SEBRAE (2020), considering strategies undertaken by startups in managing the pandemic's effects, a focus on digital marketing and expansion of contacts – strategies adopted by Startup 1 – are measures that allow a greater number of potential customers to become aware of available solutions, in addition to increasing the startup's visibility. Startup 1's interviewee pointed out that the context of the pandemic facilitated constant and rapid communication through digital channels with new partners. The remote method provided contacts with a wider range of customers, which with traditional face-to-face interactions would be a more time-consuming task; however, as he emphasised: '[...] now it's easier, I click and open a communication channel, then it became easier' (Interviewee, Startup 1, n.d.).

On the other hand, in contrast to Startup 1's use of the causation strategy, the effectuation strategy was noted in Startup 3. The emerging strategies used by Startup 3 considered the extent of their control over what could be done with the available resources to meet new demand (Sarasvathy 2001). As schools and universities suspended their face-to-face activities, Startup 3 had to anticipate the planning and launching of a distance learning platform, as 100% of its sales previously came from face-to-face courses until remote learning became the only option allowed by public regulatory bodies. This finding aligns with the literature, with the anticipation and acceleration of projects and strategies considered to be measures commonly adopted by startups affected by the pandemic (Orbi Conecta & Fundação Dom Cabral 2020).

According to Mintzberg (1991), the process of the effectuation strategy occurs without a clear intention; that is, it is not a predictive strategy. Although Startup 3 already had the intention of developing an online platform in the short term, it was not expected to be implemented so soon because of the pandemic period. It was the effects of the pandemic that accelerated this process for Startup 3, and this can be characterised as an

emerging strategy for such a company. The Organization for Economic Co-operation and Development (OECD) reports that online resources have been supporting the continuity of education during the COVID-19 pandemic (OECD 2020). In this context, Startup 3 implemented a distance education platform in order to fulfil this new market demand, which, in turn, resulted in higher revenues than they earned in the pre-pandemic period. Startups that showed positive financial results during the pandemic represent only 12% of the total number of startups, as indicated in the Startup Genome Global Startup Ecosystem report (2020).

Prashantham et al. (2019) argue that partners constitute the main providers of resources in the effectuation strategy approach. This is evidenced by the Head of Sales of Startup 3, who stated that '[...] we are conducting many partnerships with large institutions and the result is very positive [...]'. In addition to the causation and effectuation strategies observed in these two startups, another interesting finding was identified. After Startup 3 launched its courses through a new online platform, the company witnessed positive results related to the revenue provided by first-time sales. Similarly, after the onset of the pandemic, Startup 1 started selling and trading in the international market, which had not been previously planned, and witnessed revenue growth as a result. Moreover, Startup 2 started operating in a completely new market niche during the pandemic period, and thus generated profits. From these indications, we considered these three startups as 'reborn epidemic companies'. Similar to the concept of Reborn Global Companies, where the company has focused on international markets since its foundation (Knight & Cavusgil 2005), a *Reborn Epidemic Company* is a company that presented its first revenues after the onset of the COVID-19 pandemic, a company that is trading and profiting under hazardous and unprecedented restrictions never before faced by such organisations.

Another emerging finding from this field of research is the crucible strategy. This strategy was observed for Startup 2, as the founder and CEO ran out of revenue in the first half of 2020 because of the pandemic and was forced to change his company's market niche to the agribusiness field. The company had planned to operate in the education industry, specifically providing services to elementary schools. Because of the lack of revenue and concerns about the business' survival in a risky situation, the Founder and CEO of Startup 2 was forced to rethink the whole business using new strategies, which characterises his approach as a crucible strategy. In the Founder or CEO's own words:

> '[...] we had to rethink everything we were going to do [...] As soon as the pandemic started, we had zero revenue, until June. So, in contact with consultants, we saw an opportunity in the agribusiness sector that was outside our radar, totally outside, taking education for agribusiness, into agribusiness [...] So, I moved

> to a new segment, needing to make adjustments to the characteristics of the business.' (CEO, Startup 2, n.d.)

An important aspect of the crucible strategy is the manager's personal and professional experience concerning decision-making in hazardous situations. The CEO of Startup 2 reported being forced to take measures because of the atypical context:

> 'The pandemic is very similar to what I experienced in the 1980s, as a young preteen, we saw the Brazilian economy full of ups and downs. Then, as a manager, I also saw a lot of companies closing, in the crises of the 1990s. [...]
>
> 'In other sectors that I worked in, I noticed that I may not even face a real pandemic, but I dealt with pandemics every day in different proportions, I think the way I deal with this is what will change. If I don't see beyond the limits of my wall, which is the pandemic, then, there's no way. I need to look at and be aware of these perceptions. In this, I think it helps that I have worked in so many sectors, such as: automotive, clothing, education, and I've had other ventures. So, we always try to see a little more than what is the natural situation.' (CEO, Startup 2, n.d.)

Startup 2's Founder or CEO has over 20 years of experience in business management, entrepreneurship and the education field. These experiences contributed to more drastic decision-making, which enabled this company to enter an industry it had not initially planned to. This manager underlined the importance of resilience in the decision-maker and considered the pandemic scenario as an opportunity for something bigger. He also demonstrated a positive mindset and was not afraid of chaos, reinforcing that chaos is a necessary element of the exploitation of opportunities.

The manager's experience is a key element of decision-making in the crucible strategy, which was observed in the profile of Startup 2's Founder and CEO. This lengthy experience is not observed in the managers of Startups 1 and 3, which led them to adopt less aggressive strategies, such as the identified causation and effectuation strategies, when compared with Startup 2's crucible strategies. The Startup 1 interviewee had no professional experience prior to founding this company, while the Startup 3 interviewee had five years of experience in the consulting and information technology industries. Another emerging finding from our field research relates to the digitalisation process resulting from social distancing measures. The three startups analysed were shown to have benefited from digitalisation. Startup 1 used digitalisation to meet more partners, a process that previously required face-to-face meetings. Startup 2, by developing a digital platform, started to serve the distance learning education market. Startup 3, on the other hand, was able to attract customers from other regions and countries that it had not previously served or even considered at its foundation.

Digitalisation is an aspect observed in all of the analysed startups and reflects the results of a survey carried out by the Inter-American Development Bank and the Organization of American States, indicating that, during the pandemic, digitalisation in Latin America accelerated in three months at a pace which would normally take three years (CEPAL, 2020). The strategies adopted by the startups analysed are summarised in Table 2.2.

The advancement of digitalisation is also highlighted in the Global Startup Ecosystem report (Genome 2020), which states that, even though technology industries' revenue fell during the pandemic, the digital technology industry showed better results compared to other industries. The sectors of EdTech and information technology (IT) startups (relevant to all startups in this manuscript) are among those that showed the highest liquidity in the first half of 2020, according to a survey by Distrito Dataminer (Distrito 2020).

The positive results presented by the three startups studied are also aligned with reports from Órbi Conecta and Fundação Dom Cabral on the pandemic's impact in Brazilian startups. As reported, 30.9% of the startups analysed were proven to be positively affected by the pandemic's effects (Orbi Conecta & Fundação Dom Cabral 2020). Our empirical findings show that, among the main positive impacts reported by managers, changes in strategic priorities, the acquisition of new customers, changes made in terms of processes and products and increased revenues are major common points among the cases studied.

Discussion

This research set out with the goal to explore how startups have been affected by the COVID-19 pandemic and how these startups are putting causation, effectuation or crucible strategies into practice, with the aim of business survival. Our main findings reveal that the companies studied have been affected by the COVID-19 pandemic threatening their survival, and that these companies have used a set of strategies which favour several changes undertaken during the pandemic period, from adapting an existing product for remote use (causation strategy of Startup 1) to a radical shift in market niche (crucible strategy of Startup 2). In short, Startup 1 implemented a set of three causation strategies, whereas Startup 3 used two effectuation strategies, and Startup 2 demonstrated three crucible strategies.

In the case of Startups 1 and 3, the findings are guided according to the Sarasvathy (2001) causation and effectuation strategies, while Startup 2 evidenced the crucible strategy concept as described in this research.

TABLE 2.2: Strategies adopted, outcomes and cross-case meta-inferences.

Causes/ pandemic effects	Strategies adopted	Results obtained	Cross-case meta-inferences
Constraints caused by limits on physical interactions between the company and customers	Startup 1 strategically redesigned one of its four products to operate remotely (inventory control app)	Digitalisation of one product (Startup 1)	Startup 1 adopted three causation strategies by digitalising one product, implementing digital marketing strategies and implementing digital communications Startup 2 showed three ***crucible strategies*** by radically changing its market niche and abandoning the niche in which it developed its competencies, redesigning the whole business and repositioning an existing product. The crucible strategy was characterised in Startup 2 by the ***manager's skills***, forged in previous hazardous circumstances. Startup 3 adopted two *effectuation strategies* by digitalising internal processes, allowing the company to implement a distance learning platform, as well as by targeting a new and more profitable and wider market niche **'Reborn epidemic companies':** Startup 1 generated profits from its first-ever product commercialization during the pandemic period. Startup 3 started generating revenues by shifting to a more profitable market niche during the pandemic and by trading in the international market, which had not previously been planned, thanks to ICT tools. Startup 2 started generating revenue thanks to changing its market niche to a new industry. Thus, Startup 2 could be considered a 'reborn epidemic company' with regard to exploring its new market niche during the pandemic.
Competitors also migrated to cyberspace, intensifying concurrence	Startup 1 partnered with an advertising company to leverage sales growth and brand awareness, resulting in the **emergence and growth of profits**	Digital marketing strategies for reinforcing product and brand positioning (Startup 1)	
Cessation of face-to-face communication with customers	Startup 1 adopted digital communication via ICT tools	Digital communication expanded access to a wider range of customers and optimised the time used for interactions (Startup 1)	
Customers in the education industry (relevant to Startups 2 and 3) were affected by social distancing measures and moved to virtual education	Startup 2 was challenged by obtaining no revenue from its market niche. Startup 2 changed its market niche to a completely new industry (agribusiness) during the pandemic, repositioning an existing product (BBC micro:bit hardware) to the new market niche. The CEO's mindset considered chaos as an opportunity. Startup 3 anticipated the implementation of distance learning platforms and started exploring another market niche in the same segment more intensively (education industry), based on the distance learning mode. Startup 3 accelerated internal changes to more rapidly implement a distance learning platform with a strategic technical partnership. Startup 3 needed to adapt to the **international market** to receive international payments, a **market not considered before the pandemic**. Startup 3 partnered with bigger and **more profitable customers** at the national and **international levels**.	By ***rethinking the whole business***, the CEO ***radically changed to a new market niche*** via exploitation (consultancy services), ***redesigning the whole company and product offering*** (Startup 2). Aggressive strategies were adopted faster thanks to the ***manager's skills*** when dealing with ***previous hazardous circumstances*** (Startup 2). *Digitalisation of internal processes* to meet emergent market niche demands, resulting in substantially more profitable and bigger customers. Startup 3 *expanded its market share* by entering into *new Brazilian regions* and also into the *international market*, which had not previously been planned. This startup reached *more customers* by establishing strategic partnerships (Startup 3).	

Note: Terms that are highlighted in the table refer to causation strategies; those in ***bold and italics*** to crucible strategies; those in *italics* to effectuation strategies; and those in **bold** refer to features of reborn epidemic companies.
Key: CEO, chief executive officer; ICT, information and communication technology.

The empirical evidence from the three studied cases proved that under an unprecedented threat (Baker et al. 2020), the CEOs were forced to provide solutions to save the businesses they manage, as occurred to many other companies and their supply chains (Bartik et al. 2020; Hartmann & Lussier 2020; Jabbour et al. 2020). Although some industries were affected more severely by the pandemic threat (Fernandes 2020), the companies that implemented strategies more efficiently and implemented strategies narrowing the opportunities brought by the pandemic crisis solved the threat of business survival in a better way (Beaunoyer et al. 2020; Beliaeva et al. 2019; Fabeil et al. 2020; Fitriasari 2020; Guitton 2020). Even though the crucible strategy is a more radical strategy when compared with causation and effectuation, this gave space to the complete renewal of the company and resulted in giving 'rebirth' to the company in the middle of the pandemic crisis, that is, the 'reborn epidemic company'.

All the companies studied have ultimately positively benefited from the disturbances caused by the pandemic by adopting causation, effectuation and crucible strategies. These companies used digital solutions (Beaunoyer et al. 2020) and digital transformation processes (Fitriasari 2020) in their business models in an attempt to survive. An interesting finding that emerged from these empirical cases is the *Reborn Epidemic Company* concept, by which we identified the fact that Startups 1 and 2 started generating revenue during the pandemic period and by implementing their causation and crucible strategies, respectively. Startup 3 also proved to be a 'reborn epidemic company' by starting its trading activities at the international level during the pandemic period (effectuation strategy), thanks to its radical market niche alteration and exploitation of information and communication technology (ICT) tools.

This research advances the entrepreneurship or startup field of knowledge in many ways. The analyses provided substantial empirical evidence on how the causation and effectuation strategies were useful for entrepreneurs to overcome difficulties in the context of Low-Touch Economy. Additionally, the crucible strategy, based mainly on the CEO's or Founder's experience, also proved to be a turning point for business survival in the identified case. The cross-case comparisons allowed the identification of the dynamics in which strategies were put into practice in a rapid implementation as a response to the imminent threat caused by the pandemic. Another advancement in the knowledge is that other companies can learn from the studied cases on how to implement strategies in a more accurate way when facing any effect characterised by the Low-Touch Economy in future turbulent scenarios. For scholars, this research advances our knowledge in strategy formulation and implementation in practical ways and when CEOs' or Founders' decisions are critical and urgent.

Also, this study provides insights and empirical evidence on how the three different strategies are intertwined and sometimes combined by CEOs or Founders in order to save their businesses when facing adverse threats.

Conclusion

This research provides several contributions to both scholars and practitioners. We have presented how the three startups studied put their strategies into practice with the aim of securing their businesses' survival, and we identified that the three types of strategies were rapidly implemented by each company. Additionally, we have addressed how the startups studied are dealing with the effects of the COVID-19 pandemic on their businesses and the different ways in which the companies studied are implementing different strategies to ensure the survival of their businesses.

Our research contributes to the emerging body of literature on the Low-Touch Economy by introducing novel findings on startups and the need for new types of strategies, in line with the recommendations of Bucaciuc et al. (2020) or the radical business model innovations of Baghiu (2020).

We have empirically identified the concept and features of crucible strategies, which was noted in analysing Startup 2, and identified which specific actions were taken in relation to this new type of strategy. Then, beyond identifying the specific strategies used by the startups analysed in relation to causation and effectuation strategies, previously identified by Sarasvathy (2001), we identified the emergence of a new strategy type: the crucible strategy.

This chapter provides novelty by defining the concept and features of the crucible strategy, as well as identifying how this type of strategy is implemented in a real company during the hazardous period of the COVID-19 pandemic in Brazil.

The companies studied revealed which specific strategies related to the causation, effectuation and crucible strategies are being used to overcome the effects of the COVID-19 pandemic, which proved to provide better results as compared to if they had remained in the same industry or sold the same products.

Regarding the limitations of this study, this research was carried out using three case studies which were compared to each other, and results may vary if other companies are analysed. We recommend that researchers conduct future studies and compare their findings in order to reinforce the causation, effectuation and crucible strategies. We also suggest that future researchers conduct studies in other industries and other contexts and countries, as well as other technological niches.

Chapter 3

Facilitating small business development post-COVID-19 using a mentoring programme to assist practitioners within the arts and culture sector of South Africa

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Abstract

This chapter aims to examine the success of mentoring practitioners within the arts and cultural sector to further sustainable local economic development (LED). This chapter applies machine-learning and the Latent Dirichlet Allocation (LDA) technique to model the experiences and

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expectations of practitioners within the arts industry as they work through a mentoring process, post-coronavirus disease 2019 (COVID-19).

The findings indicate a positive relationship in some areas of business development within the arts and cultural sector. Preliminary studies have indicated that the impact is more pronounced across gender differences. The findings of this study indicate that, while the mentoring process has been largely successful, there are structural overarching factors that remain a barrier to developing mentoring programmes post-COVID-19. One key element is the availability of technological infrastructure to support the process. From the analysis, it becomes apparent that the mentoring process significantly contributes towards developing suitable business strategies for practitioners in the arts and cultural sector, enabling better business practice and LED.

Mentoring is an effective approach to developing a healthy behaviour change for practitioners in the cultural industry. Mentoring permits the incorporation of skill-building activities and the reinforcement of self-regulation activities. Mentoring allows individuals and groups to engage by providing a platform for support. This chapter explores the development of a mentoring programme by the Arts and Culture Trust to better prepare practitioners within the arts and cultural sector to develop sustainable business models. Mentoring cultural entrepreneurs facilitates sustainable LED.

Introduction

Meeting current needs without sacrificing the capacity of future generations to meet their own needs is the main goal of sustainable development (see the Brundtland [1987] Report). In professional fields, this implies that institutions have to ensure that the needs of present and future generations are better understood and built upon; thus, individuals are helped to make a healthy behavioural change to entrepreneurial life (Lozano et al. 2013). Literature supports mentoring as an effective approach to healthy behaviour changes. Through mentoring, self-regulation exercises can be reinforced and skill-building activities can be incorporated. Skill-building and self-regulation activities can be incorporated into mentoring relationships. Furthermore, mentoring encourages the engagement of individuals and groups by providing social support (Petosa & Smith 2014).

The very concept of mentoring remains unclear and imprecise, and the effectiveness of informal or formal mentoring to promote the success of participant outcomes is assumed (Clark, Andrews & Davies 2011). However, Boyd et al. (2019) identify the fact that within the literature, research into

the success of mentoring programmes as a tool for sustainability should focus on achieving equity. The advent of the coronavirus disease 2019 (COVID-19) pandemic and the move of many training institutions onto an online platform may have contributed towards expanding the inequality gap by forcing many disadvantaged and minority individuals into a situation where access to skill development was greatly hindered. This highlights the importance of identifying the positive effects of mentoring to assist in reducing the negative effects of growing inequality, especially among the minority spheres of society or those who had been previously disadvantaged.

Mentoring offers an approach whereby a specialist within a specific area may assist inexperienced individuals in developing their respective careers through the formation of a safe and supportive mentoring relationship (Clark et al. 2011). Mentoring is considered one of the most important strategies implemented by training institutions today, as it is effective in addressing the challenges of inequality. It is a popular strategy used by training institutions to improve well-being and, therefore, improve success rates (Petosa & Smith 2014). The early days of career development are crucial in determining overall success rates (Clark et al. 2011), while the social support provided by mentoring can also lead to an increase in retention and, eventually, lead to greater job satisfaction (Morton & Gil 2019). Budge (2006) mentions that one of the major reasons why mentoring has been implemented in institutions is to increase the retention rates of participants. Furthermore, mentoring has proven to benefit individuals who enter the workplace. Mentored individuals in the workplace often report a higher likelihood of receiving promotions at work, report higher incomes, find more opportunities, have higher job satisfaction and exert greater influence within the industry than non-mentored individuals (Budge 2006).

Reconceptualising mentoring as a holistic process that includes the perspectives of various individuals from different backgrounds will help to create the impetus to fuel the effectiveness of the mentoring programme offered within institutions (Budge 2006). This chapter will focus only on mentoring within arts and culture institutions by exploring the role of a mentoring programme post-COVID-19 in South Africa. The outcomes of this paper are designed to better understand the social dimension underlining one of the key challenges faced by institutions, namely, how to support underrepresented, disadvantaged and vulnerable groups, especially those artists who do not have sufficient support to develop their talent, those without adequate access to the Internet and those who have lower levels of digital skills or those lacking a supportive social network (networks of experts working on the social dimension of education and training [NESET] 2021, p. 37).

Reeves (2002) highlights that:

> […] an important regional dimension was added to the development of an evidence base around the economic contribution of the creative industries with the establishment of the Regional Issues Working Group by the Creative Industries Task Force [*in early 1999*]. (p. 11)

Some challenges in the field have been highlighted through NESET. Networks of experts working on the social dimension of education and training are a component of the social dimension of higher education. The European Higher Education Area (EHEA) incorporates the social dimension of higher education into its policy framework as '[…] the student body entering, participating in and completing higher education at all levels should correspond to the heterogeneous social profile of society at large in the EHEA countries' (NESET 2021, p. 33).

While 'higher education' may be defined as a third-level education after individuals leave school and usually embraces the concept of universities and colleges (nidirect 2022), the policy framework for identifying and supporting underrepresented, disadvantaged and vulnerable people studying or working in training institutions is relevant to the role of mentoring post-secondary education. This framework proposes methods and policies that improve opportunities for better market access, improve market participation and provide a structure from which to measure the success of skill transfer (NESET 2021).

The role of mentoring as a 'social dimension of higher education' will be explored in this study by examining the sentiment of participants who participated in the mentoring programme post-COVID-19. Furthermore, this study will argue for supporting mentorship in cultural entrepreneurship by developing a sustainable platform through which skills are transferred. Sustainability may be achieved through adapting to institutional change, adapting to new technologies, balancing student- and staff numbers, responding to changing patterns among equity groups and making space to allow for the mentoring programme to become more self-supporting (NESET 2021).

A key contribution underlined in this paper indicates that while we are aware of the benefits of mentoring, the method of translating the language of business into a language of creatives is very important. The very process of developing a programme that speaks of simple measurement terms such as 'wealth' in a 'financial context' may not always be appropriate. For a creative, the concept of wealth is hidden in the ability to 'create'. For others, especially within the financial sector, 'wealth' is measured in terms of 'assets'. To bridge this gap, the paper will suggest that mentoring is an effective tool to aid artists in developing a system of building financial wealth through business development while speaking to the creativeness of the creatives who are the centre of such innovative growth.

The impact of COVID-19 on skills development in South Africa

Globally, COVID-19 disrupted approximately 220 million students in educational institutions. By accelerating the transition that was already occurring in the form of online learning and teaching during the previous academic year, the pandemic transformed traditional teaching. In addition, the pandemic directly impacted how the research was carried out on institutional operations (in terms of campus closures and the shift to an online environment) and institutional governance, with management staff needing to make a range of practice changes by allowing for flexibility in many areas of maintaining continuous skill development in an uncertain environment (United Nations Educational, Scientific and Cultural Organization [UNESCO] 2020).

The effects of the pandemic on the South African labour market via increased unemployment levels have further exposed the stark social and economic differences between the rich and the poor. In South Africa, in 2020, the government imposed a national lockdown, forcing the total closure of all education campuses, including schools and training institutions. The widespread closures and lockdowns because of COVID-19 affected human capital, which would diminish economic opportunities in the long run (Mhlanga & Moloi 2020).

According to the United Nations Children's Fund (UNICEF) (2021), the disrupted education system in South Africa from the beginning of the COVID-19 outbreak has been devastating, with learners lagging behind academically. Rotational attendance, sporadic school closures and days off for specific grades have resulted in schoolchildren losing 54% of their allocated learning time (UNICEF 2021). Shepherd and Mohohlwane (2021) mention that since the onset of the COVID-19 pandemic, South African children are at an increased risk of dropping out of school. Additional concerns include lagging on their expected outcomes and losing the needed time to maintain learning goals. Other concerns raised include food insecurity and the impact of lower levels of the emotional health of children learning from home. The toll that major disruptions (caused by full and partial school closures during 2020 and 2021) had on the mental health of learners and their teachers was an added impact (Shepherd & Mohohlwane 2021).

While school closures undermined educational goals, the spill-over to the provision of essential services to communities became quite noticeable. These essential services, beyond education, include access to a balanced diet and parents' ability to go to work. There is an increased risk of gender-based violence against women and girls (UNESCO 2020). Furthermore, the development of COVID-19 has left the majority of the country's population experiencing heightened uncertainty within an already strained economic

environment (Muvunyi 2020). South Africa has recorded more COVID-19 cases than any other country in sub-Saharan Africa, according to the official count of COVID-19 cases, which is above 1,000,000 (European Centre for Disease Prevention and Control [ECDC] 2020) for 2020 (Muvunyi 2020).

The impact of COVID-19 on students was worsened by the overarching impact of food insecurity within households, resulting in increased cases of reported depression, anxiety and stress, particularly amongst women and young parents whose siblings experienced lower measurable developmental outcomes (Shepherd & Mohohlwane 2021). COVID-19 further inflated the challenges faced by students from underrepresented groups, low-income students, girls, members of minority groups, students living in remote areas and students with special needs, further driving economic hardship and countless challenges while living in emotional distress (Mitchell 2021).

The impact of COVID-19 on the arts and culture sector

By late December 2020, the impact of COVID-19 had already exceeded expectations and had rapidly and unexpectedly surged across local, regional and international economies. According to the World Trade Organization (WTO) (2020), COVID-19 negatively impacted international production and trade, which escalated unemployment, changed household expenditure patterns and further impacted schools and educational institutions. Over a year after the World Health Organization (WHO) proclaimed the outbreak of COVID-19 to be a pandemic, many learners continue to experience either partial or complete school closures (Shepherd & Mohohlwane 2021). Especially significant is the impact of COVID-19 on disadvantaged and vulnerable students in higher education who were disproportionally affected (NESET 2021).

With continuing periods of temporary physical closure of schools and higher education institutions (HEIs), COVID-19 disrupted the lives of 1.5 billion learners around the world, leaving policymakers and educational institutions with unprecedented problems (NESET 2021). Data from UNESCO (2020) revealed that, at the peak of the crisis, 94% of the world's student population was affected by the closure of educational institutions because of the pandemic. Disruptions in school attendance have not only added to learner dropout but also to irreversible losses in time taken from learning, which may compound future attendance at schools in many regions across the world. For most education systems, especially those in low- and middle-income countries, disruptions in school attendance because of COVID-19 equate to an equivalent diminished access to learning (Shepherd & Mohohlwane 2021).

Donnelly, Patrinos and Gresham (2021) explain that the closure of schools because of COVID-19 has disrupted entire regions within the European Union (EU). Data indicated learning losses because of the pandemic translate into increases in inequality. It was reported that even Europe's high-income countries experienced disruptions to education, with measurably increased levels of inequality, even with the transition to virtual learning. These outcomes are likely to be more acute in middle- and lower-income countries.

This sentiment was echoed by the United Nations Conference on Trade and Development (UNCTAD) (2020), which proposes that because of the financial implications of the impact of COVID-19 during 2020 and 2021, it is estimated that unemployment would soar to over 200 million full-time employed workers losing their jobs globally. In addition, UNCTAD (2020) reports that the induced market uncertainty because of the pandemic will cost the global economy over US$1 trillion (United Nations [UN] 2020). Thus, the loss of household incomes, changes in spending patterns and an induced growth in inequality because of the impact on the education system with less access of school leavers to higher education, resulting in lower labour market participation with lower future earnings (Donnelly et al. 2021).

Within South Africa, the disruptions and uncertainty brought by the COVID-19 pandemic have exacerbated existing socio-economic inequalities and societal pressures (Shepherd & Mohohlwane 2021). This was worsened by the economic impact of COVID-19 in South Africa. During the third quarter of 2020, the Centre for Risk Analysis (2020) reported that the South African economy was under immense pressure because of the increasing levels of unemployment brought about as businesses and other work opportunities were affected by the COVID-19 pandemic.

The arts and culture sector experienced substantial economic setbacks because of COVID-19. The limitations on gatherings, the changing nature of consumer behaviour and unemployment affected this sector. However, because of the nature of the arts and culture sector, the full scale of the impact is hard to discern, mainly because of the diversity of the industries which fall under the arts and culture sector and definitions of what constitutes art and culture (Guibert & Hyde 2021).

The arts and culture sector in South Africa is composed of a wide range of industries that operate in both the formal and the informal sectors of the economy. These industries range from film, digital and visual advertising to performance, music, architecture and design. The arts and culture sector further interconnects with other professions, non-profit organisations (NPOs), marketing companies and financial markets, all of which magnify its economic mark (Guibert & Hyde 2021).

The social benefits of the arts on community development have been argued by the Community Arts Movement as far back as the 1960s. The low priority of policy development within the political and policy agendas of the time, combined with the lack of structural and measurable evidence, suggests that the arts and culture sector may have a stronger societal impact, which is insufficiently robust to convince many policymakers to further develop the sector (Reeves 2002).

Many arts professionals are particularly exposed to the underlying shifts in the economy because of the fundamental structural aspects of their line of work. One key concept is that the practitioners within the sector do not receive as much support when impacted by COVID-19, as artists are more likely to be self-employed, and they may fall out of the sector altogether (Guibert & Hyde 2021).

Macro-economic modelling estimated that the Centre for Community Impact (CCI)'s direct contribution to the South African gross domestic product (GDP) fell from ZAR84.3bn in 2019 to ZAR42.2bn in 2020, resulting in a drop of 50%. While there has been some slow recovery in 2021, which is expected to continue, the contribution of the CCIs to South Africa's GDP was estimated to be 44% less than in 2019 (Nelson Mandela University 2021). According to Hoek (2022), the arts and culture sector contributes approximately 2.97% to the GDP of South Africa. In 2017, the South African Cultural Observatory (SACO) found that 2.77% of employed people in South Africa were employed in cultural industries and that employment in the creative economy accounted for 7% of possible employment in South Africa. With the onset of COVID-19, the arts and culture sector reduced significantly. The direct and indirect economic effects were further worsened by the induced impact as consumer habits changed the way individuals spend. It was estimated that 95% of creative professionals surveyed had their work either cancelled or indefinitely postponed (Hoek 2022).

Contextualising the social dimension of higher education: Learning to practice through mentorship programmes

Key target priorities of the EU and the EHEA framework include teaching and learning, research, community engagement, the social dimension of higher education, internationalisation, university governance and the financial impact of COVID-19 on institutions of higher education (NESET 2021). Within the 2007 framework, the target priority of the social dimension of higher education is an important goal identified by UNESCO and the EHEA. This goal, in line with the UN Sustainable Development Goals (SDGs), emphasises an inclusive, equitable and quality education, which is developed to promote lifelong learning opportunities for all (Montané et al. 2019).

A broader view of this would propose that this social dimension includes the concept of the social responsibility of an institution towards society. Salmi (2018) mentions that the social dimension of higher education plays a key role in the promotion of social interconnections, aiding the reduction of inequality by raising the level of knowledge, skills and competencies in society. Individuals of less represented races, ethnicities, socio-economic statuses, sexual identities and minority populations are in greater need of mentoring because of exclusionist policies in the past. 'Social division between groups defined in terms of race and ethnicity along economic, cultural, and political lines is a central feature of public life in nations throughout the world' (Alocer & Martinez 2017). This problem spans geographic- and political boundaries and is reflected in universal and social dynamics (Loury 1999).

Training institutions often find that many individuals from within the institutions are unaware of the types of mentoring resources that are available to them (Budge 2006). Actively incorporating minority groups into the mentoring process enhances the reach of the social dimension of higher education and focuses on the potential of individuals in terms of their personal development and their contribution to a sustainable knowledge-based society (Salim 2018, p. 146). To achieve equality, mentoring should have broader overarching targets to assist in reducing inequality.

A formal mentoring process is widely believed to be related to positive outcomes for mentees. 'Mentoring is a well-established, evidence-based social support strategy that can enhance [the] academic, social, personal, and career outcomes of recipients' (Beltman & Schaeben 2012). The three most significant theoretical explanations for the potential positive effects of mentoring – as identified by Rodger and Tremblay (2003), Bank, Slavings and Biddle (1990) and Seibert (1999) – can be concluded as social, cognitive and motivational perspectives, feelings of belongingness and the acquisition and development of satisfying relationships between peers. Reasons for training institutions adopting the mentoring system include issues such as meeting the goals of the institution, especially recruitment and retention. In addition, there are pedagogical goals, such as improved outcomes (Rodger & Tremblay 2003). Indeed, pedagogical concerns about the growth in the number of students within the classroom are contextualised by issues of transition and retention.

Furthermore, research that has been undertaken on mentoring shows that the mentoring experience has a positive impact on the mentors too. Besides the possible success seen by mentors in their mentees, additional benefits to mentors include a greater sense of inter-connectedness and deeper levels of confidence-building with measurable advancement in career-development skills that assist peer mentors to become more competitive after they have graduated (Boyd et al. 2019).

Connolly (2017) refers to the mentoring process as 'peer leadership'. By leading, mentors gain benefits such as recognising themselves as role models and perceiving that the position prepared them to look forward to future success beyond their undergraduate experiences and improving their academic foundation, which has further been linked to critical thinking skills, problem-solving and personal development (Connolly 2017). According to the study by Beltman and Schaeben (2012), collegiality and networking were often cited as positive sentiments by mentors. Furthermore, this could be detected in studies on mentors, citing better outcomes and improving the levels of satisfaction and sense of achievement through helping others, which also impacted and improved self-awareness and confidence-building of the mentor.

Other findings propose that improved social outcomes include an enhanced sense of connectedness and intercultural friendships. Mentors have also reported an improvement in their professional and organisational skills (Beltman & Schaeben 2012). It is widely recognised that learning is a social process. Instead of being about acquiring sequential cognitive skills, learning is a process where skills and self-knowledge are crucial to success (Christie 2014). Because there are few longitudinal studies that measure the impact of the mentoring programme on long-term success (Sanchez, Bauer & Paronto 2006), the real effectiveness of such a programme is sometimes questioned. This is mainly a result of the challenges inherent in collecting and analysing the data and further qualitative and quantitative restrictions given the direction of causality and significance of the correlations derived from such information (Collings, Swanson & Watkins 2014). The work by Rodger and Tremblay (2003) further highlights several specific methodological weaknesses in these types of studies, including the non-random approach to developing skills and the lack of appropriate cross-sectional research.

Because of the levels of generalisation, Collings et al. (2014) point out that subjective output measures such as satisfaction, commitment, integration and self-esteem show mixed results in some studies. This highlights increases in some variables, such as satisfaction, yet not all variables increased in the same way because of methodological concerns used in the study. Rodger and Tremblay (2003) state that the methodological challenges faced within this type of research may have serious implications regarding the findings and the reporting within the literature on mentoring and on the long-term success of mentoring.

Furthermore, the role of mentoring as a contributing factor to SDGs is a valid question. Budge (2006) raises key development objectives that can be derived from the mentoring process, namely that mentoring contributes to academic success and is significant to academic achievement. Unfortunately, neither of these can be validated from the current reports used in this research

and falls outside of the scope of this paper. Improving the sustainability of the mentoring process could be achieved following three fundamental principles, namely, a focus on the mentee's growth and achievement, the provision of broad support and mentoring relationships developed between the mentee, mentor and the institution (Boyd et al. 2019).

Methodology

The analyses explore data derived from surveys of participants involved in the mentoring stage of the 'Building Blocks Programme' which has been developed through the Arts and Culture Trust (ACT) within South Africa.

The ACT is a non-profit organisation (NPO) that provides independent funding and development for the arts. The main goal of ACT is to increase the financial support available to artists so as to promote creative and long-lasting projects that contribute significantly to society. Literature, music, visual art, theatre, dance and other artistic manifestations are all supported by the ACT through organised financing programmes. This support also extends to festivals, community arts projects, arts management, arts education and arts administration (ACT 2021b). Skill development within the arts and culture sector recognises that societies and regions may be culturally different, and focusing on a human relations approach to LED may help to develop the political, economic and social norms. The ACT Building Blocks Programme is a capacity-building programme that focuses on arts practitioners in the form of 'masterclasses' which are focused on developing deliverables in the following areas (ACT 2021a):

- digital skills
- marketing
- governance
- monitoring and evaluation
- asset-based community development.

An LDA analysis is used to determine the key sentiment as expressed by the respondents of the mentorship programme in 2021. The analysis is conducted by analysing feedback surveys for two streams of mentees who have been mentored through the ACT and have completed the mentoring programme – the first tier in March 2021 (29 respondents) and the second tier that completed the mentorship in July 2021 (24 respondents). A total of 53 mentees from different fields within the arts and culture sector of South Africa were analysed in these surveys. Each respondent was asked to answer the following questions on the mentoring process:

- How useful did you find the mentorship sessions?
- Did the mentors provide sufficient professional and personal support for you or your organisation?

- Were the mentors sufficiently knowledgeable and experienced to assist in the development of the business plan?
- Did the homework and assignments add value?
- What could we improve on?

The text analysis used in this study draws from the approach used by Khan et al. (2021) using data extraction, pre-processing and topic identification. The question posed to the mentees asked the respondent to describe: 'What could we improve on?' The use of the word 'improve' removes subject bias and allows the mentee to challenge the *status quo* of the programme being surveyed while providing a critical account of the experience.

A concern in this analysis was that the questions posed and used in the reports were written and analysed in United Kingdom (UK) English, and not all respondents use English as their first language, as expressed by the mentors and mentees within the sample (Lexalytics 2020). This could therefore influence the interpretation of the results or skew the interpretation thereof. While this is noted, the method of analysis is still used in this study to estimate their emotions. A sentiment score was established using the 'Valence Aware Dictionary and Sentiment Reasoner' (VADER) approach. The VADER Sentiment Scores function uses the VADER sentiment lexicon and modifier word lists. Language analysis is central to detecting a reliable sentiment score from the analysis. This is because of significant differences in lexicons, syntax and semantics among languages (Antonakaki et al. 2021).

Survey data used in the reports were imported and cleaned, tokenised and normalised. Data filtering is also applied to the information imported into the software. The normalisation of the collected text converts the 'slang jargon' into commonly used terms. The words are tokenised to assign roles to words within the sentence by identifying the adverbs, nouns, suffixes, verbs and adjectives (Khan et al. 2021). The analysis of sentiment data is further approached using correlation criteria, factor analysis and an 'LDA model'. The LDA model is a 'topic model' that explores underlying topics in a collection of documents and infers word probabilities to the words within the documents to extract individual topics. Topic modelling refers to the extraction of abstract topics from the collection of responses made by participants during data collection.

According to Nguyen (2014), LDA comprises viable clustering algorithms suitable to bundle topics from collections of text data. The foundation of sentiment analysis rests on natural language processing (NLP) and machine-learning applications (MLA) to automatically determine the emotional tone behind online conversations (Korolov 2021). Lists of words and expressions (lexicons) captured in the reports were collected and

imported into the model and processed using NLP techniques developed in computational linguistics. However, the LDA methodology is not without a fair share of criticism. The most often cited concern is that the assignment of text data into topics may not appear to be sensible and often the topics themselves are extremely challenging to describe in a semantically meaningful way and they may appear to be just arbitrary lists of words (Kulshrestha 2019). The sentiment analysis used within this study applies a rule-based system to identify subjectivity, polarity or the subject of an opinion.

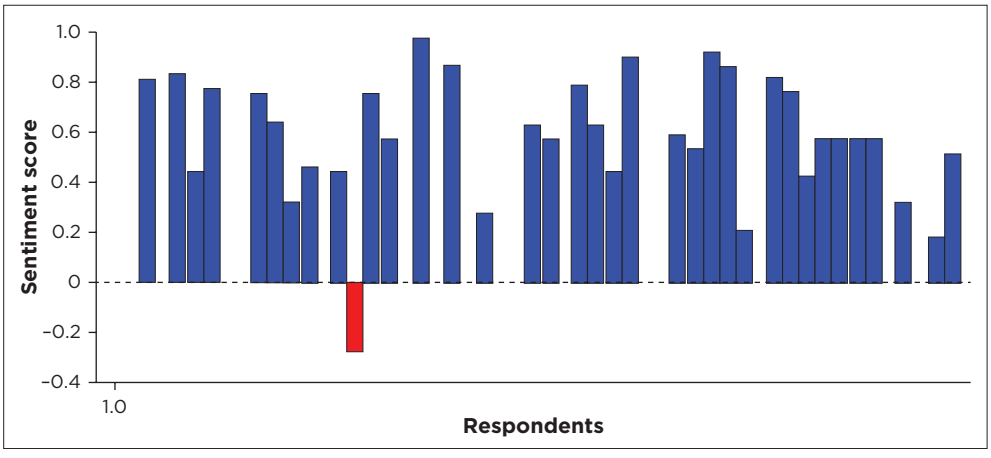
Sentiment analysis

A lexicon approach is used to develop a sentiment analysis per response within this sample. The VADER lexicon is a rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in the survey. The idea here is that the score has both polarities (positive or negative), with a maximum of one, either way. This score reflects how much of a positive or negative emotion exists within the text that was analysed and the value of the score expresses the level of intensity of that emotion. The average VADER Sentiment Score for students tutored is positive 0.5818 for the tutoring experience. The highest score obtained was 0.9744, and the lowest was negative 2.732. This is a strong positive indicator for the mentorship programme as per the responses given by each of the survey participants (refer to Figure 3.1).

The single negative response reported by the respondent stated that 'mentorship was good [it] is just that sometimes we had network problem[s] and thereafter we get lost. Understand [the] generation gap. Some of us are bbt (born before technology)' (Respondent, location unspecified, n.d.).

This statement highlighted a significant consideration: as the role of technology became more appropriate after the COVID-19 pandemic, individuals experienced vastly different relationships with technology. According to Guibert and Hyde (2021), while virtual platforms were the most widely adopted adaptations for art organisations and artists, they come with some severe limitations. An example of such a limitation indicated that many artists and arts organisations were driven to incorporate new equipment and systems, learn new skills, such as video and sound editing, and learn how to monetise their offerings in a virtual environment. At the same time, it was found that there was no assurance that audiences were able to adapt to the newly adapted virtual environment (Guibert & Hyde 2021, p. 7).

Figure 3.2 derives a 'word cloud', which is a visual representation of the words used in a particular text, with the size of each word indicating its relative frequency. Word clouds (also known as text clouds or tag clouds)



Source: Authors' own work.

FIGURE 3.1: Sentiment scores per mentee, between -1 and 1, with values greater than '0' indicating positive sentiment.

Source: Author's own work.

FIGURE 3.2: Word cloud, tokenised response by the mentees.

are a collection or a cluster of words depicted in varied sizes. Word clouds are generated by breaking the text into component words and counting how frequently they appear in the body of the text. The individual font sizes are assigned to words in the cloud based on the frequency with which the word appears in the text (Alida 2012). The four most mentioned words in the responses provided by the attendees include: 'mentor', 'business', 'plan' and 'sessions'. With respect to the mentorship programme, it appears that the training focused specifically on mentor sessions helped to develop their skills to best focus on their businesses and planning.

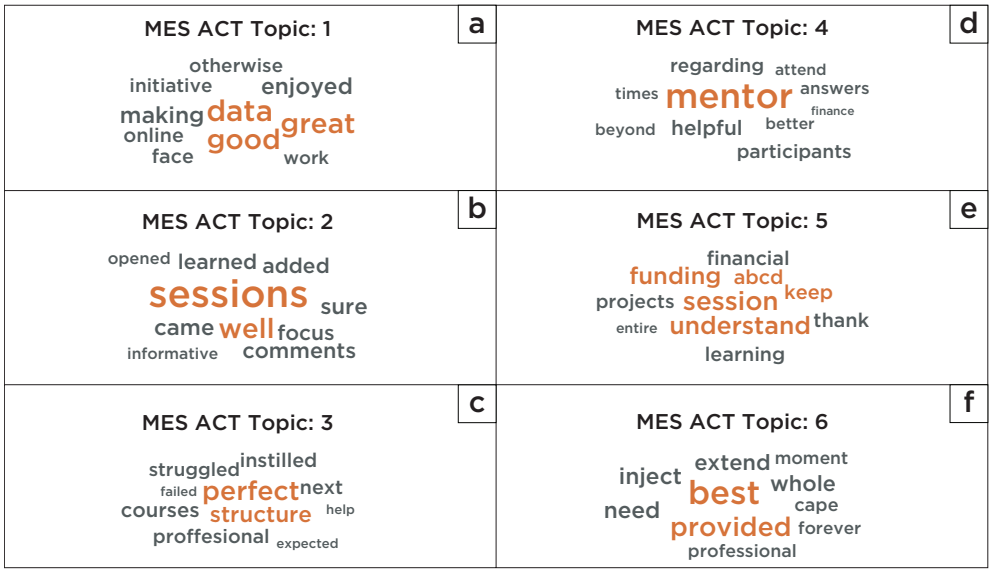
It would be safe to state that the mentoring process revolved around the concept of business and not talent. This implies that the need for business skill transfer in an area which is already rich in talent is a key factor of the mentoring programme.

This study applied a supervised machine-learning technique to the respondents' surveys. This process involves 'word clustering'. 'Clustering' is the process of organising a set of data into groups (Campbell 2005) so that observations within each of the groups are similarly compared to observations of another cluster (Martinez & Martinez 2005). The results generated in this analysis revealed several topics that determine the motivation underlying the survey responses. Eight individual topics were identified using machine-learning, and six topics were displayed according to the level and extent of the highest probability. These are presented as 'Word Clouds'.

In Figure 3.3, Topic 1 refers to the concept of data, orientated towards using technology during the post-COVID-19 era to assist in developing their businesses. Topic 2 focused on the mentoring sessions and highlighted the learning that the mentees received from the mentors. Topic 3 refers to the design of the mentoring process and how it is developed to positively assist the mentees in the development of their businesses. Topic 4 speaks of the significance of having a mentor and the value of this programme. Topic 5 speaks of the concern around financial support and how funding can best be used to drive the projects of the mentors. Topic 6 focuses on the positive view and embraces the holistic nature of the mentoring programme.

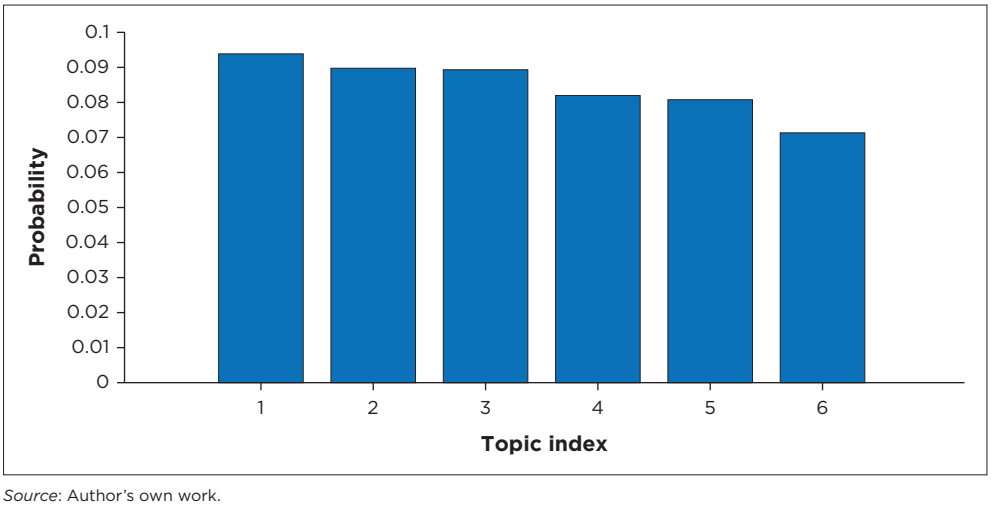
The mentoring process also revealed the density of the clustering between each of the different topics. This can be seen in Figure 3.4.

From the probability distribution, Topic 1 has the highest probability of being highlighted by the respondents. This topic highlights the importance of technology, having access to data and having training within a technologically structured environment as a pressing issue, as highlighted by the mentees. Both topics 2 and 3 share similar probabilities, indicating that the relationship between the focus of the sessions and the structure of



Source: Author's own work.
Key: MES, mentees.

FIGURE 3.3: Topic identification using supervised machine-learning.



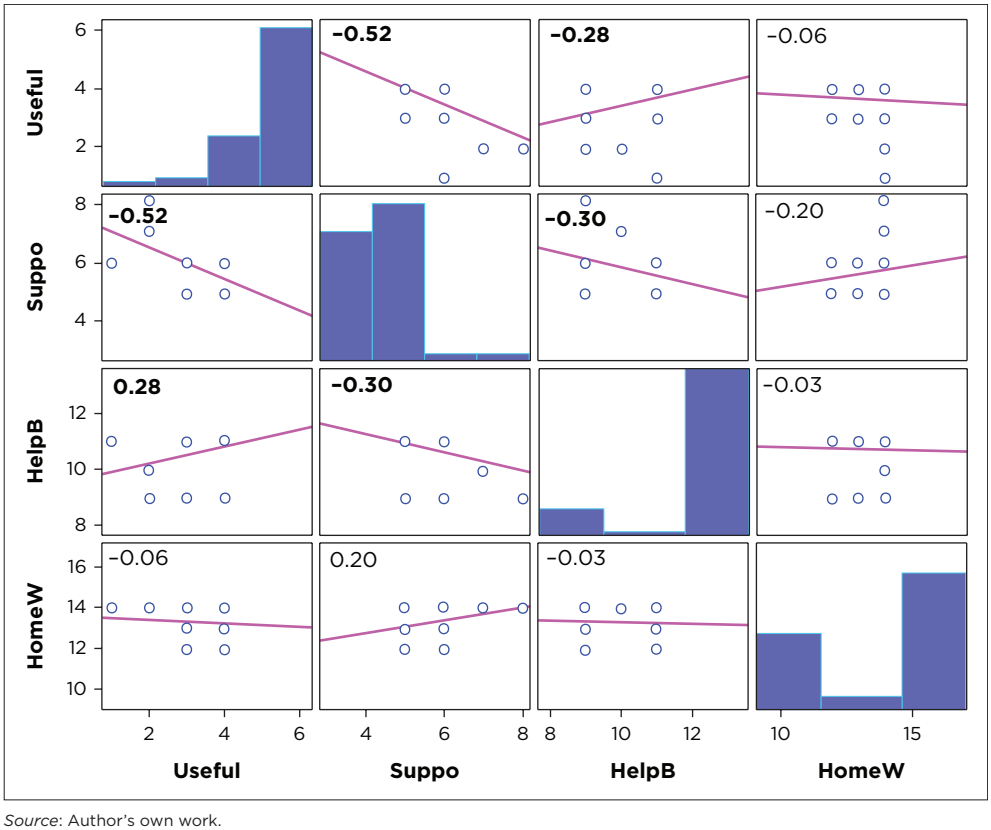
Source: Author's own work.

FIGURE 3.4: Probability distribution to show the interrelated nature of the topics identified.

the mentoring sessions is intrinsically interwoven. Topics 4 and 5 share similar probabilities, indicating that mentors see the role of financial support as having an intrinsic part in the mentoring programme. Topic 6 represents an independent idea expressed by the mentees, highlighting the mentees' positive reactions in response to the mentoring programme. The LDA analysis is further supported in the surveys when analysing

independent feedback questions that focus on the 'usefulness' of the mentoring programme, the 'support' provided in the programme, the role of mentoring in developing a 'business plan' and in many cases, the mentors were asked to undertake 'homework tasks' while working within the mentoring programme.

Of the respondents, 95% found the mentoring process useful, while 96% reported that the mentoring programme met the expectations in terms of support. Of the mentors, 98% of respondents reported that the mentor was knowledgeable and experienced and could assist with the development of the business plan. A total of 94% of the respondents reported getting value from the assignments that they were given by the mentor. Overall, this reveals a strong positive image of the mentorship programme. To better understand the interrelatedness of the survey questions, a correlation matrix was derived to explore the interrelated trends reported by the mentees, as depicted in Figure 3.5.



Source: Author's own work.
Key: Usefu, 'How useful did you find the mentorship sessions?'; Suppo, 'Did the mentors provide sufficient professional support?'; HelpB, 'Were the mentors sufficiently knowledgeable and experienced?'; Homew, 'Did the homework and assignments add value?'.

FIGURE 3.5: Correlation matrix showing the relationship between the responses to the mentor programme.

A correlation matrix is a summary table displaying the correlation coefficients for different variables that are analysed. This matrix depicts the correlation between all the possible pairs of values in a table. The key headings of the variables used in this table include 'Usefu' ('How useful did you find the mentorship sessions?'), 'Suppo' ('Did the mentors provide sufficient professional support?'), 'HelpB' ('Were the mentors sufficiently knowledgeable and experienced?') and 'Homew' ('Did the homework and assignments add value?').

The values represented indicate the 'Pearson Correlation Coefficient', which is a measure of the linear association between two variables that are used in this analysis. The Pearson Correlation Coefficient is represented by a value between –1 and 1 where –1 indicates a perfect negative linear correlation between two variables, 0 indicates no linear correlation between the two variables analysed, and 1 indicates a perfect positive linear correlation between the two variables examined. The greater the value of the coefficient, the stronger the relationship between the two variables. The sign of the coefficient indicates if there is a positive or a negative correlation. A positive correlation indicates that as one value of one variable increases, so does the correlating value of the other variable. A negative correlation coefficient indicates that as the value of one variable increases, then the value of the other variable in the data sample will decrease. Values indicated in bold in Figure 3.5 indicate that the specific correlation coefficient is statistically significant.

There appeared to be no significant correlation between 'How useful did you find the mentorship sessions?' and 'Did the homework and assignments add value?'. Despite having a strong positive response from the respondents to both questions, the relationship is not statistically significant and cannot derive any meaningful feedback.

The relationship between 'How useful did you find the mentorship sessions?' and 'Were the mentors sufficiently knowledgeable and experienced to assist in the development of the business plan?' showed a positive correlation. Both questions derived a strong positive response from each of the individual questions, and work towards the development of the business plan seemed to play a vital role in the overall effectiveness of the mentoring strategy used in this programme. When analysing the feedback from the respondents by using the n-gram methodology, the word cloud highlighted in Figure 3.6 became apparent.

The relationship between 'How useful did you find the mentorship sessions?' and 'Did the mentors provide sufficient professional and personal support for you/your organisation?' showed a strong negative correlation. This does not indicate that mentoring does not work, but two key ideas were identified in the LDA analysis. The first was the role of technology in

Source: Author's own work.

FIGURE 3.6: Word cloud analysis, using *n*-grams.

the success of the mentoring process and access to data. It appears that the technological infrastructure could act as a barrier, given the possible access to an online environment from diverse regions or the cost of access to technology. The second key point identified in the LDA analysis was the need for financial support as a tool to enhance the mentoring process. This becomes apparent when exploring the relationship between developing a business plan and the need for support. While the initial analysis indicates a positive response to both questions, the correlation coefficient showed a negative relationship.

The value that mentees place on access to suitable levels of technology and access to additional financial resources is an important consideration and something that should be explored in future studies.

Discussion

The mentoring process is of significant value to the development of practitioners within the arts and culture sector. Mentoring has been

recognised on a wide variety of international platforms, from the Regional Issues Working Group by the Creative Industries Task Force to the NESET. Concepts in mentoring have been further addressed through large international organisations such as UNESCO and UNCTAD. The EHEA incorporates mentoring through the social dimension of higher education.

Within LED, the role of the cultural industries plays a significant part in creating job opportunities and stimulating economic growth by contributing to local and regional economic development. Many practitioners within the arts and culture sector operate within small business models, while the reach and impact can be far greater than other similar-sized industries. Mentoring in the arts and culture sector has been shown to have strong benefits for related industries by stimulating cultural entrepreneurship using appropriate interventions.

Guiding the creatives, the need, as indicated in this analysis, has remarkable overarching implications. Yet the challenges of funding and access to technology are identified as two key areas in the sector which require attention. The role of mentoring in developing appropriate business strategies through skill transfer and providing guidance has positive returns in the arts and culture sector, driving sustainable LED. Yet the sector requires additional support through technological infrastructure and programmes that could support the arts and culture sector through appropriate funding channels.

Conclusion

This article explored the mentoring programme as a part of the sustainable development objectives as prescribed by the UN through the social dimension prescribed within the framework of the EHEA. This focuses on one of the key challenges faced by creatives within the arts and culture sector, namely, supporting underrepresented, disadvantaged and vulnerable groups by allowing for the development of a healthy behavioural change through mentoring.

The literature seems to support mentoring as an effective approach to this health behaviour change. Mentoring allows for the incorporation of skill-building activities and the reinforcement of self-regulation activities. Mentoring allows for the engagement of individuals and groups by providing social support, even through an online platform.

Within South Africa, vast socio-economic gaps exist. While the nation grapples with high unemployment and deepening poverty levels, skills shortages remain prevalent. While this paper does not measure the success of practitioners within the arts and culture sector over the long run,

it examines the response of mentors as they develop their businesses within the creative industries.

It may be bold to recommend that the mentoring process of creative people should be expanded to reach wider audiences. It is not always possible to reach more creatives when the institutions that focus on developing such material are limited financially or even through available trainers. Where possible, support from higher funding bodies should be made available to assist practitioners in the field of arts and culture, to bolster the industry while further supporting the creatives. By supporting the creative industries, one supports innovation, and innovation is the key to achieving economic growth.

This study showed that the mentoring process may contribute towards improving the sustainability of business within the arts and culture sector of South Africa. Mentoring plays a significant role in strengthening business practice within the arts and culture sector and also contributes significantly to sustainable LED.

Chapter 4

The importance of recognition of prior learning for economic growth and development and social change

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Abstract

Global catastrophic events, such as wars and pandemics, negatively impact every sphere of the economic, social and political fabric of nations, resulting in the development of reconstruction and recovery plans focusing on economic, social and, oftentimes, infrastructure recoveries. The education sphere is usually tasked with supporting and developing a skilled and capable workforce that will be key players in implementing such plans. Few people recognise the fact that recognition of prior learning (RPL) has been a credible instrument used after world wars and other catastrophes to support economic growth and development for social justice and change. Through a brief historical overview of the trajectory of RPL and its purposes in times of reconstruction and recovery, and two case studies using a

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qualitative methodology with an inductive approach, the author hopes to build common knowledge at the intersection of professional practices, to reinvigorate the implementation of RPL following the coronavirus disease 2019 (COVID-19) pandemic. The COVID-19 pandemic's impact on the skills development and education sphere has necessitated change into digitally-driven dynamic ways of learning, teaching, assessing and quality-assuring. It is hoped that by growing common knowledge about RPL and its role in skills development in post-pandemic local economic and social development, RPL will be viewed importantly as a mechanism to address COVID-19 pandemic-related impacts. These, importantly, include finding ways to stem job losses and populate new kinds of jobs through recognising the knowledge, skills and competence of people with already achieved but unrecognised skill sets to work in a changed economic environment.

Introduction

Recognition of prior learning as a mechanism for economic development and personal, community and social change, especially after a 'catastrophic' event, is not new in South Africa. This view about RPL was proposed as one of the four significant building blocks of the education and training landscape adopted by the African National Congress (ANC) in 1994, after years of colonialist and apartheid education and training systems in South Africa. The road towards implementing this vision has been convoluted and contested where the issues of what knowledge counts, and the matters of who decides what is knowledge and how it will be recognised are deeply embedded in policy disparities and power relationships. The initial 'high road' vision of the importance of RPL, which is part of the education, training and skills development sphere, to rebuild an economy and support skills and community development appears to have been removed from the RPL discourse. The concept of RPL was shifted from being one of the central pillars of the new education and training system in the country after 1994 to being viewed as an outlier option for access to further studies and possibly the awarding of some credits for learning achieved in another institution or workplace. The literature about RPL reflects the binary views about RPL, with a number of scholars presenting views about the benefits of RPL and case studies describing successful RPL implementation, and others rather focusing on the difficulties associated with RPL, such as its credibility, challenges in its implementation, recognition in mainstream teaching, learning and assessment, ways to implement RPL and the costs associated with implementing RPL. The recognition of RPL as an important component of skills development and economic development has remained at the periphery of discourses about how to grow local economies and build a sustainable flow of skilled and capable people to work in a growing economy. This chapter seeks to

develop common knowledge about RPL and to restore its role as one of the key solutions to grow a pipeline of skilled and knowledgeable people whose agency is vital in local economic development, especially when recovering from a pandemic such as the global COVID-19 pandemic.

In the education sphere, three critical disruptors have emerged that have galvanised a renewed focus on understanding and implementing RPL in situations previously not included in the RPL discourse. The digitally-focused Fourth Industrial Revolution (4IR) and Fifth Industrial Revolution (5IR), the future of work and especially the COVID-19 pandemic have necessitated change into digitally-driven dynamic ways of learning, teaching, assessing and quality-assuring. New rules of engagement and innovative approaches to RPL have been designed and implemented to accommodate a heightened need for differently skilled and knowledgeable people to work and participate in all aspects of community and economic life to deal with the impact of the pandemic on education, training and skills development. To illustrate how RPL can be used in new contexts, the author shares experiences in two case studies in this chapter, focusing on RPL for a professional designation and RPL for promotion at work.

The methodology is qualitative, using an inductive approach to analyse information from a desktop literature review, followed by the two case studies. One of the case studies deals with awarding professional designations in sports coaching through the successful adoption of a flexible, digitised online implementation approach to RPL. The other case study considers how RPL has been applied to support candidates in promotion in the workplace. The chapter also highlights the importance of a functional qualifications framework, using a learning outcomes paradigm, to facilitate the implementation of RPL and that RPL is both possible and necessary. The chapter proposes that through growing common knowledge, countries and institutions could consider developing quality-assured processes to recognise non-formal and informal learning – a type of high-level and strategic global RPL referencing system to encourage sustainable economic development supported by a skilled and capable workforce.

Research design

In building an effective research design, the author is sensitive to her research paradigm, ensuring that it is in line with her stance regarding the nature of reality (Mills, Bonner & Francis 2006, p. 2). The author's philosophical paradigm is interpretivist as she views the world as complex and dynamic and interpreted through interactions with people and wider social systems (Aliyu et al. 2015). Through this chapter, she aims to achieve 'a deeper understanding of the social phenomenon under study' (Rashid et al. 2019, p. 3).

The choice of epistemology affects the choice of research methodology. A qualitative approach is used to further develop the understanding of RPL and its application in new contexts and renew focus on previous applications of RPL through a desktop literature review and two RPL case studies. Case studies use data that are descriptive in nature (Brynard, Hanekom & Brynard 2014), and the phenomenon is explored in real-time and in different contexts (Yazin 2015). The author's ontology is relativist, in which she 'assumes that there exist multiple, socially constructed realities ungoverned by natural laws' (Guba & Lincoln 2005). The case studies, in particular, should deepen an understanding of RPL practice and assist in bridging boundaries between professionals who have different knowledge and practices of RPL. Through the author's subjective epistemological view, she seeks to create a more informed and sophisticated understanding of RPL and to build common knowledge from her professional practice.

Historical overview of recognition of prior learning foci and conceptual frameworks

Tracing the historical trajectory of RPL, it emerges that RPL has been closely aligned with the concepts of adult education, lifelong education and lifelong learning. It has variously been both a mechanism for economic growth and development and for social justice and change (Lloyd 2022; Michelson 1999). The focus areas of economic growth and development and social change are re-emerging as key themes in the further development of the concept of RPL globally. The brief historical overview in this chapter starts with Lindeman's (1926) early conceptual framework underpinning RPL, cited by Rachal (2015, p. 5), in which RPL was viewed as part of *adult learning*, in which 'The resource of highest value in adult education is the learner's experience'. After World War I, World War II and later the Korean War, RPL emerged as an important mechanism to enable returning soldiers and other personnel who were part of the 'war efforts' to gain employment through recognising and validating knowledge and skills developed during the years of war. The focus of RPL at that time was *economic growth* and *social justice* or 'social modernisation' (Werquin 2012, p. 2). The concept of adult education was still very important immediately after World War II, which resulted in many children and adults (Elfert 2019a):

> [*W*]ho had missed out on years of schooling and education. The reconstruction of societies and the ensuing economic boom called for the fast reintegration of war survivors into the economy. (p. 540)

Validation of experience and RPL became important mechanisms to reintegrate people into work with a focus mainly on economic growth.

In Europe and the United States of America (USA), the concept of lifelong *education* attained a central position on the policy level in the late

1960s and early 1970s. This concept was a humanistic definition of education (Faure 1972) and was related to a positive humanistic notion of progress and personal development. 'Faure saw personal development as good for society, and lifelong education would enable people to control and adapt to change' (Elfert 2019b, p. 18). In the 1980s and 1990s, the concept of lifelong *education* was replaced by lifelong *learning* within the policy texts and the Delors (1996) report. According to Elfert (2019b, p. 21) Delors (1996, p. 100) introduced a new term, 'learning throughout life', which includes lifelong and life-wide learning, emphasising learning as a 'continuum'. Lifelong and life-wide learning became a cornerstone in Jacques Delors's white paper on competitiveness and economic growth within the European Union (EU) in 1994 (Lloyd 2022). Drawing from the Faure and Delors reports, Werquin (2012) describes the widespread belief that always existed in France that a qualification could be achieved in different ways. The pathway and the method could be different, but the qualification must be the same. This is the essence of the French validation of experiential learning outcomes (VAE) system (Werquin 2012, p. 4).

In 2001 the European Commission published a Memorandum on Lifelong Learning (The Lisbon Strategy), which positioned lifelong learning as a central policy concept in the realisation of the Commission's strategies. Andersson, Fejes and Sandberg (2013) stated that:

> The shift from focusing on education to speaking about learning signifies a shift that is important because it marks a new way of conceptualising the adult learner in terms of, for instance, the how, what, when, where and output questions of learning. (p. 406)

In the 1990s and early 2000s, the emergence and developments of national qualification frameworks and assessment of prior learning in relation to these frameworks (e.g. in the United Kingdom [UK], Australia and South Africa) made it possible to use existing vocational or professional competence more effectively in the labour market. The focus shifted towards economic development and validation of lifelong learning and experience through RPL processes that underpinned the notion of releasing a pipeline of skilled and knowledgeable people into the workforce through RPL.

The trajectory of recognition of prior learning development in South Africa

The origins of RPL in South Africa can be traced to the US in the 1970s, with strong links to the key assumptions made at that time that (Mukora 2010):

> What a learner knows and can do, no matter how or where it was learned, should be recognised appropriately and that hands-on experience of things being learned about and worked with can enhance that learning. (p. 11)

Mukora locates the origins of the early ideas about the National Qualifications Framework (NQF) and RPL practices 'In policy proposals about education and industrial training reforms developed under the apartheid state' (Mukora 2006, p. 11). In South Africa, its origins are found as early as 1977 in the Wiehahn Commission and Riekert Commission reports; in 1981, in the De Lange Commission's report, which was the report of the main committee of the Human Sciences Research Council (HSRC) investigation into education (HSRC 1981); and in the Artisan Training and Recognition Collective Agreement for the Metal Industries (ATRAMI). The ATRAMI Scheme recognised people as artisans by means aimed at providing RPL for semi-skilled workers in the industry (Mukora 2010, p. 19).

In South Africa, RPL emerged in the context of wider societal change. In particular, RPL appeared on the ANC policy agenda in response to proposals from the Congress of South African Trade Unions (COSATU). Then COSATU, which has been at the forefront of workers' struggles in South Africa, believed that workers could improve their wages and achieve better job grading through RPL. To this end, COSATU influenced the proposals made in the White Paper on Education and Training (RSA 1995) released by the post-apartheid government. In 1995, Elana Michelson was working in South Africa in the field of RPL and considered in her work the social transformation of RPL. She used three stories from different job sectors to explore the political and epistemological implications of the South African experience of RPL so far. She focused on issues of language and visibility and the way that learning is embedded within specific social relationships and a specific social history. She viewed RPL as 'having the potential to further progressive social and educational transformation' (Michelson 1999, p. 99). She delved into 'contemporary theories of knowledge, because RPL requires that we think about knowledge' (Michelson 1999, p. 99) and that 'Socially useful knowledge is created and utilised in the course of all kinds of socially useful human activities'. Michelson found, through her three stories, that RPL is a contentious, power-laden activity and that, in the 'relationships between language and power', RPL implementation is played out in 'very unequal relationships of power' in which 'the assessment of what knowledge counts relies on a RPL candidate being assessed by someone else according to standards that someone else has set' and concluded that RPL in SA so far has led to confusing, even disappointing results (Michelson 1999, p. 100).

During the 2000s, RPL in South Africa became the site of RPL policy development and, coupled with this, contestation and policy discrepancies. The concept of RPL was viewed as expensive and difficult to implement; especially the higher education sector in SA viewed RPL practices as less than credible and less than useful (Lloyd 2022). Werquin (2012, p. 4) and Mukora (2010) ascribed this to the fact that key role-players reflected a lack of common ground for RPL practices and were 'not ready for the

same kind of paradigm shift as had occurred in France, Germany and some of the Nordic countries'. In South Africa, RPL's development trajectory has been a contested space, full of policy contradictions and ambiguities (Lloyd 2022).

Osman and Castle (2001, p. 58) wrote that 'there seem to be more questions than answers' and found that 'RPL forces the negotiation of two worlds – the world of experience and the world of academia'. As Michael Young (2006, cited in Andersson et al. 2013, p. 406) puts it: 'Questions about knowledge, authority, qualifications and different types of learning will always be with us'.

It is against the background of the historical trajectory of RPL, which points to contestation and insufficient understanding about and acceptance of RPL, that building common knowledge about RPL and the social return on investment benefits that can be ascribed to RPL becomes important. This is especially so in a world that is still deeply affected by the impacts of the COVID-19 pandemic on every aspect of the human and economic condition.

Building common knowledge

Middleton (1996) described building common knowledge as knowledge based on shared experiences, while Carlile (2004, p. 557) proposed that 'knowledge held in common was particularly helpful in linking sub-units within an organisation so that knowledge could be managed across boundaries to provoke innovation', especially when the common knowledge led to emerging and new practices. Professionals working within a scholastic or professional field or in a trans-disciplinary space embrace knowledge that is valued in their professional work and practices that are described as 'historically formed, imbued with knowledge, freighted with emotion and shaped by the values and purposes of the institutions in which they are located' (Edwards 2010, p. 40). To start the process of building common knowledge, Ness and Riese (2015, p. 29) suggest that 'multidisciplinary groups, consisting of people with different and highly specialised expertise from different disciplines are brought together to share and create knowledge and work with innovation'.

South Africa adopted a consultative approach requiring all forms of legislation, including policies, to be widely consulted with stakeholders, role-players and the general public. This suggests that such an approach engenders a system to build common knowledge across our legislative and policy framework. An example is the recent re-alignment of RPL and articulation policies in the post-school education and training (PSET) system. The historical trajectory of RPL development in SA has shown

that different paradigms, even opposite binary views existed in the understanding of what RPL is, its place within an education and training system and how and when it should be implemented. These differing paradigms were 'voiced' in policies and practices of the South African Qualifications Authority (SAQA) and the Quality Councils (QCs), and their respective accredited providers, which were not aligned to the Ministerial RPL policy. In recent months, however, especially as a result of the devastating impact of the global pandemic on jobs and economic growth, there has been a significant shift towards developing common knowledge and understanding about RPL and its importance in supporting economic and social reconstruction and recovery policies and plans. These amended or re-aligned policies reflect professionals' knowledge, practices, perceptions and paradigms associated with RPL, quality assurance and parity of esteem. Through consultation characterised by 'interdisciplinary collaborations' (Edwards 2010, p. 40), the shift towards removing barriers to credible RPL implementation across contexts and purposes of RPL has happened. Edwards, Lunt and Stamou (2010, p. 29) view these places of intersecting practices as the emergence of new boundary spaces that become potential sites of collaboration to gain sufficient insight into the purposes and practices of others to enable collaboration (Edwards 2011, p. 34).

New rules and moral purpose

Change is implicit in the development of new, emerging practices developed during times of building common knowledge through collaboration. Change that follows 'an incremental, step-wise' approach (Organisation for Economic Co-operation and Development [OECD] 2017), will not work anymore. A new set of rules and a new 'moral agentry' is emerging to guide the education response to teaching, learning and quality assurance. The OECD view on change is not a recent view. In 1992, Benhabib (1992, p. 51) wrote about 'communicative ethics' as a form of 'ethical cognitivism', at the points of professional practice and conversations, which occurs along 'the model of a moral conversation [...] [with] the capacity to reverse perspectives' (Benhabib 1992, p. 8). This implies a 'willingness to seek understanding with the other and reach some reasonable agreement in an open-ended moral conversation' (Benhabib 1992, p. 9). Fullan (1993, n.p.) included 'the essential partnership of moral purpose with change agentry' as part of educational change.

These open-ended moral conversations that take place are generative in nature and are the 'vehicle for the production of value-laden common knowledge to which people can ascribe, contribute and argue against' (Taylor 1995, p. 69).

The author believes that professional fact-based evidence from case studies, for example, where RPL has been credibly and authentically conducted, can support the increased use of RPL as a mechanism to strengthen post-pandemic social and economic development and recovery. From such a body of evidence, RPL guidelines and criteria could be further developed and RPL practice could become more inclusive and impactful across a wider range of implementation sites.

Disruptor-driven change

The COVID-19 pandemic resulted in a deeply unsettled world that requires leaders to commit to a moral purpose, combined with 'a healthy respect for the complexities of the change process' (Fullan 2001, p. 4). Significant occurrences such as the COVID-19 pandemic and the 4IR and 5IR are disruptors that drive urgent change. Deeper understanding of the challenges and opportunities emerge, born out of the knowledge that disruptors have forced change very quickly. In the education sphere, change is happening rapidly from what we practised as mainly face-to-face quality education, training and skills development systems into digitally-driven, agile and dynamic systems. Skerbetz and Aglio (2020) propose that:

> The world of education, which historically is resistant to change, has been forced to evolve [...] [*to*] develop new learning environments and platforms that allow instruction to take place while ensuring the safety of students and staff remains the top priority. (p. 1)

Hanstedt (2020, cited in Lloyd 2021) describes:

> [...] a traditional education system as a bureaucratic system that has not been agile enough to manage critical change when needed. Higher education institutions, both public and private, are legislated, regulated and influenced at [*institutional*] and [*national*] levels by global movements and shifts and national government departments. (p. 106)

These movements and entities influence institutional agency in responding to and implementing initiatives, such as, *inter alia*, adaptive online learning and teaching approaches and RPL design and implementation. In a recent colloquium held by the Southern African Regional Universities Association (SARUA), Gachago (2021, cited in Ligami 2021, n.p.) said that higher education 'now needs a long needed rethink to allow for more flexible, open, accessible models'. She noted that the 'ideals of flexible education are not just about access but also equity diversity, inclusion, retention, completion and satisfaction' and encouraged higher education institutions (HEIs) to 'humanise online teaching and learning, and support this by four interwoven principles: trust, presence, awareness and empathy' (Gachago 2021, cited in Ligami 2021, n.p.).

While complexity and uncertainty now appear to be the norm, Basset (2020, n.p.) reminds us that 'those in a position to think beyond immediate survival [must] keep an eye on core values', ensuring that 'such changes [...] be studied for efficacy and to understand best what works and does not, and for whom'.

The National Qualifications Framework as an enabler

The South African NQF is recognised as one of the so-called first-generation NQFs. Its key objectives remain unchanged and reinforce the importance of the underlying principle of education for all. The *NQF Act* (ss. 5.1 and 5.2 of the Act) reaffirms the importance of the objectives of the NQF to the full personal development of each learner and *the social and economic development of the nation at large*.

A brief overview of legislation in South Africa, with specific reference to RPL, showed that the *NQF Act* (2008) is an enabling piece of legislation for RPL. Through implementing all aspects of the Act, RPL could become more mainstream and provide credible pathways to access qualifications, credit accumulation, achievement of qualifications, promotion in the workplace and professional designations. There are clear links between the building blocks or elements of NQFs and how NQFs enable lifelong learning and cohesion in education and training systems. Elements such as learning outcomes, NQF levels, level descriptors, qualification types and notional hours or credit hours are enabling mechanisms which support the design and implementation of RPL across diverse contexts. The concept of RPL is transformative and enabling in that non-formal and even informal learning achieved in different ways to that of formal learning can be recognised for access, credit, designations and promotion and can improve skills development and employability opportunities. Underpinned by an enabling NQF system, the author suggests that in a world emerging from a pandemic such as COVID-19, RPL becomes an important tool to help build a broken economy and support the employability of people who have built skill sets and knowledge through workplace-based learning and experience. The case studies that follow build on this belief.

The two case studies

This section comprises two case studies, one describing the RPL process in the sports coaching environment through which professional designations are awarded through RPL, and the second one, RPL for promotion in the workplace. This section draws on the brief literature review in this paper, which describes the historical purposes of RPL when it was applied for

economic development after world wars and other global catastrophic socio-economic events and the development of common knowledge at the intersection of professional practices and sites of collaboration. The author has chosen to use case studies to present RPL in contexts not often included in the discourse, with the aim of growing knowledge and understanding about the significant implementation opportunities for socio-economic and community development through RPL. The case studies selected are examples of how RPL can support economic development as part of an Economic Reconstruction and Recovery Plan (ERRP) after a pandemic. South Africa's ERRP, which was developed as an urgent response to grow the economy after the pandemic, comprises eight outcomes, of which the recovery and growth of the tourism, cultural and creative industries (reflected in Case Study 1, in the RPL for a sports coach designation, and Case Study 2, in Public Administration as part of mass public employment interventions) are two of the outcomes of the ERRP.

Case Study 1: South African Sports Coaching Association: Recognition of prior learning for a designation

The South African Sports Coaching Association (SASCA) is a SAQA-recognised professional body (PB) for sports coaching.

South African Qualifications Authority Recognition and registration

According to the SAQA (2021) *Policy for the Recognition of Professional Bodies and Registration of Professional Designations*, a PB plays a critical role in quality assurance and standards development for the profession in the NQF environment. The importance of recognition of a PB by SAQA and the registration of their designations is that it contributes to strengthening social responsiveness and accountability within professions and promotes pride in association for all professions and occupations. The SAQA policy (2021) defines a PB as 'any statutory or non-statutory body that sets professional standards and registers individual expert practitioners in an occupational field'. A 'professional designation' means a title or status *conferred by a PB* in recognition of a person's expertise or right to practise in an occupational field.

Establishment of South African Sports Coaching Association

On 19 November 2019, at a meeting of sports coaches, members of national federations, Provincial Sports Confederations and others, SASCA was

officially launched. The South African Sports Coaching Association is charged with overseeing the development and implementation of sports coaching in SA within the four domains of inclusive sports coaching, which include children's sports coaches, emerging sports coaches, participation and recreational sports coaches and high-performance sports coaches.

The South African Sports Coaching Association adopted and approved eight designations and the criteria per designation, as well as the criteria that potential members must comply with in order to be awarded a designation. These criteria are underpinned by the level descriptors of the NQF levels as per the SAQA policy on level descriptors (2013).

The Department of Sport and Recreation has published its Sport and Recreation South Africa (SRSA) Bill Part B 2020, which will amend sections of the current *SRSA Act of 1998*, as amended in 2007. One of the key areas proposed by the Minister for amendment reinforces the establishment of an independent PB for sports coaches. The bill is in the process of being approved and ratified in Parliament and by the National Council of Provinces. This makes the work of SASCA even more important to develop and license (or award designations to) sports coaches. The objectives of SASCA require it to promote the standing of sports coaching in South Africa through facilitating collaboration amongst all sport-related stakeholders (including the South African sporting organisations), promote lifelong learning to the membership through continuing professional development (CPD), promote the sports coaching charter and code of ethics and to commission sports coaching research.

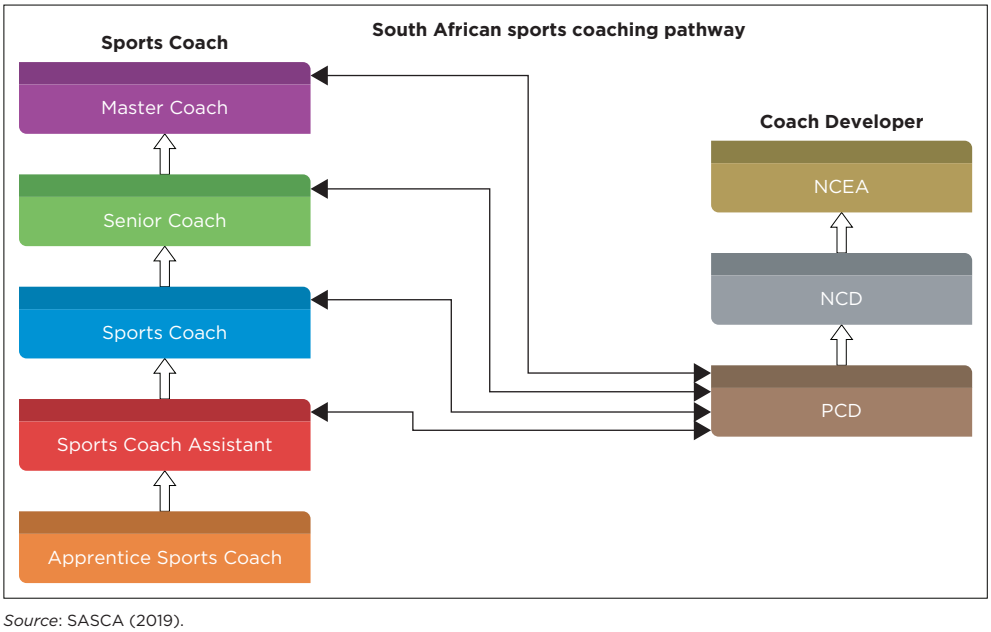
Gaining a designation through the recognition of prior learning route

The impact of the COVID-19 pandemic was devastating for some professions, *inter alia*, sports coaching, the performing arts and the aviation industry. Local and provincial sports clubs and their related sports teams and coaches and school sports teams became severely financially challenged, resulting in large numbers of coaches losing their positions or not being paid their stipends. At the same time, professional recognition through a professional designation meant that coaches with recognised designations stood a better chance of getting a coaching position when the COVID-19 lockdown ended. The South African Sports Coaching Association was approached by a number of coaches, federations and clubs to implement an RPL programme, to recognise coaches' experience and to award designations in anticipation of a return to full-scale sports events and the new *Sports and Recreation Act*. The South African Sports Coaching Association actively promotes the benefits of achieving a sports coaching designation as a signal of coaching knowledge, competence and ethical

compliance with the coaching charter. Other benefits of a coaching designation are that it encourages coaching excellence, which leads to high-performance athletes at all levels and establishes pride in coaching designations and coaching as a profession and occupational pathway.

The South African Qualifications Authority requires all professional bodies to have different routes through which members can apply for and be awarded a professional designation. The South African Sports Coaching Association has three routes: (1) an underpinning NQF-registered qualification and adherence to designation-specific criteria as per the example presented here; (2) having the relevant international and national sports federations' coaching and coach educator courses that are aligned to international coaching levels and standards, and adherence to the designation-specific criteria; or (3) an RPL route, which uses the coach's knowledge, skills, experience, capability and other criteria that are mapped against the learning outcomes of an underpinning qualification and adherence to designation-specific criteria. It is this third route that is discussed here.

There are two learning and career pathways (Figure 4.1), one being for sports coaches and one for sports coach educators or developers, as described in Figure 4.1 (SASCA 2019). All the designations are aligned to an

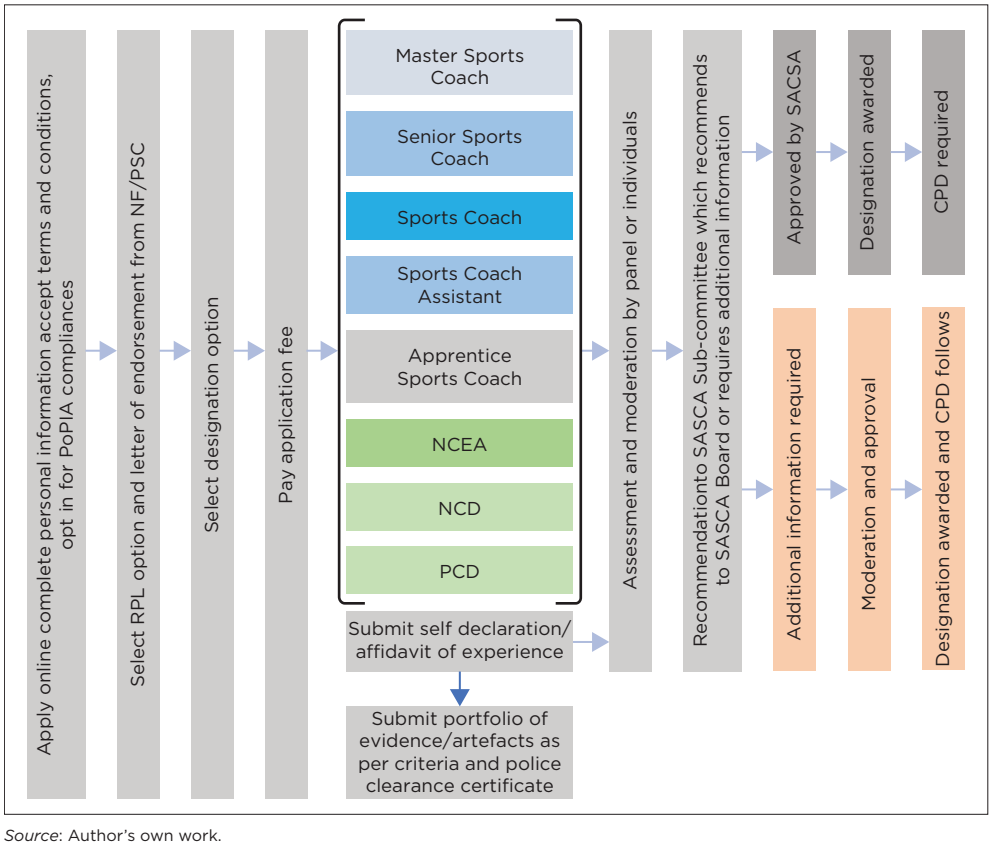


Source: SASCA (2019).
Key: NCEA, National Coach Education Advisor; NCD, National Coach Developer; PCD, Provincial Coach Developer.

FIGURE 4.1: The South African Sports Coaching Association sports coaching and sports educator designation framework.

NQF level that underpins the criteria and designation descriptors of that particular designation. The South African Sports Coaching Association decided, for example, that the minimum *underpinning qualification* for Master/Olympics and Senior Coaches and National Coach Education Advisor (NCEA) and National Coach Developer (NCD) designations would be an NQF 7 relevant qualification.

The South African Sports Coaching Association was one of the first professional bodies to adopt a digital platform for applications for membership, for a designation or for the achievement of a designation through RPL. The SASCA developed a designation application flowchart that charts the process that an applicant for a designation follows when applying for a designation. In the case of an RPL application, the candidate will follow a process through which they are supported by SASCA or the SASCA-recognised RPL provider, as described below in Figure 4.2 demonstrating the RPL application process for a designation.



Source: Author's own work.
Key: PoPIA, *Protection of Personal Information Act 4 of 2013*; RPL, recognition of prior learning; NF, National Forum; PSC, Public Service Commission; NCEA, National Coach Education Advisor; NCD, National Coach Developer; PCD, Provincial Coach Developer; SASCA, South African Sports Coaching Association; CPD, continuing professional development.

FIGURE 4.2: The recognition of prior learning process to be awarded a designation.

The important elements of a recognition of prior learning for a designation approach

The methodology employed was to evaluate applicants' evidence and their CVs against the designation framework requirements. The learning outcomes of underlying qualifications were mapped against the profiles of the various designations in the SASCA framework and the learning outcomes of comparable international qualifications. Consideration was given to coaches' local, provincial, national and international experience and their teams' achievements in these sporting arenas.

The ontology in approaching the RPL for a designation was guided by the Actor Network Theory (ANT) and learning theories, that people learn in many different ways, such as those described by scholars such as Knud Illeris (2018) and Tara Fenwick (2018). Recent research articles and reports by Fullan (2020) and other scholars who research, work on and write about learning, recognition of learning, understanding approaches to higher education and learning and teaching in a higher education contexts informed the approach taken. There was also reliance on current research conducted on Mode 2 and Mode 3 approaches to teaching, learning and assessment.

South Africa is a leading country in terms of RPL for designations practice and the application of a learning outcomes-based approach to RPL assessment design. The South African Sports Coaching Association focuses on RPL candidate support and the credibility and authenticity of the RPL process. In iterative candidate discussions about RPL and, in particular, the SASCA RPL process, the applicant is assisted in understanding what process will be undertaken and what it means, learning and career pathways, design and development of the portfolio of evidence (PoE), submission and assessment and moderation of the RPL PoE. The SASCA board decided to use inclusive technology principles in the design of its PoE submission process, which means that a blended approach to PoE submission, assessment and moderation is appropriate. Videos or other visual media of actual work at the site are included in the PoE, and Microsoft PowerPoint presentations and recorded presentations can also be included as part of the PoE. During assessment or moderation, additional evidence may be requested. After the conclusion of the actual RPL process, the designation is awarded by the SASCA board. Retention of a designation is dependent on annual payment of fees, annual attendance of CPD and active coaching activities.

An example of the description and criteria of a designation is discussed further. In this instance, the example selected is the master/Olympics Coach designation. This designation is described as a senior-level designation

requiring a minimum experience of seven years as a senior sports coach and a proven track record of having coached athletes towards achievement of Olympics participation or international level, world championships or continental participation. There are a number of national sports federations and sports codes which are not included in Olympic sports codes, so the international, continental and world championships are also recognised.

The designation can be awarded after evaluation of the underpinning qualification, years of experience and adherence to criteria, or the International Federation, or achievement of the National Federation highest coaching course levels, years of experience and adherence to criteria or RPL assessment and moderation with submission of a PoE.

☐ Designation criteria (competences)

Over and above the other elements required for a designation, each applicant (irrespective of the route selected) has to provide evidence of the adherence to the criteria in a PoE. The criteria describe what the designee will be able to do on the job. In the case of the master/Olympics coach, the following criteria are set as a standard and are aligned to the International Coaching Council for Coaching Excellence (ICCE) standards. The coach must:

- Demonstrate good communication skills, people orientation, influence, decision-making and stress management
- Demonstrate the ability to manage relationships and possess sports-code-specific coaching skills
- Design and contribute to the delivery of programmes over seasons, in medium to large-scale contexts, underpinned by innovation and research
- Design, develop and implement strategic plans for coaching
- Provide credible and authentic evidence of a proven track record as a senior coach
- Provide credible and authentic evidence of a proven track record of having coached an Olympic athlete(s) or team at the World level (coach at the highest level of sport-specific competition)
- Mentor at least five senior sports coaches
- Annually update police clearance certificate
- Annually update world anti-doping certificate
- Have a Level 2 first-aid certificate
- Compulsory attendance of CPD courses at the appropriate level of Safety in Sport, Child Safety and Gender-based Violence
- Designation awards: findings and recommendations.

The South African Sports Coaching Association is satisfied that the RPL process has been successfully applied to over 370 coaches at various levels,

from apprentice sports coach to master coach, from a number of sports codes over the period of March 2021 to the time of writing this chapter. The sports codes include rugby, netball, soccer, tennis, swimming, equestrian, chess, bowls, cricket, life-saving, wrestling, sailing and gymnastics. This provides SASCA with a credible sample to assess the robustness and credibility of RPL for designations. All the applications that were submitted by coaches and coaching directors to SASCA have been worked through steadily. Having concluded the RPL assessments and verification of information, some findings are worth noting.

☐ Preparation and content of the portfolio of evidence

There was an exceptionally high standard of preparation and evidence presented by the applicants. The presentation of the evidence showed that the application for a designation was taken very seriously. They took utmost care to provide as much information as clearly as possible and their presentation of their evidence showed pride in their work, in their coaching achievements and in their teams, as well as a determination to build a standard for the profession of coaching. All the criteria stated in the designation framework are relevant, credible and aligned to the work that coaches do with their athletes and their teams. There was clear evidence and demonstration of their cognitive abilities and logicality, and their ability to analyse situations and address core issues to improve athlete's performance was found in the work of all applicants, which supported the relevance of the Coaches Charter.

☐ Profile of applicants and awardees

They have excellent coaching' track records' underpinned by sound, relevant and valid evidence. They have a passion for coaching and have achieved significant milestones in their respective coaching careers. A number of them already have some underlying qualifications and therefore the task was to consider their achievements and evidence against the criteria of the various designations, which they all meet. Some of the designees have previously been awarded designations, and therefore their designations were not new evaluations but rather re-confirmation of their status in the sport and their currency in their designation.

Of particular interest were the applicants' approaches to coaching and mentoring, and it was noteworthy that all of them have worked and coached in different places, contexts and groups and have applied athlete-centred and learning outcome approaches in their work and in their setting of goals. All have the requisite number of years of coaching and the achievements of teams across a spectrum of pre-school, primary and

high schools, colleges, universities and clubs at provincial and national levels. They are all coaches, players, administrators and, in many cases, they are umpires, all of which have helped to develop them as well-rounded and competent coaches.

All coaches have participated in lifelong learning in their coaching career. A significant number of them have umpiring expertise, and some of them have technical managerial expertise. The range of knowledge, skills and competence displayed by these coaches is sound and in line with the learning outcomes of underpinning qualifications or courses of international federations.

Concluding comments

To render the RPL process credible, it was important to read each person's work underpinned by the above reflections, as there is no right or wrong answer and each coach's context is different. Yet what emerged was a passion for coaching, a passion for excellence and for the development of their athletes. Over and above this, all of the people recommended for a designation are true developers, facilitators and coaches in the context of their sport. As the national, provincial and local sports clubs and schools sports teams return to full activities, increasing recognition is being given to the RPL process of achieving a designation and numerous federations are approaching SASCA for information and assistance to bring their coaches into the professional designation 'frame'.

Case Study 2: Recognition of prior learning for a promotion in the workplace or workplace progression

The author has spent years working in the RPL space and developed approaches to implement RPL in a number of contexts. Previously, the contexts were RPL for access, for credit and for a qualification. Her PhD thesis, titled 'Recognition of Prior Learning as a Social Entrepreneurial Practice', focused on five case studies using different contexts and approaches to RPL in the financial services industry and a comparative analysis of six African countries' RPL policies and approaches. Interesting findings at that time showed that in each of the case studies and the African countries' RPL practices, there were very similar elements that underpinned successful RPL design and implementation. With this in mind, the author approached the design and implementation of RPL in new contexts and situations and applied her professional knowledge to push the boundaries of where and how RPL can be applied outside of the normal and known contexts.

Work began with organisations and government departments to consider whether RPL could be applied to assist potential candidates for promotion posts when the candidate did not have the qualifications stated in the job advertisement. This case study describes one process for a particular candidate, but is also the process followed in different contexts in which the author has applied the same methodology and achieved very similar results. These contexts were, *inter alia*, for a marketing deputy director and an information technology (IT) deputy director in a national public entity, a senior manager in a national department, a senior statistical report writer for a non-profit organisation (NPO), three different directors' posts in a national government department and a deputy director in finance in a provincial government department.

Generic elements used in recognition of prior learning for workplace progression

The author used similar generic elements to conduct RPL for workplace progression to those described in Case Study 1.

The process for recognition of prior learning for workplace progression

The report discussed further in the text serves the purpose of the case study report and has been edited to be anonymous for the organisation and the candidate. It provides the narrative of the RPL process of assessment and evaluation conducted for Ms X by the author. The author's voice is in the first person.

I was requested by the ABC Government Department to conduct an assessment of Ms X and her suitability to submit an application for an advertised post, based on her experience, knowledge and skills in lieu of the qualification required for the post as advertised. The evaluation and comparability of her learning, knowledge, skills and experience to the requirements of the position for which she wanted to apply was the basis of the RPL intervention. The advertised position is Assistant Director: Human Resource Transactions.

In discussion with Ms X, we were able to identify a currently registered qualification which comprises the learning outcomes, exit-level outcomes and associated assessment criteria and which could be mapped against the qualification she held and her experience and knowledge gained through working in the department. Her further learning and participation in other courses, such as financial management courses and human resources courses during her career in the public service were also considered in light of the knowledge, experience, skills, cognitive

understanding development, logical and analytical skills and people management skills that were developed and displayed by her in her work and wider life.

I met virtually with Ms X to discuss her particular needs and the approach that I would take to conduct a credible evaluation of her authentic evidence and information which she would need to provide to me.

The selected methodology for the comparability evaluation or recognition of prior learning assessment

In comparability evaluation and RPL assessment, it is important that the candidate is initially guided as to what RPL is, what it comprises, and that there are different approaches to conducting RPL. In the case of Ms X, we discussed the requirements for the post she applied for, and specifically that the advertisement required a range of different qualifications that were considered suitable for the post. Her qualification that was selected is a Bachelor's degree (BA) in Public Administration. We confirmed the NQF levels and credit values and comparability with the selected BA in Public Administration currently registered on the NQF. We discussed the various aspects of the work that Ms X has done in her working life to obtain information about the level of the work *vis-à-vis* the requirements stated in the advertisement.

The RPL assessment relies on the construct of the NQF to ensure that the assessment is credible, relevant and pitched at the correct level for the job and the qualification requirement. All qualifications are registered with exit-level outcome statements or learning outcomes and specific outcome statements. These are used to map comparable qualifications that may differ from each other in terms of the names and the core focus but are nonetheless comparable to specific skill sets required in a job or advertised position. Learning Outcome statements in registered qualifications also guide the content of the questions that are asked during the oral interview with the candidate.

The NQF-level descriptors are important as they are used to pitch the level of questions and to assess the responses that would be expected at the NQF level at which the qualification is registered and which the job specification requires. The RPL, in each case, would assess knowledge, skills, competence, analytical skills, logical thinking ability, ethics, values and ability to lead, as per the requirements for the job.

In RPL assessment, it is important that the candidate is initially guided as to what RPL is, what it comprises and that there are different approaches to conducting RPL. The candidate is made aware that the same

considerations of questions and answers that would be required in a classroom assessment are required in RPL; the difference is that the RPL candidate has to provide evidence that is used to assess each of the learning outcomes stated in the registered qualifications. The evidence is matched to the actual outcomes, and the evidence can be presented in a number of ways. These ways are determined after discussion with the candidate.

In Ms X's case, I considered a number of Bachelor's degrees (BAs) in Public Administration and mapped these against the actual National Diploma in Public Administration outcomes and curriculum, which she had previously achieved. The skill sets derived from the learning outcomes which are required for the advertised position are quite generic and would be taught and learned in both the degree and the national diploma, which I considered and mapped. Her formal studies and the comparable current qualification lend themselves to be applied in different contexts, which is important in the design and development of national qualifications.

With the added benefit of having studied other courses and short courses during her working career and the number of years of experience she has garnered (which falls well within the required number of years for the post of Assistant Director), all skill sets required were assessed and mapped.

I considered her current work experience and her knowledge and skills related to the advertised post against the required qualification for the post. This is a very important part of the process, as the RPL candidate must feel confident that they have the necessary knowledge, skills and competence based on their experience over a number of years and will be able to provide the evidence required for the RPL assessment.

In this RPL process, I requested soft copy evidence, which I used to conduct the evaluation after the initial discussion I had with Ms X. She provided excellent examples of the evidence required for the soft copy component of the assessment. This evaluation was followed by an oral interview, which provided the opportunity to ask 'deeper' questions and focused on assessing cognitive levels, the ability to analyse and logically arrange information and to respond quickly and correctly to randomly posed questions. I used the NQF-level descriptor policy, as the assessment needs to be conducted at the appropriate level of the post's requirements.

In the interview, we discussed aspects of all the areas which would be requirements for the job and which would be duties she would perform should she be the successful candidate. Ms X provided a number of examples of work she had conducted to illustrate points made in the

application for the job. This provided excellent examples of her knowledge about the issues she has dealt with and which she will need to deal with in the future as well. They show her significant ability to understand systems, people and the use of problem-solving skills to resolve issues or to plan new and innovative solutions to issues.

It is usually at this stage that an RPL candidate will either show significant comparability or will demonstrate that the RPL for the post is showing gaps that can be filled through CPD or further upskilling. In the case of Ms X, she showed exceptional skills and abilities in all aspects of the job she applied for.

Concluding statements for Candidate X

I had no hesitation to recommend that consider Ms X be shortlisted for the post for which she has applied. She has demonstrated that her work experience and her knowledge, skills, competence, attitudes, management abilities and ethics and values were sound, especially within the requirements of the job and her wider interaction in a community of practitioners and the socio-economic environment in the country.

The Table 4.1 is taken from the actual job description placed in the internal advertisement, and the tables are from sections taken from the actual table that was used by the candidate and the author to identify the job requirements in Column 1, the broader explanation of key performance areas related to the job requirements in Column 2 and components of the type of evidence and format of evidence required to be submitted by the candidate.

Examples of the templates are provided in the following tables.

TABLE 4.1: Template of job description.

Job description template for a Gauteng provincial government department	
Section A	Job information summary To provide and ensure efficient and compliant HR transaction service to the head office on conditions of service, employee exit, staff provisioning, remuneration and leave management
Job title	Assistant director: Human resource transaction services
Name and surname	Ms X
Persal number	ABCDE
Designation of the supervisory post	Deputy Director: HR transaction services (head office) and transversal support
Core	Supervision, monitoring, evaluate, quality assurance, advice and mentoring

Key: HR, human resources.

TABLE 4.2: Requirements for the portfolio of evidence and oral interview.

Job description: Assistant Director: Coordinator Stakeholder Relations, Audits and Enquiries: Ref. no.: 001528	Relevant qualifications (based on learning outcomes), experience mapped against the job description. The advertisement requires an appropriate recognised three-year National Diploma in Human Resource Management. The RPL intervention maps the candidate's current qualifications and experience against the learning outcomes of a HR diploma.	Oral interview and supporting evidence required
Three to five years' experience in Human Resources Administration	CV and various positions held by the candidate during her public service career. Formal theoretical learning in the qualifications achieved by the candidate underpins the application in this skills set.	Hard copy: Evidence of experience in HR Administration (hard copy already provided). Oral interview: Some discussion about administration and efficiencies explored.

Key: Ref. no., reference number; RPL, recognition of prior learning; HR, human resources; CV, curriculum vitae.

TABLE 4.3: Requirements and oral interview.

Demonstrated ability to use HR systems for planning, monitoring and reporting	CV and experience of planning, monitoring and reporting, is evidenced in the various jobs performed by the candidate over ten years demonstrates her practical application of theory learnt in the qualifications held by the candidate	Hard copy: Candidate can select hard copy evidence which is relevant. Oral interview: Discussion about what drives HR planning, monitoring and reporting. Discussion about which documents and processes are essential to ensure credible and fair monitoring.
Ability to work under pressure	CV and experience in the various posts held by the candidate are provided. A qualification will not demonstrate this, as this is a practical element of working. Theoretical understanding about what causes stress and pressure is gained in the qualification already held by the candidate.	Hard copy: Already drawn from annual assessment documentation. Oral interview: Identify key stressors and coping mechanisms. Discuss how guidance is given to people in the workplace on how to deal with pressure and work/life balance.

Key: HR, human resources; CV, curriculum vitae.

Conclusion

This chapter set out to build a greater understanding and common knowledge about RPL as a tool for local economic, social and community development after an event such as a pandemic. In the process of fulfilling

this aim, the author selected a qualitative methodology with a subjectivist, interpretivist approach using two case studies to share professional practice knowledge. The literature review comprised a brief historical overview of the developmental trajectory of the foci and conceptual frameworks underpinning RPL. Particular emphasis was placed on the role of RPL as a mechanism for economic development and employability after global catastrophic events such as world wars, pandemics and political subjugation of citizens by governments. The themes of building common knowledge, new rules and moral purpose, disruptor-driven change and the NQF as an RPL enabler are important in presenting the argument for a renewed and invigorated understanding and approach towards RPL, especially in an ERRP environment. The case studies highlight the use of RPL as an approach to support economic recovery in sectors identified in the government's ERRP. The author believes that a picture is emerging that suggests that RPL design and practice can successfully support local economic, social and community recovery and development as a credible and authentic route applied across a number of contexts and for different and unique purposes. Even more interesting is the intersection of RPL practice with technology, which has emerged as an essential component of implementation in unsettled times such as those that occurred as a result of the COVID-19 pandemic. It is through boundary 'pushing' and discourse at places of intersecting practice that RPL will grow and become more integral to learning, teaching, assessment and progression.

Thus, I believe that it can challenge the hierarchy of 'legitimate' knowledge that is stratified by class, race and gender everywhere in the world, not only in South Africa (Michelson 1999, p. 99).

Chapter 5

Sustaining higher education service delivery levels post-COVID-19

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Abstract

Coronavirus disease 2019 (COVID-19), classified as a pandemic on 11 March 2020, disrupted people's lives and institutions globally. Higher education as a global phenomenon is no exception. Higher education institutions (HEIs) were closed, conferences postponed, international students evacuated and returned to their home countries, faculty prohibited from travelling abroad and academic courses transformed into online modes. To assist HEIs in planning for sustainable post-COVID-19 service delivery, this case study analyses key adjustment constructs at both the global and

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national levels. In times of crisis, the principles may guide HEIs and policy-makers to develop appropriate service delivery strategies. The adjustment constructs were identified using a qualitative design and a theoretical documentation sampling approach based on the latest scientific publications and documents published since the COVID-19 outbreak. Thirty-six publications were coded and analysed, resulting in eight structural adjustment constructs:

- crisis-prepared learning management systems (LMSs)
- technology investment
- support services
- higher education internationalisation
- institutional stability and agility
- stewardship
- curriculum development
- resource development.

The findings revealed the need to diversify HEIs' efforts and means. Finally, the case concluded with suggestions to align COVID-19 data with HEI response requirements.

Introduction

Higher education institutions worldwide have been profoundly impacted by COVID-19 (Botha, Van Dijk & Marias 2023; Tee et al. 2022). Lockdowns and restrictions resulting from the virus's rapid spread and deadly impacts effectuated rapid changes in higher education and its stakeholders (Sengupta & Vaish 2022). The pandemic and the need for social distancing forced HEIs to rapidly transition to remote-hybrid learning and changes in university operations. As a result, a significant amount of money was invested in technology and digital infrastructure without adequate time to consider its appropriateness (Brown & Foster 2023). Online platforms and virtual classrooms have become essential tools for delivering education and continuing learning (Khandelwal, Chaturvedi & Kanwar 2022). Technology has enabled new collaboration and communication methods and expanded educational resources and material access. The transition presented challenges, including technology and infrastructure, student engagement, individualised learning and a greater need for financial and mental health support (Guo et al. 2022).

As a result of the COVID-19 pandemic, higher education is likely to face new challenges and changes that influence the choice of indicators and metrics, acknowledging that different indicators and metrics can be applied to assess service quality (Camilleri 2021). The choice of indicators and metrics will depend on the specific goals and objectives of the higher

education institution (HEI) and the services being evaluated (Sousa & Mourão 2022). For example, HEIs may emphasise measures related to remote-hybrid learning, student support and mental health services in the aftermath of the pandemic. Post-COVID-19, there may be a need to re-evaluate what is considered essential and relevant. To provide high-quality education and prepare graduates for the job market, some HEIs may prioritise student satisfaction and employability (Bikar et al. 2023).

On the other hand, an institution that prioritises research and academic excellence may focus on research publications, grant funding and research impacts. Hence, combining metrics could provide a comprehensive picture of service quality (Carpenter, Cone & Sarli 2014). With the pandemic disrupting traditional modes of education delivery, HEIs have had to adapt their models to continue providing quality education to their students (Imran et al. 2023). As the world emerges from the pandemic, HEIs face the challenge of planning for sustainable post-COVID-19 service delivery. This case study examines key adjustment constructs at both the global and national levels that HEIs can leverage to create sustainable post-pandemic service delivery models.

This chapter is organised and focused on the service delivery adjustment constructs to create sustainable post-COVID-19 service delivery by delineating and contextualising LMSs, communication technology investments, support services, higher education internationalisation, institutional stability and agility, stewardship, curriculum development and resource development.

Service delivery adjustment constructs

In the competitive world of higher education, reputation and rankings significantly attract students, faculty and funding (Escandon-Barbosa, Salas-Paramo & Moreno-Gómez 2023; Miotto, Del-Castillo-Feito & Blanco-González 2020). Poor service quality can lead to negative reviews, ratings and feedback from faculty, staff, students and other stakeholders, negatively affecting an institution's reputation (Camilleri 2021). Poor service quality can be particularly damaging in today's digital age, where information is easily accessible and quickly spreads through social media and other channels. On the other hand, institutions that consistently deliver high-quality services are more likely to be highly regarded and sought after (Simbolon & Yanti 2021). Therefore, it is even more critical for HEIs to prioritise quality in their e-learning and virtual systems' online offerings to maintain and enhance their reputation and rankings.

Assessing service quality in HEIs has become increasingly important in recent years as more students seek higher education opportunities, and

institutions compete to attract them. E-learning, mobile learning (m-learning) and virtual systems have become essential and permanent components of many higher education programmes, models and offerings, especially post-COVID-19 (Sivasubramanian et al. 2022). These programmes, models and offerings provide, among others, increased accessibility, agility and scalability. By adopting these e-learning and virtual systems, HEIs can better serve their faculty, staff, students and stakeholders (Feifei, Kian & Adaikkala 2022).

The quality of e-learning, m-learning and virtual system services provided by HEIs can impact students' academic performance, satisfaction with the educational experience and ability to achieve career goals. Therefore, it is essential to include e-learning, m-learning and virtual systems service quality as a component of any service quality assessment in HEIs (Khaneghahi, Nasripour & MahmoudZehi 2022). Eight important service delivery adjustment constructs require further elaboration: The LMS, communication technology investments, support services, higher education internationalisation, institutional stability and agility, stewardship, resource development and curriculum development.

Building a crisis-prepared learning management systems

Because of the COVID-19 pandemic, many HEIs turned to LMSs for asynchronous learning (Fernandez, Ramesh & Manivannan 2022). This shift led to increased adoption of e-learning and m-learning as universities sought to continue educating students while maintaining social distancing measures (Camilleri 2021). Technical support through responsive helpdesks helped overcome technical difficulties and ensure a successful transition to online learning.

A crisis-prepared LMS emphasising the importance of resilience and adaptability is essential for HEIs in light of the post-COVID-19 environment (Eissa 2022). A rapid shift to online learning has demonstrated the need for institutions to have flexible, adaptable systems that can rapidly and effectively support hybrid learning (Santiago et al. 2021). The LMS should be capable of handling large amounts of data and supporting many users while also being secure and accessible to the faculty, staff and students. In addition, institutions should consider integrating backup systems and redundant infrastructure to continue delivering education during disruptions, such as power outages or system failures. A well-designed and robust LMS can reduce the adverse impacts of imminent crises on the learning experience (Furqon et al. 2023).

Developing a well-designed and resilient LMS capable of efficiently responding to disruptive situations may appear challenging

(Muthugamage & Galhena 2022). Learning management systems can, however, be developed to resist crises and still serve modernisation and scholarship needs. Higher education institutions can ensure continued education continuity, even during disruptions, by installing robust security measures and dependable backup systems (Mohee et al. 2022). An LMS system that is accessible from any learning device could also improve student access to education while meeting the demands of our digitally connected society (Adedoyin et al. 2023). The COVID-19 epidemic has revealed the potential of technology to improve learning experiences, and institutions are unlikely to revert to traditional teaching techniques in the future. Instead, educational institutions must continue to explore and adopt innovative approaches to education that harness technology and suit students' changing demands (Ojukwu, Agim & Ameh 2021).

Developing a sustainable LMS involves finding creative and innovative solutions to overcome traditional challenges while incorporating new characteristics and features. The transition to hybrid learning has demonstrated the capability of LMSs to facilitate personalised learning, enabling students to learn at their own pace and according to their preferred style while also providing faculty, staff and students with the ability to monitor progress and assessments (Behzad et al. 2022). However, sustainable LMSs must address critical challenges, such as ensuring accessibility, security and reliability of systems and promoting effective pedagogical practices that support student learning (Amporful 2023). Additionally, LMSs should incorporate features encouraging engagement and collaboration through virtual classrooms, discussion forums and peer-to-peer learning opportunities (Andrew, Wallace & Sambell 2021).

Investing in technology

Using advanced technology in universities should focus on supporting and enhancing the university's mission and values while being used responsibly and ethically. Technology can revolutionise various university administrations and operations (Vesić, Laković & Vesić 2023). For example, the COVID-19 pandemic forced many HEIs to temporarily move from traditional on-campus teaching to hybrid learning, often involving a blend of online and in-person instruction (hybrid model) (Xing & Saghaian 2022). This trend will likely continue post-COVID-19 in shaping the future of higher education (Camilleri 2021). The use of technology should also be balanced with hands-on experiences and traditional classroom instruction to ensure that students are well-rounded and have a diverse range of skills and knowledge (Rasli et al. 2022). Distance education is not a new phenomenon in South Africa, but the advancement in communication technology has significantly impacted education delivery,

pre- and post-COVID-19 (Badaru & Adu 2022). However, it is essential to note that technology alone is not a solution and must be combined with effective pedagogical practices to enhance the learning experience. The options may be using new communication technology or methods used during the pandemic or discovering new and inventive ways to impart instruction (Mavengere et al. 2021). The goal is to provide students with high-quality education that is adaptive and responsive to the changing demands of society and the labour market.

Simulation software has become popular as a virtual alternative to traditional laboratory sessions. It does, however, have limits in terms of providing students with a thoroughly comprehensive hands-on experience. To solve this, merging augmented reality (AR) and virtual reality (VR) technology can improve virtual laboratory engagement and immersion (Rasli et al. 2022).

Augmented reality and VR have the potential to bridge the gap between virtual and physical learning by providing an engaging and dynamic educational experience to students (Fitria 2023). However, before applying these technologies, universities must thoroughly assess their feasibility and accessibility, considering cost, training and support requirements and infrastructure requirements. Integrating AR and VR into the education system needs a well-thought-out strategy that considers each HEI's specific aims and goals and the preferences of faculty, staff and students.

Virtual reality headsets, for example, may immerse students in recreated laboratory facilities, allowing them to conduct research in a safe and controlled environment. Furthermore, by mixing virtual elements into the actual space, AR technology has the potential to supplement physical laboratory sessions, resulting in a more engaging and dynamic learning experience. Incorporating AR and VR into the educational system creates new chances for dynamic and engaging laboratory experiences (Camilleri 2023; Tribe & Singha 2023).

By effectively utilising these technologies, universities may give students a more immersive and engaging learning environment that mimics a traditional laboratory setting (Liubchak, Zuban & Artyukhov 2022).

Furthermore, faculty, staff and students must take personal responsibility for training themselves in using technology and consistently upgrading their skills and knowledge. As the technology landscape constantly changes, staying updated regarding the latest tools and advancements is imperative.

Higher education institutions need to reassess the use of communication technology in their teaching and learning practices, prioritising the security

of student and institutional data by employing the most effective technologies available (Ramos et al. 2015). Given the increased reliance on communication technology, it is imperative to evaluate security measures thoroughly to safeguard sensitive information and prevent data breaches. In addition, robust security measures should be implemented to protect online learning platforms from hacking (Acquaro 2018). Additionally, institutions should prioritise the accessibility of their communication technologies, ensuring they are inclusive to all students, regardless of their background or technological capabilities. Striking a balance between the advantages of communication technology and maintaining stringent security and privacy standards is paramount (Rohan et al. 2023).

Online examinations pose vulnerabilities to cheating and technical difficulties, making it challenging to recreate the same level of interaction and engagement in traditional classroom settings (Năznean 2021). Additionally, the shift to remote learning has impacted courses that rely on access to specialised equipment or facilities, like laboratories or fieldwork. These challenges underscore the importance of innovative solutions that maintain the integrity of academic assessments while providing students with a high-quality educational experience (Leal-Filho et al. 2022).

It is necessary to evaluate the assistance provided by technology service providers to ensure that technology effectively supports efficient learning for faculty, staff and students (Polly, Martin & Guilbaud 2021). In addition, technology service providers should provide educators with reliable and accessible technical support, training and resources to assist them in effectively integrating communication technology into their teaching practices (Mwalongo & Mkonongwa 2021). Assessing the customisation and flexibility offered by technology service providers to meet each institution's unique needs and requirements is essential. By evaluating these factors, institutions can make informed decisions about the technology service providers they choose to work with and ensure that they can effectively support education delivery.

The challenges posed by load shedding and rising fuel prices in South Africa complicate providing quality and uninterrupted education. Load shedding and fuel price increases can lead to power outages and interruptions in education delivery, making it difficult for institutions to meet their standard for value for money and customer expectations (Matsheta & Sefoka 2023). In this context, HEIs should assess the resilience of their technology infrastructure and consider alternative solutions, such as backup power sources or cloud-based solutions, to minimise disruptions. Additionally, institutions may re-evaluate budgets and view alternative funding sources to ensure the maintenance of technological infrastructure to provide quality education.

Using new technologies and digitisation in education requires specific requirements to be met for success. These requirements include:

1. Adequate technological infrastructure to support virtual education, such as reliable Internet access and appropriate software and hardware.
2. Scholars use information technologies proficiently and can design and implement effective virtual teaching practices.
3. Appropriate pedagogical practices that promote engagement and interaction in a virtual learning environment.
4. Development of critical thinking and autonomous learning in students, as virtual learning requires self-directed and independent learning.
5. Ongoing evaluation of the virtual modality to ensure its effectiveness and identify areas of improvement. It includes evaluating the technology and pedagogical practices used in virtual education (Bedoya-Dorado, Murillo-Vargas & González-Campo 2021; Liu et al. 2022; Ozdemir 2023; Tocco et al. 2023).

Support services

The digitisation of administrative management is crucial to delivering high-quality services in higher education (Peter et al. 2023). Institutions can use technology to expedite administrative processes and improve information flow among faculty, staff, students and stakeholders (Mfecane, Iwu & Mohsam 2022). Real-time data makes service delivery, strategy formulation and decision-making more efficient. Higher education institutions can make informed decisions, assess progress, identify areas for development and remain competitive in an ever-changing market with reliable data and analysis. Furthermore, digitisation enables HEIs to modify their services to match the changing demands of faculty, staff, students and stakeholders, resulting in a more personalised and effective learning experience (Gerhardtl et al. 2022).

Digitisation also allows institutions to automate mundane procedures, allowing staff to focus on strategic initiatives that improve the student experience and promote student success. It also enhances cross-departmental communication and co-operation, lowering the risk of silos and creating a more integrated and efficient approach to service delivery. Higher education institutions may ensure timely and accurate information to all stakeholders by digitising administrative development, which is vital for promoting high-quality instruction and fostering student success (Teixeira 2023). Furthermore, big data, artificial intelligence (AI) and statistical analysis can provide important insights into student behaviour and performance, allowing faculty to make educated and proactive decisions (Rasli et al. 2022). Improving student success may significantly contribute to the university's overall aims.

Higher education internationalisation

Institutions must adapt and discover new ways to promote internationalisation and provide faculty, staff and students with a global perspective (Tewari, Zhang & Zhuang 2021). It may be necessary to provide more online and hybrid learning opportunities, collaborate with institutions abroad and participate in virtual exchange programmes (Whann et al. 2022). Institutions may give students access to a global array of resources and perspectives regardless of physical location by offering online and hybrid learning opportunities (Shah & Satish 2023). Furthermore, by collaborating with universities worldwide and conducting virtual exchange programmes, institutions may encourage internationalisation and provide their faculty, staff and students with a global perspective (Coryell et al. 2022).

Collaborative online international learning emerged as a viable approach to offer students cost-effective and flexible global learning opportunities (Borger 2022). Collaborative online international learning can increase intercultural understanding and awareness by bringing students from different nations and backgrounds together in a virtual learning environment (Rasli et al. 2022). Students can benefit from collaborative learning by increasing motivation and engagement and promoting critical thinking, problem-solving and communication skills. Furthermore, collaborative online international learning might be more accessible and inclusive compared to traditional study abroad programmes as it removes many travel and financial constraints (Hammond & Radjai 2022). As a result, collaborative online international learning has the potential to be a beneficial tool for HEIs seeking to promote internationalisation and deliver well-rounded, internationally-focused education to their students (Suguku 2023).

Collaborative online international learning may be superior, and institutions may confront particular challenges. Some students, for example, may have difficulties because of technological and linguistic challenges (Marcillo-Gómez & Desilus 2016). Furthermore, the absence of face-to-face interaction and cultural immersion might restrict the total value of foreign learning experiences. However, if developed and appropriately executed, collaborative online global learning may give students excellent learning opportunities while also assisting HEIs in meeting their internationalisation objectives. For international students, the epidemic has posed unprecedented problems (Nair et al. 2023). Following COVID-19, HEIs must be responsive to their demands and concerns by enacting legislation, offering new resources and devising creative ways to serve international students (Gochhayat & Das 2023). Finally, HEIs should invest more in the success and well-being of international students in order to establish a more inclusive and dynamic academic environment.

These resources and services should address mental health concerns, financial difficulties and academic challenges. Furthermore, HEIs must provide counselling and other support services to assist students in adjusting to new realities (Su 2023). Many international students suffered financial difficulties because of the pandemic's impacts, which included job losses and reduced financial assistance from family members (Wilson et al. 2022). Furthermore, HEIs must give assistance and resources to assist international students in overcoming these challenges. Aside from these support services, HEIs must be adaptable in their policies and processes to meet the changing demands of international students. The transition to hybrid learning models has introduced additional issues for international students, who may require assistance accessing technology and feel alienated and detached from their peers, lecturers and supervisors.

Changes in policy, practice and support services must also be communicated openly and transparently by HEIs. International students boost the learning experiences of all students by bringing variety and new insights to academic communities. Universities can guarantee that international students continue to pursue their studies and prosper socially and emotionally during these difficult times by offering comprehensive assistance to international students (Demuyakor 2020; Matarirano, Gqokonqana & Yeboah 2021; Zhang-Wu 2020).

Higher education institutional stability and agility

In the post-COVID-19 era, HEIs must be stable and agile (Skokauskas et al. 2023). By being both stable and agile, HEIs can continue to provide high-quality education and support services while also adapting and improving systems, processes and practices to changing circumstances and leveraging new technologies and methods of service delivery. It will also enhance their competitiveness in the global marketplace and promote greater collaboration and knowledge exchange (Amankwatia & Cobb 2023). The post-COVID-19 context asks for a more inclusive and equitable higher education system that meets the needs and expectations of faculty, staff, students and stakeholders (Natow, Johnson & Manly 2022). Consequently, re-envisioning of higher education is required to ensure stability by taking into account, among others, diversity in income levels of parents, employment status of supporting family members, proportions of students receiving government grants, the ability of students and staff to regard HEIs as safe and secure learning environments, access to a stable Internet, sufficient space to study productively, safeguarding of information, ensuring the integrity of academic data (Wang & Sun 2022). Finally, the new approach should aim for a more

inclusive and fair system that satisfies the needs and aspirations of all students, faculty and stakeholders.

Building resilience and adapting to the new normal of hybrid learning is critical for the survival and success of HEIs (Arthur-Holmes 2020). It is critical to rethink and build effective policies to enable this type of learning and redesign and construct courses, including assessment of learning outcomes, resources and technology. Furthermore, faculty, staff and students must be reskilled and upskilled to engage effectively in hybrid learning. Setting defined goals and objectives helps to enable a seamless transition to hybrid learning (Leal-Filho et al. 2022).

The COVID-19 pandemic has significantly altered how HEIs operate, and a new governance model is required to adequately adapt to these changes (Jakoet-Salie & Ramalobe 2023). It is vital to succeeding in breaking out from bureaucratic cultures and organisational rigidity and building resilience and adaptation in the new learning environment (Shaya et al. 2022). This new approach should strengthen faculty, staff and students' talents and skills for collaborative problem-solving, critical thinking and cognitive flexibility. They can better fulfil the changing requirements of students and the larger academic community by adapting to new contexts, challenges and opportunities (Leal-Filho et al. 2022). Higher education institutions may ensure sustained success in the new normal of online and blended learning by adopting a more agile and flexible governance style.

In light of current global events, universities must assess the advantages and opportunities that online education and co-operation provide (Huang et al. 2020; Kolomiets & Litvinova 2020). Universities may miss out on online education and co-operation benefits if they resort to conventional pedagogy without fully embracing and adopting new methodologies into their teaching practices (Gochhayat & Das 2023). Adopting these new approaches will allow universities to give students a current and relevant education that will equip them for the digital age's challenges and opportunities. By doing so, universities may take advantage of online education opportunities and must compete to deliver quality education (Leal-Filho et al. 2022).

Stewardship

The construct refers to the responsibility of HEIs to act in the best interests of faculty, staff, students and other stakeholders. It highlights the importance of ensuring the sustainability of service delivery, developing new resources and funding streams and engaging in strategic planning to ensure long-term viability.

Stewardship management is critical for the success and sustainability of HEIs in the post-COVID-19 era (Skokauskas et al. 2023). Stewardship entails meeting the needs of students, faculty and other stakeholders while sustaining the quality and integrity of educational programmes and services provided (Abdullah et al. 2022). To do so, HEIs must prioritise continuous teaching, learning and service delivery and develop online teaching platforms that may offer students access to education even in times of crisis. Furthermore, HEIs must strengthen their stakeholders' relationships by establishing trust and credibility via effective communication and engagement. By emphasising stewardship, HEIs may secure the continuance of their fundamental objectives and build a feeling of community and belonging among students and staff, therefore mitigating the effects of climate change. By concentrating on stewardship, HEIs may secure the sustainability of their primary goals and build a feeling of community and belonging among students and staff to mitigate the pandemic's influence on the learning experience.

Furthermore, all stakeholders, including individuals, communities, organisations and systems, must be involved in learning and relearning for planetary health (Natow et al. 2022). Collaborative and communal actions are required to solve the challenges confronting the world and its people, as no single individual, group or organisation has all the answers. As a result, collectively increasing knowledge, skills and capabilities can lead to a more sustainable and equitable future (Grynyukl et al. 2022).

Traditional higher education generally concentrates on theoretical knowledge while only sometimes providing students with the required skills and experiences to navigate the real world. Students can gain the ability to handle complex issues by taking a more holistic approach and understanding the interconnection of social, economic and environmental systems. Students will also better grasp the role values and attitudes play in shaping their relationship with the world as a consequence of this approach and becoming more civic-minded.

For example, a more experiential education approach might include hands-on learning activities such as field excursions, community service initiatives or engagement with local organisations (Jacob et al. 2015). This approach can help students gain greater awareness of real-world problems and demonstrate how the knowledge they gain in class can be used realistically. It can also help students develop critical thinking, problem-solving and communication skills. Finally, a more relational, contextual and experiential approach to education can help students develop the skills, knowledge and values required to handle our planet's complicated challenges and create a more sustainable future (Redvers, Faerron Guzmán & Parkes 2023).

Changing the traditional approach to higher education will necessitate a fundamental shift in our understanding of education's purpose. It will necessitate re-evaluating existing curricula, teaching techniques and assessment processes and introducing fresh viewpoints and approaches that correspond with planetary health principles. For example, the 'what' of higher education might be rethought to include multidisciplinary courses that address the complex challenges of planetary health and offer students a greater understanding of the concerns. Hands-on and practical learning opportunities that recognise the solid defaults-world scenarios may improve the 'how' of education (Thapaliya & Hrytsuk 2023). Education's 'who' may be expanded to incorporate voices and viewpoints from other groups and organisations addressing global health concerns. Finally, education's 'why' might be reframed to emphasise the development of student's values, attitudes and civic responsibilities (Ammigan, Chan & Bista 2022).

It is vital to realise that this transition will take time. Educators, institutions and policymakers will need to work together to accept this new approach to education. We can assist future generations in preparing to confront the complex issues facing our planet and create a more sustainable future.

As students learn about the effects of their activities on the environment and their communities, this form of education helps build a feeling of civic duty. Students can better comprehend the interconnectivity of social, economic and environmental systems by stressing their complex linkages and their role in determining our relationship with our planet.

Planetary stewardship highlights the importance of humans playing a more active part in caring for the planet and its resources (Westendorff, Mutch & Mutch 2021). Higher education plays a critical part in this endeavour. Higher education may develop a more holistic awareness of our challenges and inspire students to think critically and creatively about solutions by teaching them about the linked nature of social and environmental systems. Interdisciplinary programmes that bring specialists from many domains together can successfully cultivate this form of integrated thinking. They can give students the knowledge and expertise they need to change the world meaningfully. Finally, by fostering planetary stewardship via education, HEIs may create a more sustainable and just future (Redvers et al. 2023).

Curriculum development

The COVID-19 pandemic has presented an opportunity for universities to re-evaluate and re-structure their curricula to meet the needs of the changing world (Wangenge-Ouma & Kupe 2022). Universities may provide

their students with the required skills for success in today's ever-evolving job market by promoting critical thinking, creativity, curiosity, co-operation, entrepreneurship, a growth mindset and global competence (Zhao & Watterston 2021).

Furthermore, introducing digital literacy and technology skills into the curriculum, such as coding, data analysis and design thinking, will give students the tools they need to excel in the digital age (Indah et al. 2022). These abilities are in high demand in today's fast-paced, tech-driven world, and they will be critical for students to thrive in the future employment market. The pandemic has also highlighted the significance of multidisciplinary and cross-disciplinary approaches to addressing complex global concerns (Dar & Bashir 2023). These difficulties necessitate a comprehensive and coordinated response. Universities may respond by including these topics in the curriculum, encouraging students to broaden their perspectives and preparing them to face future difficulties (Ojo 2023).

However, it is critical to remember that curricular adjustments must be inclusive and accessible to all students. This may be accomplished through a flexible curriculum design that considers varied learning requirements and styles and provides appropriate assistance and resources to individuals who require them (Rasli et al. 2022).

Following COVID-19, there may be a move from outcome-based education (OBE) to performance-based education (PBE). The transition toward PBE emphasises the necessity of allowing students to apply and exhibit their knowledge and abilities in real-world circumstances. This approach recognises that learning is an ongoing process that students should be encouraged to own (Shahin & Shelley 2020).

Performance-based education correlates with the modern workforce's evolving demands, as companies want workers with the skills and capabilities to adapt to a rapidly changing employment market. Students may obtain significant experience showcasing their abilities and knowledge by concentrating on performance-based assessments, which can aid them in their future professions (Zlatkin-Troitschanskaia & Shavelson 2023). It should be noted that adopting PBE necessitates a joint effort from faculty, administrators and HEIs. This transition is not a direct exchange of one system for another. Instead, an extensive review of the present educational system is required, as is the creation of new assessment techniques and tools and continuing support for faculty to incorporate performance-based assessments into their teaching practices (Ebel et al. 2020).

Sustainability education can potentially be essential in addressing the world's numerous challenges (Delaney & Liu 2023). Sustainability education, through facilitating transformational learning, can assist individuals and

communities in developing a better awareness of the interconnection of environmental, social and economic systems and in adopting more sustainable behaviours and practices (Rasli et al. 2022). Individuals are encouraged to reflect on their values, beliefs and behaviours and question the current paradigm of unsustainable progress via transformative learning. Transformative learning leads to new insights, new perspectives and changes in attitudes and behaviours that support sustainability (Bryant, Ayers & Missimer 2023).

Policymakers and educators must play a critical role in promoting sustainability education. They can, for example, offer educational programmes, curriculum and resources to assist students in understanding the importance of sustainability and acquiring the knowledge, skills and attitudes required to be engaged and informed citizens (Bernal, Figueroa & Díaz 2018; Sidiropoulos 2019).

Furthermore, policymakers and educators may collaborate to establish a conducive educational environment that supports change at the institutional, community and societal levels. This might involve encouraging environmentally sound practices in universities, allowing students to participate in community-based projects, and advocating for sustainable policies and procedures at the local, national and international levels.

Resource development

In reaction to the pandemic, HEIs must create new resources and financing streams (Kanishevska et al. 2022). Furthermore, technology must be invested in, research must be undertaken, student support services must be offered, and new partnerships and collaborations must be developed. It will include optimising current and new resources for optimum effect and return. Higher education institutions may secure long-term survival and competitiveness while delivering high-quality education and support services to their students and communities by building an efficient and sustainable resource development and allocation system (Hromovenko & Tytska 2018). Furthermore, by optimising their resources and maximising their return on investment, HEIs may develop greater sustainability and resilience, assisting in mitigating the effects of future crises and assuring their long-term success.

Efficient resource development enhances organisational resilience. The capacity of HEIs to endure and recover from disruptive events or changes in the global environment is called organisational resilience (Shaya et al. 2022). Promoting resiliency via learning and reflection can benefit HEIs in a variety of ways (Chatzipanagiotou & Katsarou 2023).

Sharpening critical and problem-solving skills

By encouraging faculty, staff and students to reflect on and learn from their experiences, they may develop their critical thinking and problem-solving abilities, allowing them to confront challenges more successfully (Alberida et al. 2022; Ali El Sayed Ibrahim, Mostafa Shazly & Fathy Saad 2020).

Improving flexibility and adaptability in decision-making

Resilient HEIs can swiftly adjust to changes in the global environment and are more likely to make informed judgements based on previous experiences and best practices. Faculty, staff and students may understand their decision-making processes via learning and reflection, resulting in more thoughtful and adaptable decisions in the face of change and helping them to remain competitive (Walker et al. 2023).

Enhancing communication with stakeholders

Regular reflection and learning help HEIs become more open in stakeholder interactions, fostering trust and mutual understanding (Asiedu & Doe 2023; Hunt, Tourish & Hargie 2000).

Seeking feedback

Higher education institutions may better understand the views of people affected by their decisions by soliciting input from stakeholders regularly, resulting in more informed and effective decision-making (Nanath, Sajjad & Kaitheri 2022; Teng, Zhang & Sun 2023).

Fostering resilience via learning and reflection can assist HEIs in becoming more flexible, more prepared to deal with disruptive occurrences and more receptive to change (Karlsson & Offord 2023). Providing continual training and professional development opportunities for faculty and staff to promote student growth is critical. This training can assist faculty and staff in gaining the knowledge, skills and understanding required to successfully and compassionately manage their students' developmental needs. Furthermore, cultural competence training may assist faculty and staff in understanding the distinct cultural views and experiences that influence student mental health and developing the skills required to deliver culturally responsive care (Norman 2018).

Universities may assist their faculty and staff in keeping up with the latest research and best practices in student development by providing

continuing training and professional development opportunities, ensuring they have the knowledge and skills to serve their students successfully.

Student engagement and empowerment

Involving students in the decision-making process and empowering them to take an active role in their development and well-being is a vital aspect of a comprehensive approach to student support in HEIs (Alberto & Pilar 2020). Several ways exist, including student-led support groups, student–lecturer wellness committees and peer mentorship programmes. Student–lecturer wellness committees can also play an important role by fostering collaboration between students and staff and ensuring that students are considered when developing and implementing development programmes and policies (Aziz et al. 2022). Peer mentorship programmes can also promote development by providing students with guidance and support from older or more experienced students. These programmes can help to build self-esteem and confidence and provide students with role models and support networks (Reeves et al. 2023).

Developing risk management capabilities

Higher education institutions may need a more flexible approach to risk reduction (Chatzipanagiotou & Katsarou 2023). This may involve conducting a thorough risk assessment to identify new and evolving risks, prioritising the most significant ones, and developing and implementing new policies and procedures to address specific challenges. By taking a proactive and evidence-based approach to risk management, HEIs can help to protect the well-being and safety of everyone in the higher education community and can help to minimise the impact of COVID-19 on their operations (Pavitra et al. 2023; Siddiq 2022).

Upskilling and reskilling

The impact of automation and technological advancements on the job market has been a topic of discussion for some time, but the COVID-19 pandemic has accelerated this trend. As a result, workers must proactively upskill and reskill to stay relevant in the changing job market (Tamoliūnė et al. 2023).

According to the World Economic Forum (WEF) (2020), industries that require human skills such as creativity, empathy and problem-solving will likely see a growing demand for workers with those skills. Some jobs expected to be in high demand include healthcare professionals, data analysts, software developers and digital marketers. Individuals need to

continuously learn and upgrade their skills, and employers must provide opportunities for employees to do so. Governments and HEIs can also help students transition to the new economy by providing training programmes and resources. Consequently, the need for lifelong learning and adaptability will only increase, and individuals need to stay ahead of the curve by continuously upgrading their skills and knowledge (Lungu 2022; Van Tonder 2022).

Since the COVID-19 pandemic, there has been a growing need for short and flexible learning options that allow individuals to acquire new skills and knowledge quickly (Mauritti et al. 2021). With the rapid pace of change in the job market, short-term courses, online certifications and other forms of micro-learning have become increasingly popular as a means of upskilling and reskilling (Pachler 2022). In addition to the practical benefits of short learning options, their recognition and validation are becoming increasingly important (Tamoliūnė et al. 2023). Employers place a premium on practical, job-related skills and knowledge and look for ways to certify an individual's talents that go beyond standard degrees and certificates.

As a result, there is an increasing need for learning programmes and credentials that companies recognise and value and give workers a clear route for career progression. In response to this trend, higher education is developing new learning and evaluation modes that match labour market expectations (Pachler 2022). Higher education institutions can provide micro-credentials or be recognised by institutions using the European Higher Education Area (EHEA). In the EHEA, micro-credentials are brief, focused learning programmes that address particular skill and knowledge demands. They can be provided in various ways, such as online courses, workshops and other types of flexible learning (Trepule et al. 2021; Ward et al. 2023).

Because they have the experience, resources and infrastructure to create and execute high-quality learning programmes, HEIs are critical in providing micro-credentials (Brown, McGreal & Peters 2023). Higher education institutions can also give accreditation and validation for their micro-credentials, which can be used to show potential employers an individual's abilities and expertise (Ralston 2021). Furthermore, the participation of HEIs and recognition processes in the EHEA will be required to ensure the quality and recognition of micro-credentials to enable sustained recovery from the COVID-19 crisis and stimulate higher education innovations (Thompson & Hoy 2023).

Micro-credentials should be recognised as important for supporting lifelong learning and the development of work-related competencies, active citizenship and personal growth by HEIs (OECD 2021). This may be accomplished by using novel methods for professional development, career

planning and learning design solutions. Micro-credentials can aid in the recovery from the COVID-19 pandemic (Tamoliūnė et al. 2023). Micro-credentials enable faculty, staff and students to promptly learn new skills and knowledge and exhibit their ability to future employers (McGreal & Olcott 2022). Micro-credentials can assist in bridging the skills gap and promote the creation of a more resilient and adaptive workforce by making learning and development more accessible and flexible for faculty, staff and students (McGreal et al. 2022).

Micro-credentials provide a more flexible and accessible approach for learners to gain new skills and knowledge, and they can assist students unable to complete traditional, full-length degrees (European Commission 2022). Micro-credentials provide considerable flexibility by allowing students to pick the time, location and pace of their learning, allowing those with busy schedules, employment obligations or other responsibilities to complete their education (Tamoliūnė et al. 2023). Furthermore, because micro-credentials frequently focus on specific, in-demand skills, they can be cost-effective and efficient for students to upskill or reskill and remain competitive in the labour market (Brown et al. 2021). Furthermore, because micro-credentials are frequently offered online, they can reach students who reside in remote regions with limited access to quality education. As a result, micro-credentials are ideal for expanding access to education and giving students additional opportunities to advance in their professional and personal lives (Brown 2022).

A wide range of social stakeholders are involved in the micro-credentialisation process. To ensure the quality and validity of micro-credentials, these stakeholders must collaborate (Tamoliūnė et al. 2023). Employers, for example, play an important role in establishing which skills and competencies are in demand in the labour market. They can offer helpful feedback on micro-credential design (Brown et al. 2021). They can also assist in verifying students' micro-credential skills by recognising and embracing them as a viable form of professional growth (Ehlers 2018). Educational institutions, on the other hand, are responsible for delivering micro-credentials and ensuring they fulfil high quality and rigour criteria. They may also assist in marketing the benefits of micro-credentials to students and employers and collaborate with other stakeholders to build quality assurance methods that verify the validity and reliability of micro-credentials (Oliver 2019).

Micro-credentials are gaining popularity in higher education because they provide students with a flexible and accessible means to learn new skills and knowledge that can be added to their academic credentials (Pigott & Polanin 2020). Implementing micro-credentials in HEIs can give various advantages. Firstly, they can enhance students' learning experience

by allowing them to acquire new skills and knowledge that complement their academic credentials. Micro-credentials may be adjusted to faculty, staff and students' needs, making them more relevant and valuable to their chosen professional path (Ralston 2021). Second, by giving evidence of specific skills and knowledge relevant to their chosen career, micro-credentials can boost the employability of higher education graduates (Tamoliūnė et al. 2023). Employers are increasingly seeking employees with varied skills and experience, and micro-credentials can help graduates stand out in the job market. Third, micro-credentials can generate a new income source for HEIs. Higher education institutions can attract more international students interested in obtaining specialised skills and knowledge relevant to their native country by giving micro-credentials (Selvaratnam & Sankey 2021). Implementing micro-credentials in HEIs can benefit both students and institutions. They can improve the learning experience, promote employability and generate a new income source for HEIs. As a result, HEIs must explore incorporating micro-credentials into their academic offerings.

In the long run, micro-credentials may add substantial value to individuals' jobs by assisting them in acquiring transferrable and particular abilities. Employers in various sectors value transferable abilities such as critical thinking, problem-solving and communication. Coding and data analysis skills are also in high demand in today's work environment.

Contribution to knowledge

The COVID-19 pandemic has had a substantial impact on HEIs throughout the world, forcing urgent changes in service delivery paradigms. Several significant reasons contribute to new knowledge in this sector as HEIs attempt to maintain and improve service delivery levels in the post-pandemic era.

The requirement for stewardship and sustainability within HEIs is critical. Prioritising stewardship entails acting in the best interests of all stakeholders and maintaining service delivery sustainability. This entails creating sustainable financial streams, strategic planning and cultivating a feeling of community. Higher education institutions may contribute to new knowledge by emphasising the significance of sustainability and community-building in higher education by emphasising stewardship (Skokauskas et al. 2023).

Another important component is developing a hands-on, holistic approach to education. This strategy emphasises giving students hands-on learning opportunities, including them in community service projects and encouraging contacts with community organisations. Higher education institutions contribute to new knowledge by redefining the purpose and

methods of education in order to provide students with the skills, knowledge and values required to address complex challenges and create a sustainable future (Jacob et al. 2015; Redvers et al. 2023).

Curriculum development is an important issue for HEIs to address. The pandemic has provided a chance to reassess and adapt courses to fit the world's changing demands. This involves encouraging students' critical thinking, creativity, entrepreneurship and global competency. In order to educate students in the digital age, it is critical to incorporate digital literacy and technological skills into the curriculum. Incorporating interdisciplinary and cross-disciplinary methods also aids in addressing complex global concerns. Higher education institutions contribute to new knowledge by providing students with appropriate skills and knowledge for the future by designing inclusive and accessible curricula (Indah et al. 2022; Wangenge-Ouma & Kupe 2022).

Higher education institutions must optimise their resources in order to improve service delivery. Investing in technology, research, student support services and developing new collaborations are all elements of strategic resource development. Higher education institutions may increase sustainability, resilience and long-term success through managing resources and maximising return on investment. This adds to new knowledge by underlining the need for effective resource allocation and the requirement for long-term viability within HEIs (Hromovenko & Tytska 2018; Kanishevska et al. 2022).

Student participation and empowerment are critical components of comprehensive student support in HEIs. Higher education institutions enhance personal growth and generate a feeling of ownership by integrating students into decision-making processes and allowing them to participate actively in their development. Student-led support groups, peer mentorship programmes and student–lecturer wellness committees are all successful ways to involve students and enhance their well-being. Higher education institutions contribute to new knowledge by acknowledging the importance of student involvement in creating their educational experiences by stressing student engagement and empowerment (Alberto & Pilar 2020; Reeves et al. 2023).

Higher education institutions must develop organisational resilience and take a flexible approach to risk management. This includes risk assessments, policy and procedure development and enabling ongoing learning and reflection. Higher education institutions may become more resilient and prepared for future challenges by sharpening critical thinking, improving decision-making, strengthening stakeholder communication and soliciting feedback.

Higher education institutions contribute to new knowledge by investigating innovative approaches to sustain and improve higher education service delivery post-COVID-19 by concentrating on three important areas. These elements stress the significance of stewardship, experiential learning and curriculum development.

Recommendations for future research

Several recommendations for future research on sustaining higher education service delivery levels post-COVID-19 may be provided.

Firstly, evaluating the effectiveness of crisis-prepared LMSs would be beneficial. This might look into the characteristics and capacities of LMSs that lead to resilience and flexibility in times of crisis. Furthermore, assessing the influence of a well-designed and robust LMS on educational continuity during interruptions may give helpful information.

Another relevant research topic would be assessing the influence of technological investments on higher education quality. This research might examine how investments in communication tools, virtual systems and new technologies like AR and VR affect education delivery quality and student learning results. Evaluating the mix between technology and conventional teaching approaches would also be valuable.

Security and privacy concerns in communication technologies must also be addressed. Investigating the security and privacy standards adopted in online learning platforms and communication technologies and vulnerabilities to hacking and cyberattacks may lead to ideas for improving security while retaining accessibility.

Innovative assessment approaches for online learning should also be investigated. This might examine the challenges and possible benefits of online examinations and assessments, emphasising methods that ensure academic integrity and engagement in remote assessment settings. Alternative solutions for courses requiring specific equipment or facilities might also be considered.

Higher education institutions' efficiency in providing technological services to promote efficient learning should be evaluated. The efficacy of technology services in aiding faculty, staff and students in incorporating communication technology into instructional methods might be evaluated through research in this field. Customisation, adaptability and reliability of technical support and training supplied by HEIs should be investigated.

A resilient information technology (IT) infrastructure in the face of interruptions is also important. Research should concentrate on the resilience of higher education technology infrastructure in the face of

challenges such as power outages, fuel price rises and other interruptions. Alternative alternatives, such as backup power sources or cloud-based technologies, might assist in reducing disruptions in education delivery.

Another issue worth investigating is the digitisation of administrative management in higher education. This might examine how digitising administrative procedures affects HEIs' service delivery and information flows. It is necessary to assess the efficiency and efficacy of technology-enabled administrative management systems.

It is also necessary to investigate the influence of support services on student satisfaction and academic success. This might look into the function of support services, including counselling, mental health services and career counselling, in increasing student satisfaction, well-being and academic success. The effectiveness of technology-enabled support services in satisfying the requirements of students in remote or hybrid learning contexts, in particular, should be evaluated.

Another topic that warrants consideration is the influence of e-learning, m-learning and virtual systems on academic performance. This might look at the relation between the quality of e-learning, m-learning and virtual system services and students' academic performance and satisfaction with their educational experience. Investigating the factors contributing to successful and engaging online learning environments is necessary.

A comparison of service quality criteria in higher education might be beneficial. This might examine and contrast various indicators and metrics used to evaluate service quality in HEIs. Investigating the individual goals and objectives of HEIs and their effect on the selection of indicators and metrics, in particular, might result in a complete mix of metrics providing a holistic picture of service quality.

These research recommendations address the challenges and opportunities posed by the COVID-19 epidemic in higher education. By investigating these topics, researchers may give valuable insights and practical recommendations for constructing resilient, inclusive and high-quality HEIs in a post-pandemic world.

Conclusion

The chapter aims to assist HEIs in planning for sustainable post-COVID-19 service delivery by considering, analysing and providing proposed solutions to eight key adjustment constructs influencing HEIs at both the global and national levels. The eight key service delivery adjustment factors to be considered are building a crisis-prepared LMS, investing in technology, providing support services, improving higher education

internationalisation, promoting higher education institutional stability and agility, enhancing management of stewardship, re-envisioning curriculum development and efficient resource development and allocation. The proposed solutions were presented broadly to allow individual HEIs the freedom to develop and implement their unique indicators and metrics to assess the successful implementation of their adaptation strategies post-COVID-19. As such, the heterogeneity of HEIs and the diversity of contexts are recognised and appreciated.

Chapter 6

Education providers as first responders to economic reconstruction and development plans

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Abstract

The global coronavirus disease 2019 (COVID-19) outbreak has thrown the world as we know it into a place where future outcomes are unclear and filled with disruption and uncertainty. The challenges are understood, as are the opportunities, born out of the knowledge that disruptors have forced change very quickly. To promote post-pandemic recovery, South Africa has adopted economic packages that include financial and skills development policy measures. The South African government published an Economic Reconstruction and Recovery Plan (ERRP) to focus agency and resources on current and future pandemics and crises. Without the critical role played by education and training providers from the education sphere, these plans would not be implemented. The role that private education, training and skills development providers play is to design and implement appropriate skills development programmes to

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address the need for skilled and knowledgeable future-fit people for a changed workplace. This chapter uses a qualitative methodology, comprising a literature review of the skills development trajectory in South Africa, followed by a narration of initial responses from focus groups comprising mainly private providers to the government's ERRPs. Through provincial capacity-building workshops and focus group discussions, innovative and entrepreneurial solutions were proposed. What emerges as new knowledge is a positive early response in the form of a proposed model, encompassing entrepreneurial partnerships, new qualifications and formal and non-formal skills development programmes to drive new resilience in local economies.

Introduction

The dire global impact of the COVID-19 pandemic together with the confluence of other crises such as climate change and conflicts is described in the *Sustainable Development Goals Report* (2022) as threatening 'humanity's own survival' (United Nations [UN], 2022, p. 2). An Organization for Economic Co-operation and Development (OECD) report (2020) speaks about skyrocketing unemployment and estimates a 'reduction of 20–25% of GDP in a number of OECD countries' and Nodari, Rees and Runycharoenkitkul (2022) write about the 'extraordinary economic impact in which the first half of 2020 saw the largest decline in economic activity in almost a century'. Similarly, in the education sphere, the fault lines have been revealed in our education systems (Fullan et al. 2020, p. 2) and 'have both exposed and exacerbated what was wrong with the system' (p. 25). Ydo (2023, p. 1) writes about the pressing concern about 'emergencies which are now present in most educational systems around the world'. Even though laws, regulations and policies are written to regulate or guide the socio-economic, political and community behaviour and activities of the people within a country, there were few blueprints on how to deal with the disruption of basic day-to-day issues resulting from the pandemic. After nearly 100 years since the last global pandemic, the crippling effects of the 2019/20 COVID-19 pandemic in all sectors and spheres of the socio-economic fabric of nations were akin to things truly falling apart.

Against this dire picture the call has gone out to governments globally to put in place an urgent rescue effort to 'deliver global sustainability [...] [to] put the world on track to sustainability which [*sic*] will require concerted action on a global scale' (UN 2022, p. 3). Questions are being raised regarding how global growth will evolve after the enormous disruptions wrought by the pandemic (Nodari et al. 2022) and 'how can education once again become a transformation agent of society?' (Fullan 2020, p. 3).

The author suggests that as we grapple with the devastation wrought globally at every level of society, some green shoots are emerging; Nodari et al. (2022, p. 45) write about 'a path out of the pandemic which is gradually emerging, [while] the fastest [economic] recovery in several decades took place over the subsequent 18 months'. The OECD report (2020, p. 2) describes actions being taken by local and regional governments to help 'sustain the vitality of local communities today and tomorrow', such as offering access to skills development programmes to facilitate training and adjustment. Fullan et al. (2020) state that: 'it's time to situate education as an instrument of individual and societal good'.

Within the context of rescue plans to reposition local and regional economies, including the education system, the author suggests that implicit herein is the need for skilled people to implement the plans. Governments, multi-national and local companies, organisations and institutions are called upon to take action; however, without a reskilled, upskilled and multi-skilled and capable workforce, it is unlikely that these plans will be brought successfully to fruition. It has been the author's long-held belief that the education providers are what she terms 'first responders' to implement a wide range of legislative imperatives and recovery plans after the pandemic, which directs the overarching socio-economic, political and human rights plans of the country. It is through the response of the public and private education and training system that people are educated and trained to meet the skills development needs of the country; it is in this context that the author views them as 'first responders'. In their role as first responders, education providers have become increasingly agile and innovative to ensure that they remain relevant and meet the demands for skilled and knowledgeable people to address the socio-economic needs of the country.

The response to the call from the UN to 'put the world back on track' showed that governments applied themselves to dealing with the immediate crises as they arose, as well as to developing post-pandemic recovery policies and programmes. South Africa has adopted economic packages that include financial and skills development policy measures. The South African government published two key policy frameworks to focus agency and resources on current and future pandemics and crises, these being the ERRP (2020) and the District Development Model (DDM) (2019). Within these two policies, there are opportunities to develop innovative responses from all sectors of South African society. One of the types of responses is a skills development response, where skills development is a generic term that overarches education, training and skills development in diverse forms and formats. The responses from the education sphere to the pandemic have created 'an unprecedented opportunity to transform education across whole systems' (Fullan et al. 2020, p. 3).

Context and purpose

The chapter is contextualised within the work of DLL Consulting and the Association of Private Providers of Education, Training and Development (APPETD) in partnership with the National Skills Fund (NSF). Through this partnership, which is in itself new and unique, provincial capacity-building workshops were designed and conducted to facilitate dialogue and build capacity. The purpose of this chapter is to provide an account of providers' initial responses to the eight objectives of the ERRP and to propose a model to underpin the design and implementation of a future response that can be used by providers and partner stakeholders. This model emerged from focus group discussions and presentations and was adopted by the providers as a feasible way that they could effectively implement the ERRP and DDM.

The response from the private provider sector to these initiatives relies firstly on capacity-building, which initially focuses on building an understanding of what capacity-building is and its importance as an instrument to underpin the design and implementation of projects and programmes. This is followed by a brief history of skills development in South Africa to show that focused skills development initiatives were implemented in the past to address crippling or catastrophic events that rendered the country economically and socially extremely vulnerable. This history briefly references education and training in South Africa from the days of the Welsh Commission and traces the various policy initiatives since 1990. The author suggests that the new knowledge provided by this chapter is the development of an acceptable model for education providers to respond to the ERRP based on focus group responses in the provincial workshops.

Capacity-building

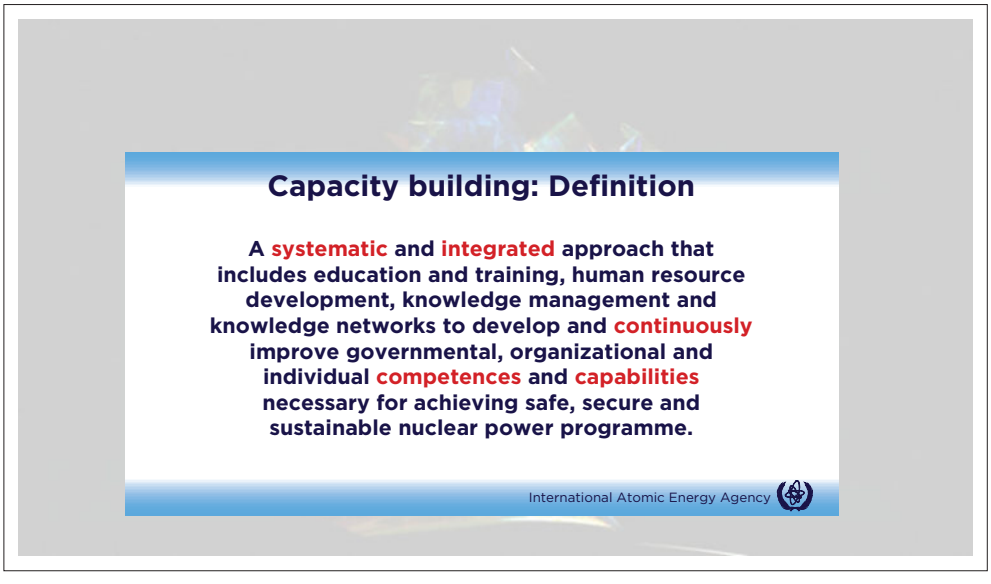
It has been the author's view that where the implementation of policy, regulations and plans has not met the expected outcomes and made the desired impacts, this has been because of insufficient capacity-building of all of those involved. Private providers were encouraged to understand the importance of capacity-building and how they could use different capacity-building methods when they engaged with provinces, municipalities and districts in education interventions to meet the requirements of the reconstruction and recovery plans. The response from the private provider sector to these initiatives relied on capacity-building, which refers to those activities that *fortify* the knowledge, skills, abilities and behaviour of individuals and improve institutional structures and processes by which an organisation can efficiently and profitably meet its missions and goals in a

sustainable way. Mallick and Malloy's (2014 n.p.) definition of capacity-building shown in Figure 6.1 describes the approach taken by the author in the provincial workshops.

The private providers were guided to understand the full spectrum of capacity-building and its applicability for them to engage meaningfully with the ERRP and the DDM. They moved towards understanding that capacity-building was not information sharing; rather, it included 'education and training; human resource development; knowledge management and knowledge networks' (International Atomic Energy Agency [IAEA] 2015, p. 3).

History of skills development in South Africa

The South African story about the conceptualisation of an education and training system – which would radically reverse the system embedded through *colonialism* and *apartheid* – has often been told and still renders listeners and readers determined to change forever the scarred and ugly past of a 'legalised and institutionalised system of racism and discrimination in terms of gender, race, class and religion against 80% of its population' (Lloyd 2022a; Walters 2012, p. 159). As early as 1948, the Nationalist Party (NP) government intensified the *apartheid* system 'to an unendurable



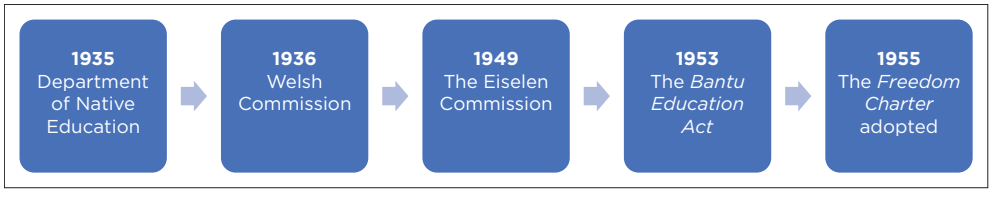
Source: Mallick and Molloy (2014).

FIGURE 6.1: Capacity-building definition.

degree at the very time when racialist and colonialist theories and practices were discredited and condemned throughout the world' (Turok 2012, p. 52). Isaacs and Nkomo (2012, p. 101) remind us that 'This has become the loadstone that weighs South Africa down and undermines its potential in profound ways'. Figure 6.2 and Figure 6.3 show some of the key policy documents that drove skills development in South Africa from 1935 to 2019. These documents are not discussed in this chapter.

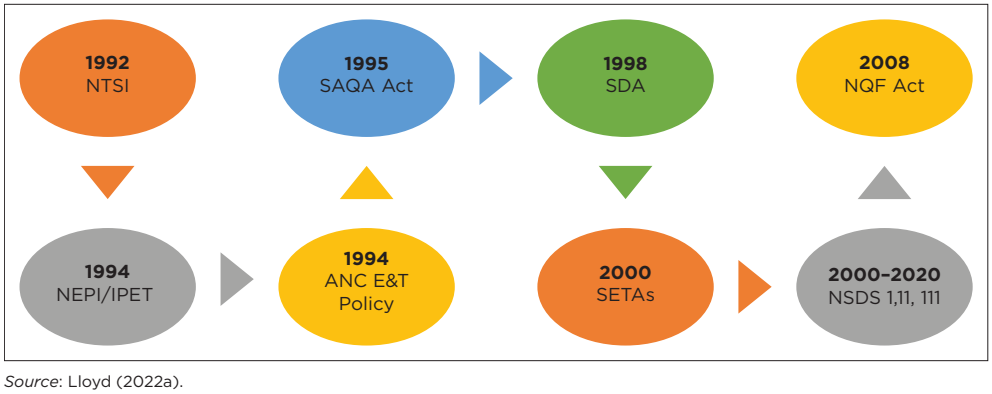
Figure 6.3 represents the development of positive and enabling regulations and legislation promulgated in South Africa to address the discriminatory policies which were in place during the apartheid era, pre-1994. The acronyms are explained in the following paragraphs, which are extracted from a number of research reports written by the author over the period from 2019 to date (Lloyd 2019).

The South African skills development system post-1994 represented a 'fulcrum' that brought together the transformation and redress agenda for the education and training system. The previous colonialist and apartheid education and training policies rendered the majority of South Africans economically and educationally unequal.



Source: Lloyd (2020).

FIGURE 6.2: Timelines: Lead up to the *Bantu Education Act of 1953* and the *Freedom Charter*.



Source: Lloyd (2022a).

Key: NTSI, National Training Strategy Initiative; SAQA, South African Qualifications Authority; SDA, *Skills Development Act 97 of 1998*; NQF, *National Qualifications Framework Act 67 of 2008*; NEPI, National Education Policy Initiative; IPET, Implementation Plan for Education and Training; ANC, African National Congress; E&T, education and training; SETA, Sector Education and Training Authorities; NSDS, National Skills Development Strategy.

FIGURE 6.3: The development of enabling skills development regulatory framework.

The South African education system, both in relation to basic and further education, has a unique history characterised by the exclusion of black Africans, Indians and coloured people under the system of *apartheid*. The NP came to power in 1948, and in 1949, the government established the Eiselen Commission. The Eiselen Commission report was published in 1951 and set the tone for an *apartheid* education and training system in South Africa under the NP government. Kross (1996, p. 326) is of the opinion that 'the report was concerned with the re-ordering of black people and making an attempt to keep them in a servile status and on the marginal side of white society'. Soudien (2006, p. 42) argues that 'the Eiselen Commission essentially laid out the philosophical and organisational foundations for much of the affronting 1953 *Bantu Education Act*'. As such (ANC 1994; Penxa 2009):

> The education and training system under apartheid had been characterised by three key features. First, the system was fragmented along racial and ethnic lines, and was saturated with the racial ideology and educational doctrines of apartheid. Second, there was a lack of access or unequal access to education and training at all levels of the system. Vast disparities existed between black and white provision and large numbers of people, in particular, adults, out-of-school youth and children of pre-school age, had little or no access to education and training. Third, there was a lack of democratic control within the education and training system. Students, teachers, parents, and workers had been excluded from decision-making processes.[4] And more importantly, apartheid education and its aftermath of resistance had destroyed the culture of learning within large sections of our communities, leading in the worst-affected areas to a virtual breakdown of schooling and conditions of anarchy in relations between students, teachers, principals, and the education authorities.[5] (n.p.)

From the early 1970s, black trade unions started demanding a living wage; these demands were repeatedly rejected by employers on the grounds that workers were unskilled and therefore their demands were unjustified. This, in turn, led to black workers seeing training as a means of achieving their demands for better wages. By the 1980s, the entire education system had been discredited and rejected. In 1989, the National Union of Metalworkers of South Africa (NUMSA) established a research group comprising workers and union officials to formulate recommendations on training, and thereby (Penxa 2009):

> The proposal stressed the need not only for basic education, without which workers would not be able to access the proposed system, but also for portability and national recognition of training so that workers would not be at the mercy of a single employer. The proposal was formally adopted by the Congress of South African Trade Unions (COSATU) in July 1991. (n.p.)

4. ANC Policy Document on Education and Training (1995).

5. ANC Policy Document on Education and Training (1995).

The National Education Policy Initiative (NEPI) was eventually established which set about developing proposals for the restructuring of the formal education system. The NEPI reports and framework, published in 1992, were premised upon the principles of non-racism, non-sexism, democracy and redress and the need for a non-racial unitary system of education and training.

In 1992, the Department of Manpower and the trade union federations met and formed a representative task team, which established eight working groups charged with developing a new national training strategy. The working groups had representation from trade unions, employers, the state, providers of education and training, the African National Congress (ANC) Education Department and the Democratic Alliance (DA). The year 1994 saw the publication of three documents which laid the foundation for the *South African Qualifications Authority* (SAQA) *Act 58 of 1995*. The three documents included the ANC Policy Framework for Education and Training (1994), the Discussion Document on a National Training Strategy Initiative (NTSI) (1994) and the Centre for Education Policy Development (CEPD) Implementation Plan for Education and Training (1994), referred to as the IPET document. White papers on Reconstruction and Development (1994) and Education and Training (1995) followed, and both underscored the need for the development and implementation of the National Qualifications Framework (NQF).

South Africa's transition to democracy in its first-ever free national and provincial elections in 1994 energised the newly elected government to institute reforms in its education and training system, characterised by equal access to education and training for all South Africans. These initiatives would also galvanise new developments to support economic development in South Africa. Walters (2012, p. 159) describes this process as a 'commitment to equity and redress in a Reconstruction and Development Programme' and Khan (2005, p. 39) writes that 'The whole process of transformation was fundamentally to increase access, eliminate inequalities and abolish all educational discriminatory practices'.

Three key programmes or documents underpinned the design of a new non-racial, non-sexist education and training system. The first of these is the *Freedom Charter* (Congress of the People 1955),[6] through which it was asserted that 'Education shall be free, compulsory, universal and equal for all children'. The second was the Reconstruction and Development Programme (RDP) (1994), which was a progressive and radical policy instrument published as a policy framework in November 1994 and

6. The *Freedom Charter* adopted by the Congress of the People at Kliptown, Johannesburg on 25 and 26 June 1955.

emphasised the development of the human resource capacity of South Africa through a non-racial and equal education and training system to support economic and social reconstruction. The third is the South African Constitution (1996),[7] which is the supreme piece of legislation from which others are developed and to which all legislation needs to answer. It is founded on the values of equality, human dignity, non-racialism, non-sexism, human rights and freedoms as embedded in the Bill of Rights, which comprises Chapter 2 of the Constitution of the Republic of South Africa.

The 1994 democratic government inherited a vulnerable economy and (Reddy et al. 2018):

> [*A*] population with low educational and skills levels and an education and training system that was fragmented, dysfunctional and unequal. The first task of the new government was to repeal apartheid legislation and institute legislation that enabled access for all as well as redress measures for inequalities from the apartheid period. The first few years of the new government has been described as the 'evolution of ideas' and articulating a vision through the 'integrative' National Qualifications Framework. (p. 5)

Early policy documents of the democratic government rarely focused explicitly on skills development or workplace-based learning but rather on the education and training system and its subsystems, that is, General Education and Training (GET), Further Education and Training (FET) and Higher Education and Training (HET) (as well as Adult Basic Education and Training [ABET]) and the need for recognition of prior learning (RPL) (ANC 1995, pp. 11, 19). The *Skills Development Act 97 of 1998* was conceived to replace the *Manpower Training Act 56 of 1981*, the *Guidance and Placement Act* of 1981, the *Local Government Training Amendment Act 76 of 1991* and *Telecommunications Act 103 of 1996*. The National Skills Authority (NSA) became the successor to the National Training Board established by the *Manpower Training Act 56 of 1981*, the NSF the successor to the Manpower Development Fund, the Industry Training Boards were wound up, a system of Sector Education and Training Authorities (SETAs) was put in place and training centres and apprenticeships abolished (*Skills Development Act 97 of 1998*, s. 37[2]).

By that time, the 1994 democratic elections had taken place and the RDP had been initiated, and the concept of what the NQF should encompass had extended to 'embrace a universal system of quality-assured standards and qualifications embracing all education, training and skills development at all levels, both in the workplace and in learning institutions' (RSA 2007, p. 2). Isaacs and Nkomo (2012) highlight the fact that:

7. The *Constitution of the Republic of South Africa*, adopted on 08 May 1996 and amended on 11 October 1996 by the Constitutional Assembly.

> The adoption of the NQF was a response to two fundamental imperatives: The first was the need to democratise education and training opportunities across race, gender, class etc.; and secondly, a response to the existential reality of the late twentieth and early twenty-first centuries – that is globalisation. (p. 102)

The ANC initially envisaged a national qualifications framework through which a much closer integration of education and training can be achieved and which would positively impact economic development through a skilled and capable workforce to grow the economy. A structural integration of education and training in a single Ministry of Education and Training did not emerge in 1994; however, the envisaged single Ministry of Education and Training would eventually only be established in 2009. There was also 'a shift from the integration of education and training to an *integrated approach* to education and training' (Isaacs 1998, p. 20).

What was crucial in the development of the NQF was to ensure that (RSA 2007):

> At the heart of the construction of the NQF was the desire to take an integrated approach to education, training and skills development in a variety of settings, including formal education, training and skills development institutions and the workplace. (p. 3)

National Skills Development Strategies 1, 11 and 111

The *Skills Development Act 97 of 1998* enabled the vision of skills development for all in South Africa to become visible through this legislation. Its purpose was 'To provide an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of the South African work force' (*Government Gazette No. 19420 of 2 November 1998*). This Act framed the establishment and the roles and functions of the SETAs, in 'collaboration with' the *SAQA Act 58 of 1995*. From this Act, and from these purposes, the National Skills Development Strategy (NSDS) emerged, which were intended to (RSA 1998b):

> [*R*]adically transform education and training in South Africa by improving both the quality and quantity of training to support increased competitiveness of industry and improved quality of life for all South Africans. (n.p.)

When launching the NSDS 1, the Minister of Labour stated that 'this strategy outlines specific and measurable national targets to achieve the broader objectives of the legislation' (RSA 2004: 1).

Each of the NSD strategies, namely NSDS 1, 11 and 111 were guided further by a particular focus for the five years of implementation and each strategy was legislated with the purpose of economic and

TABLE 6.1: Summary of objectives of each of the NSDSs, 1, 11 and 111.

NSDS	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7	Objective 8
NSDS 1	Developing a culture of high-quality lifelong learning and fostering skills development for high-quality jobs	Fostering skills development in the formal economy for productivity and employment growth	Stimulating and supporting skills development in SMMEs	Promoting skills development and access to jobs and sustainable livelihoods through social development initiatives	Assisting new entrants into employment in the labour market	-	-	-
NSDS 11	Prioritising and communicating critical skills for growth, development and equity	Promoting and accelerating quality training for all in the workplace	Promoting employability and sustainable livelihoods through skills development	Assisting new entrants into the labour market and self-employment	Improving the quality and relevance of provision	-	-	-
NSDS 111	Establishing a credible institutional mechanism for skills planning	Increasing access to occupational-directed programmes	Promoting the growth of a public FET college system that is responsive to sector, local, regional and national skills needs and priorities	Addressing the low level of youth and adult language and numeracy skills to enable additional training	Encouraging better use of workplace-based skills development	Encouraging and supporting cooperatives, small enterprises, worker-initiated, NGOs and community training initiatives	Increasing public sector capacity for improved service delivery and supporting the building of a developmental state	Building career and vocational guidance

Key: NSDS, National Skills Development Strategy; SMMEs, small, medium and micro enterprises; FET, Further Education and Training; NGOs, non-government organisations.

social development. The NSDS 1 (2001) was guided by the need to establish a cost-effective and high-quality skills development system which supports economic growth, employment creation and social development and is responsive to national and individual needs. The NSDS 11 (2005) was underpinned by the vision of skills for sustainable growth, development and equity. The NSD 111 (2010) was underpinned by a vision of 'A skilled and capable workforce that shares in, and contributes to, the benefits and opportunities of economic expansion and an inclusive growth path'.

The National Skills Development Plan 2030

The National Skills Development Plan (NSDP), which followed from the NSDS 111, was not developed in a vacuum; the *White Paper on Post-School Education and Training* (WP-PSET), the National Plan for Post-school Education and Training (NPPSET) and the National Development Plan (NDP) were pre-cursors to the NSDP, as they 'frame' the NSDP. The NSDP of 2019 departs from being a strategy and is presented as a *plan*, which is deeply embedded in the vision of NDP, as it is 'key to enabling government and social partners to contribute towards economic growth, employment creation and social development' (NSDP 2019, p. 1). The NDP calls for a skilled and capable workforce, and the NSDP for 'an improvement in the quality of education and training to enhance capabilities of our people so that they are active participants in developing the potential of the country' (NSDP 2019). The mission is 'to improve access to occupations in high demand and priority skills aligned to supporting economic growth, employment creation and social development while also seeking to address systemic considerations' (NSDP 2019). This will be achieved through the eight outcomes of the NSDP, which are:

Outcome 1: Identify and increase the production of occupations in high demand.

Outcome 2: Linking education and the workplace.

Outcome 3: Improving the level of skills in the South African workforce.

Outcome 4: Increase access to occupationally-directed programmes.

Outcome 5: Support public Technical and Vocational Education and Training (TVET) colleges.

Outcome 6: Skills development support for entrepreneurship and cooperative development.

Outcome 7: Encourage and support worker-initiated training.

Outcome 8: Support career-development service.

The Economic Reconstruction and Recovery Plan and the District Development Model

Very soon after the publication of the NSDP, the COVID-19 pandemic struck and the government quickly pivoted to develop the ERRP and refocused energy on the DDM. The SETAs signed new service-level agreements (SLAs) for delivery against the ERRP to develop skills for economic recovery. This was not the first time that South Africa developed economic recovery plans. South Africa has developed numerous plans since 1994, each one comprising the vision of economic growth and social development. So, the ERRP and DDM are underpinned by 'prequels', which are the various government socio-economic policies ranging from the ANC's Ready to govern and the RDP in 1994 to the ERRP and DDM of 2020. These are briefly referred to further in the text.

Recovery plans since 1994

The ANC published 'guiding' documents that mapped out their socio-economic and political approaches, which would become their guiding policies after the 1994 elections. The first of these was the 'Ready to Govern' policy document that would be followed by a number of other policy frameworks in the years after 1994. These are briefly listed further on and map the development of the policy trajectory. Each of these documents has similar themes, which the author terms 'golden threads', that somehow hold the centre of the vision of economic growth to address unemployment, poverty and inequality together. The jury is still out, though, on whether there have been too many socio-economic frameworks and policies in too short a time, diluting the efficacy of implementation of each of them as each one was not sufficiently embedded before the next one was published. It became expensive and logistically difficult for education providers to align and reframe their responses and operations to these policies every five years.

Ready to govern (1990) to the Reconstruction and Development Programme (1994)

This policy framework is characterised by three major themes:

- improved labour markets through the creation of employment opportunities
- improved manufacturing and agricultural productivity
- structural reform of industries.

Growth, Employment and Redistribution: A macro-economic strategy for South Africa (1996)

In 1996, the South African government introduced a macro-economic policy framework called the Growth, Employment and Redistribution (GEAR) strategy to stimulate faster economic growth, which was required to provide resources to meet social investment needs. It is characterised by an increase in the country's growth rate, increased exports and job creation.

The Accelerated and Shared Growth Initiative for South Africa (2005)

Accelerated and Shared Growth Initiative for South Africa (AsgiSA) was prepared in 2005 and launched in February 2006. Its objectives were to introduce policies, programmes and interventions that would allow the South African economy to grow enough to halve poverty and unemployment between 2004 and 2014. Most organisations welcomed the AsgiSA initiative with its focus on identifying and unblocking the constraints on higher growth.

National Growth Plan (2010)

The National Growth Plan (NGP) emerged five years after AsgiSA, and a strong focus was placed on the financial aspects of an economic plan and workers' wages, which could hopefully energise the sluggish economy. Its key themes were building capacity to enhance the creation of employment within agriculture, mining and manufacturing, improving the wages of workers and improving domestic savings.

National Development Plan (2012)

The NDP has become an overarching framing policy document which aims to eliminate poverty and reduce inequality by 2030. According to the NDP, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state and promoting leadership and partnerships throughout society. In its design, the NDP departs from the previous growth plans in that it focuses on planning and implementation processes to address all sectors' responses to the overarching plan. The NDP is for the whole country, and the government engaged with all sectors to understand how they are contributing to its implementation and particularly to identify any

obstacles to them fulfilling their role effectively. The plan identifies the improvement of the quality of public services as critical to achieving transformation. This requires that provinces and local governments are able to fulfil their developmental roles.

The Economic Reconstruction and Recovery Plan – 2020[8]

The ERRP aims to build a new economy and unleash South Africa's true potential. The overarching goal of the plan is to create a sustainable, resilient and inclusive economy. The plan is organised in three phases: (1) a direct response to the health care crisis to save lives; (2) reforms and other interventions to restore the country's economic well-being while monitoring the health risk; and (3) building a resilient, inclusive and sustainable economy.

It focuses on the following priority areas:

- **Energy security:** Energy *demand* necessitates a further *diversification and strengthening* of the energy pool and capacity through innovation and efficiency.
- **Industrial base to create jobs:** The industrialisation through localisation objective focuses on certain local industries, including those sectors located in economically depressed areas. Priority will be placed on key value chains, such as in construction, agro-processing, health care, basic consumer goods, capital goods (including equipment and industrial inputs used in infrastructure projects), exports and transport rolling stock focusing on automobile and rail assembly component production.
- **Mass public employment programme:** The mass public employment plan cuts across clusters and spheres of government and builds on existing Expanded Public Works Programmes (EPWPs) and the implementation of the Presidential Youth Employment Intervention. In addition, mass employment opportunities will be created through social employment programmes, such as launching a campaign on 'War on Waste', building the circular economy, supporting the learning environment in schools as well as initiatives to support and expand small producers producing food for their own consumption and for local informal markets.
- **Infrastructure development:** The infrastructure delivery programme will prioritise network industries to support a long-term increase in the productive capacity of the economy with the potential to crowd-in

8. This section is drawn form Lloyd (2022b).

additional private sector investment. As part of prioritising infrastructure development for network industries, the modernisation of freight and public transport will receive immediate attention.

- **Macro-economic interventions:** The macro-economic framework required to support South Africa's Economic Recovery and Reconstruction Plan should be underpinned by effective coordination of fiscal and monetary policies as well as the mobilisation of other financing instruments to ensure that the plan is sufficiently funded while maintaining financial sustainability.
- **Green economy:** One significant component of a green economy strategy is to promote the development and adoption of sustainable technologies such as biodiversity and economy infrastructure rollout, inclusive of protected areas, support for SMMEs and cooperatives, support for small grower farmers through public-private partnerships (PPPs) in forestry (including in-state plantations), waste picker integration and revitalisation of buy-back centres and intermediary solutions for aquaculture products, as well as the revitalisation and upgrading of existing government hatcheries and research centres.
- **Food security:** Food security means availability, accessibility and affordability of food to all the citizens of the country at all times.
- **Reviving the tourism sector:** The tourism industry is a focal point for growth, able to absorb varying skill levels through employment. Industrial linkages of the sector have important implications for the general stimulation of South Africa's economy through the multiplier effect from the expenditure side. The government has developed a tourism recovery plan as well: 'In addition, specific interventions in sectors that have emerged as important areas of growth and employment will be made to strengthen the economic reconstruction and recovery. Interventions in the plan will be underpinned by the need to protect vulnerable workers, households and firms; build consumer, investor and public confidence; deepen industrialisation through localisation; pursue environmental sustainability, deliver quick wins; and continue providing relief to mitigate the impact of COVID-19. Ultimately, the end goal is to pursue and infrastructure led economic reconstruction and recovery with investment in infrastructure that will stimulate the various sectors of the economy. In the final analysis, the reconstruction and recovery plan seeks to build a South African economy that meets the needs of all its citizens. An economy that will create enough jobs for all who seek employment, provide equitable distribution of income amongst all South Africans and create a better life for all' (The South African Economic Reconstruction and Recovery Plan 2020, p. 4).

The District Development Model[9]

The DDM was initiated by President Cyril Ramaphosa in his budget speech in 2019. The president identified the 'pattern of operating in silos' as a challenge that led 'to lack of coherence in planning and implementation and has made monitoring and oversight of government's programme difficult'. The consequence has been non-optimal delivery of services and diminished impact on the triple challenges of poverty, inequality and employment. Subsequently, the DDM was discussed and adopted by Cabinet, the 2019 Presidential Coordinating Council (PCC), the March 2020 extended PCC and various Minister and Members of the Executive Council (MINMECs) committees.

The model consists of a process by which joint and collaborative planning is undertaken at local, district and metropolitan levels by all three spheres of governance, resulting in a single strategically focused one plan for each of the 44 districts and eight metropolitan geographic spaces in the country, wherein the district is seen as the 'landing strip' (Amajuba n.d.). Therefore, the model is a practical intergovernmental relations (IGR) mechanism to enable all three spheres of government to work together with communities and stakeholders to plan, budget and implement in unison, thereby (StatsSA report on Tourism 2022):

> The DDM is an operational model for improving Cooperative Governance aimed at building a capable, ethical developmental state. It is a method of government operating in unison focusing on the municipal district and metropolitan spaces as the impact areas of joint planning, budgeting and implementation. (n.p.)

It may be inferred that (Mahikeng Local Municipality 2020):

> In so doing the vexing service delivery challenges can also be turned into local level development opportunities, through localised procurement and job creation which 'promotes and supports local businesses, and that involves communities'. This will also require national and provincial departments provide implementation plans and budgets which address local challenges and developmental opportunities while aligning with national, regional, continental and global goals and objectives. (n.p.)

The objectives of the DDM are to:

- Coordinate a government response to challenges of poverty, unemployment and inequality, particularly among women, youth and people living with disabilities.
- Ensure inclusivity by gender budgeting based on the needs and aspirations of our communities at a local level.

9. This section is drawn from Lloyd (2022b).

- Foster a practical IGR mechanism to plan, budget and implement jointly in order to provide a coherent government for the people in the country, that is, the development of 'One district, one plan and one budget'.
- Build government capacity to provide support to municipalities by strengthening monitoring and evaluation at district and local levels.
- Exercise oversight over budgets and projects in an accountable and transparent manner.

The difference between the ERRP and the DDM is found in their aims. The ERRP aims to build a new economy and unleash South Africa's true potential. The overarching goal of the plan is to create sustainable, resilient and inclusive economy. The DDM aims to develop one plan that is meant to improve the coherence and impact of government service delivery with a focus on 44 districts and eight metros around the country as development spaces that can be used as centres of service delivery and economic development, including job creation.

The providers' response: A proposed model

The capacity-building workshops held countrywide in each province provided insights into the developmental history of skills development in South Africa and the numbers in quick succession of previous economic and social reconstruction and development plans. This was a proposed explanation to some of the challenges slowing the implementation of previous policy directives. The author suggests this is because of there being too many non-aligned 'moving parts' in non-aligned systems, which has resulted in very fragile implementation.

The main focus of the workshops was on what the ERRP and DDM comprised, what their aims were and what kind of response the education, training and skills development providers could develop to ensure credible and quality implementation of programmes and projects. The outcomes from these workshops and the proposed model are presented in the final section of this chapter.

Inputs from all providers at the provincial workshops

Four important questions were asked in the capacity-building workshops: firstly, which of the eight ERRP objectives would most likely be a strong focus in the province where the providers were situated; secondly, what drove the economic activity of the district and locale in which the providers were situated; thirdly, were there qualifications registered on the NQF,

if any, which could address the skills development needs to implement the ERRP and the DDM; and fourthly, was there an approach or model that providers could use to ensure maximum effectiveness and efficiency in implementing projects and programmes aimed at implementing the ERRP objectives?

Some assumptions underpinned the questions. Assumption one was that even though each province would work towards implementing programmes and projects in each of the eight ERRP objectives, the particular drivers of the economy in provinces would highlight some objectives as being a stronger focus in a specific province. Assumption two was that the ERRP objectives and provincial foci were underpinned by the district development focus areas and economic drivers. Assumption three was that the education and training providers were already involved in the delivery of qualifications or learning programmes to meet the previous and current skills development needs, but new qualifications and skills programmes would be required to meet the requirements of the ERRP and the Fourth Industrial Revolution (4IR) and Fifth Industrial Revolution (5IR) requirements.

In Table 6.2, the author has combined the responses from all the workshops based on input from the providers to populate the table's contents. The table provides a summary of the responses to the first three questions.

The proposed model

The capacity-building programme at the provincial workshops was intended for private education providers; however, a number of public TVET colleges and universities also attended and the inputs reflected in Table 6.2, as well as in the final model, contain private and some public providers' inputs. Through the capacity-building, it was hoped that providers would develop an understanding of the different layers of engagement with communities, local municipalities, districts and provinces in which they were located, as well as how they could implement projects and programmes in these areas to meet the implementation requirements of the ERRP and the DDM.

Two of the participants, on invitation from APPETD, proposed a model that was eventually adopted by provincial participants, which they believed would enable efficient, cost-effective and measurable design, implementation, monitoring and evaluation of projects and programmes. The model that was adopted emerges from an interesting approach used by the proposers of the model and is based on the concept that the Department of Defence (DoD) mirrors the government in its organisational structure.

TABLE 6.2: Economic Reconstruction and Recovery Plan objectives and inputs from provincial workshops.

ERRP objectives	Particular provincial foci	Particular district foci	Qualifications for skills development, reskilling, upskilling and multi-skilling
Energy security	Gauteng, Western Cape, Mpumalanga, Northen Cape, Limpopo and North West provinces	Johannesburg, Tshwane and East Rand (Gauteng); Cape Town and surrounds, West Coast area and Mossel Bay (Western Cape); Secunda and surrounds (Mpumalanga); Kimberley and coastal areas (Northern Cape); northern areas of Thabazimbi (Limpopo); and Rustenburg (North West)	Qualifications exist for traditional mining for coal and solar energy; however, new qualifications are needed for renewable energy sources such as wind, solar, crops for bioenergy production; nuclear energy
Industrial base to create jobs: • Industrialisation through localisation. • Focus on reduction in the proportion of imported intermediate and finished goods. • Improve the efficiency of local producers and develop export competitive sectors.	All provinces with a focus on construction; agro-processing; health care; basic consumer goods; capital goods, including equipment and industrial inputs used in infrastructure projects; and transport rolling stock focusing on automobile and rail assembly component production	Sectors located in economically depressed areas, jobs that can be created in large quantities, industries where South Africa already has existing capacity, and industries that can spark innovation	Qualifications must start to include the *beneficiation* of locally produced products and raw materials and the logistical requirements of exports and global markets. Skills programme development is important
Mass public employment programme: Supported by the Special Adjustment Budget. Focus on more direct investment in employment creation through public employment programmes and related measures, such as meeting community needs in areas such as infrastructure maintenance, the care economy and ecological services).	All provinces	All municipalities and metros	*New* or revised qualifications and skills programmes are required to meet skills needs for environmental programmes, small-scale farming, maintenance of municipal infrastructure, facilities, water and energy efficiency, construction of rural bridges, community health care work and nursing, community forestry, school assistants, entrepreneurs, micro-enterprises and BPO

Table 6.2 continues on the next page→

TABLE 6.2 (cont.): Economic Reconstruction and Recovery Plan objectives and inputs from provincial workshops.

ERRP objectives	Particular provincial foci	Particular district foci	Qualifications for skills development, reskilling, upskilling and multi-skilling
Infrastructure development: Focus on rail and ports and includes PPPs, local supplier industries, review of the PFMA and the MFMA and the establishment of Infrastructure South Africa	It includes, in particular, a focus on rail and ports infrastructure (Gauteng, Eastern Cape, Western Cape and KwaZulu-Natal provinces)	For rail, Mabopane in Tshwane (Gauteng) and Metrorail in Cape Town (Western Cape); Gqeberha for the Coega project (Eastern Cape); Buffalo City and Gqeberha (Eastern Cape); Durban and Richards Bay (KwaZulu-Natal); and Mossel Bay and Cape Town (Western Cape). Reinforce the municipal infrastructure support unit.	• Qualifications exist for the building of railway, harbour and road infrastructure, but these will need to be updated and revised to meet the requirements of the 4IR and 5IR and technology innovations that are being developed. • Skills programmes can be developed to 'kick-start' the process in the short term, which will eventually lead to qualifications. • Qualifications to enable the development of local supplier industries must be developed.
Macro-economic interventions: • Underpinned by effective coordination of fiscal and monetary policies as well as the mobilisation of other financing instruments to ensure that the plan is sufficiently funded while maintaining financial sustainability. • Important fiscal support programmes include the Sukuma Relief Programme and the South African Future Trust.	Impacts all provinces through the work of the SARB	Impacts all districts, municipalities and metros through the fiscal opportunities created through the SARB	Qualifications exist in the form of diplomas and degrees, but skills programmes need to be developed to grow knowledge and understanding of sound financial policies, approaches, budgeting and implementation of budgets and M&E. Financial fitness, budgeting and M&E should be included in school curricula as a compulsory component.
Green economy	Mpumalanga, Western Cape, Eastern Cape, KwaZulu-Natal and Limpopo provinces	State forest areas in the Western Cape, Limpopo, Mpumalanga, KwaZulu-Natal and the Eastern Cape provinces. Coastal areas for aquaculture, hatcheries, etc.	• Qualifications exist for forestry, hatcheries and aquaculture, but these need updating to include new technologies and new information related to the 4IR and 5IR. • New qualifications for aquaculture and green economy are required. New skills programmes (through the QCTO) must be developed to enhance existing qualifications and for skills development. • Introduction in school curricula through the development of content in school subjects.

Table 6.2 continues on the next page→

TABLE 6.2 (cont.): Economic Reconstruction and Recovery Plan objectives and inputs from provincial workshops.

ERRP objectives	Particular provincial foci	Particular district foci	Qualifications for skills development, reskilling, upskilling and multi-skilling
Food security: Driven by the Comprehensive Land and Agrarian Strategy	Food security includes all provinces, with specific foci, sometimes for industrial crops, such as cotton (Limpopo) and sugar cane (KwaZulu-Natal) and wool and mohair in the Eastern Cape and Western Cape provinces	Mainly the peri-urban and rural areas of the provinces. There is an increase in food gardens in urban areas and people are growing food on top of high-rise buildings as well.	There are a number of qualifications for agriculture and horticulture. More focus should be placed on curricula in understanding food production and food security. Skills programmes developed in conjunction with the QCTO which focus on new technologies, 4IR and 5IR implications, small-scale farming and community gardens and household food growing need to be developed. Introduction in school curriculum in one of the subjects.
Reviving the tourism sector: Driven by an envisaged Tourism Relief Fund, a Tourism Equity Fund and a Tourism Recovery Plan comprising three recovery phases: Protect and rejuvenate supply, re-ignite demand and strengthen the enabling capacity in the sector and the introduction of the e-visa programme and visa waivers.	Each province	All municipalities and districts, with a focus on the particular characteristics of an area, for example, historical and cultural importance, the growing film industry, edu-tourism (groups of people come to South Africa for a few months to learn a language, for example)	• Qualifications exist, but these need to be revised and updated to include new types of tourism and approaches to tourism. • Skills programmes to revise and refresh the hospitality standards set in all establishments, to meet the growing sophistication and quality needs of the local, continental and international markets.

Source: Lloyd (2022a).
Key: PPPs, public-private partnerships; PFMA, *Public Finance Management Act 1 of 1999*; MFMA, *Municipal Finance Management Act 56 of 2003*; ERRP, Economic Reconstruction and Recovery Plan; SARB, South African Reserve Bank; M&E, monitoring and evaluation; BPO, business processes outsourcing; QCTO, Quality Council for Trades and Occupations.

The DoD is the only government department that has*, inter alia*, fully functional 'departments' for medical, police, security, infrastructure or engineering, energy, communications, education, innovation and science and services. Each of these departments within the DoD uses the macro strategic planning areas used by the government to develop the macro government plans and budgets. What sets the DoD apart in their design and development is the focus on logistics, demand and supply and communication, which are essential 'ingredients' in any defence situation, from theatres of war to rendering essential support in times of natural disasters in a country or attempted political insurrections.

UPI Programme for Sustainable Developmentand Empowerment Model (Tourism)

Assets	Unemployment	Poverty	Inequality
Manpower	• Managers • Skilled, semi-skilled and unskilled formal and informal training • Professionals	• Skills in high demand • SETA workplace skills plans • Critical skills list • Company development plans • Org HR requirements • Priority areas, ERRP enablers, DDM Model NSD I,II,III • White Paper for PSET • General regulations • Address the skills mismatch and train the required skills	• Achievable equity targets • Fair and equal opportunities for all • Fair recruitment and selection • Increase placement opportunities • Train in relevant skills to meet demand

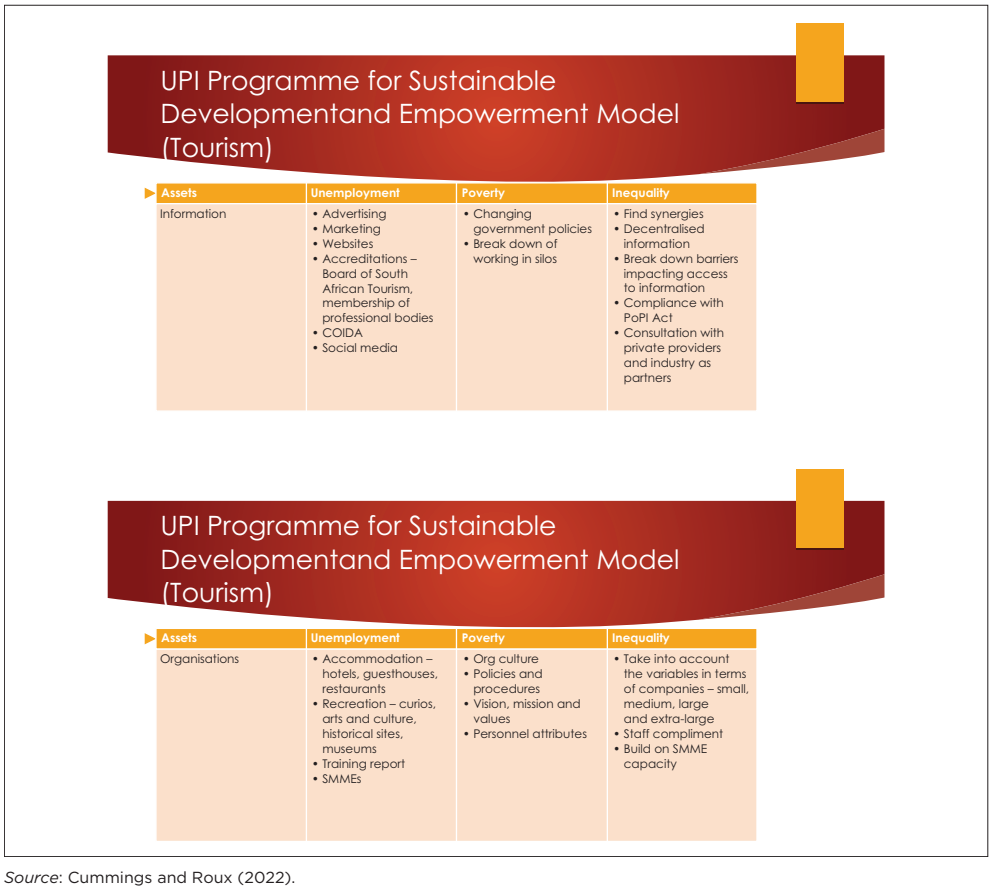
UPI Programme for Sustainable Developmentand Empowerment Model (Tourism)

Assets	Unemployment	Poverty	Inequality
Finances	• Capital • Public funding • Private funding • Tax incentives • International investors International and local guests • Tourism levy-funded projects • Mandatory and discretionary grant funding (SDL and NSF) • Business rejuvenation • Public/private partnerships • Salaries and stipends	• Ethical conduct • Accountability • Counter-corruption measures • Allocation of funds to both public and private training providers • Collection of levies • Market-related remuneration • Resilient and inclusive economic plan	• Review of salaries and wages • Regular review of working conditions • Ongoing changing environment • Efficient allocation of funding to all qualifying bodies/ SDPs/training providers • SETAs to consider the private sector as a specific partner when allocating grants

UPI Programme for Sustainable Developmentand Empowerment Model (Tourism)

Assets	Unemployment	Poverty	Inequality
Logistics	• Infrastructure • Transport – road, Air, inventory storage • Health and Safety compliance • Electricity • Malls • IT resources • Technology • Energy sources • Water and sanitation • COIDA, UIF	• Stable and available power and water supply • Stable and available resources – connectivity and communications • Stable and available fuel resources • Accessibility to port of entries	• Support to private providers to be inclusive • Simplify the accreditation process

Figure 6.4 continues on the next page→



Source: Cummings and Roux (2022).
Key: SETA, Sector Education and Training Authority; Org, organisation; HR, human resources; ERRP, Economic Reconstruction and Recovery Plan; DDM, District Development Model; NSD, national skills development; PSET, post-school education and training; SDL, Skills Development Levy; NSF, National Skills Fund; IT, information technology; COIDA, *Compensation for Occupational Injuries and Diseases Act 130 of 1993*; UIF, Unemployment Insurance Fund; PoPI, *Protection of Personal Information Act 4 of 2013*; SMMEs, small, medium and micro enterprises.

FIGURE 6.4: Microsoft PowerPoint example of the provider's Economic Reconstruction and Recovery Plan implementation model.

The model is known as the *Model for Sustainable Development and Empowerment* (Cummings et al., 2022), and the lens of unemployment, poverty and inequality is used to overlay each aspect of the model. The model proposes that the providers need to approach the development, design and implementation and delivery of any learning programme for the ERRP and the DDM not only as a curriculum or qualification development activity, but they must include a brief theory of change or reframing 'reflection', then consider the issues of the social and environmental and community impacts of an intervention (similar to the Social, Environmental Impact Assessment System [SEIAS]) and then consider what finances, people and their training or skilling, logistics, assets and information or

communication infrastructure will be required. In order to address the specific South African context, the model must be developed through the lens of unemployment, poverty and inequality. It is not usual in the design and development of qualifications, skills programmes, learning programmes or curricula for the developers to consider each of these aspects during the development process. Even policy developments have previously not sufficiently taken care of the importance of all logistical aspects of implementation during implementation monitoring and after-event evaluation. An example from one of the groups using the ERRP tourism objective is presented further in the text, which demonstrates how they considered some of the elements in the model underpinned by the impact on poverty, unemployment and inequality.

Conclusion

In this chapter, acknowledgement has been given to the global devastating effect of the COVID-19 pandemic on every part of economic and social activity. The dire warnings issued by the Secretary-General of the UN, António Guterres, in the Sustainable Development Goals Report 2022 and other realistically pessimistic views about economies, societies and education were heard and understood. The call to action by the UN (2022), the OECD (2020) and scholars such as Fullan et al. (2020) was heeded, and green shoots of post-pandemic recovery were seen everywhere. Through the historical overview of skills development and reconstruction plans, it became apparent that South Africa has strong underpinning policy frameworks expressed through its modern, innovative and socially and economically responsible acts, regulations and policies to guide socio-economic growth and recovery. With that being said, it is also acknowledged that inefficient or ineffective approaches have hampered effective and impactful implementation, with insufficient monitoring and evaluation at the end of a programme. It emerged through the capacity-building workshops that a number of gaps existed and that the severity of the COVID-19 pandemic and its global impact on every sphere of socio-economic and political well-being had highlighted these 'fault lines'. These gaps were identified as a possible 'missing link' in the government's understanding at all levels about the role and function of education providers who are effectively 'first responders' to the development of the knowledge, skills and competency bases in the supply of people to address the demand in all the economic and social sectors and support economic reconstruction and development. Knowledgeable and skilled people are essential 'components' of any implementation plans of any government strategy or plan. Without quality qualifications and skills programmes, quality-assured learning and teaching and credible and enabled providers, the full impact and benefit of any plan or strategy will not succeed as

envisaged, to the detriment of the South African economy, society and communities. The importance of the role of education providers to supply skilled, knowledgeable and capable people to work in an ever-changing and diverse future of work and technology-driven contexts must be included in the government's thinking and plans from the outset. Recognising the *first responder role* of education providers has become an intrinsic part of successful implementation and fruitful social return on investment of any strategy and plan.

Acknowledgement

This work draws from (with suitable reworking) the author's previously published work (Lloyd 2020).

Chapter 7

Measuring the impact of COVID-19 on local economic development by exploring shifts in financial market behaviour

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Abstract

This chapter examines the relationship between art market sentiment and financial market performance during the early stages of coronavirus disease 2019 (COVID-19). A specialised art market sentiment index was developed in this article and is analysed against a selection of international financial market indices. COVID-19 influenced financial market behaviour by shifting a portion of financial market investment into the art markets, used by some investors as an alternative investment strategy. Such investment spurred local art market development. This chapter uses data collected from the Twitter (X, formerly and commonly called Twitter) application programming

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interface (API) and applies Valence Aware Dictionary for sEntiment Reasoning (VADER) to determine the sentiment scores. Additional analysis of the text collected was carried out using a Latent Dirichlet Allocation (LDA) model. The results show that changes in art market sentiment as an alternative investment opportunity induced by changing financial market behaviour may impact local art market development by stimulating art markets. The sentiment analysis proved to be statistically robust. Investors hedging risk into the art market inadvertently induce local economic development (LED) through changing behaviour patterns within the financial markets.

Introduction

The COVID-19 pandemic has had a stark effect within the primary and secondary art markets. Auction houses rapidly adapted to digital platforms to promote and sell artwork after the lockdown on public events. While COVID-19 severely affected the global art market, it also forced the art market into an unprecedented digital revolution (Artprice.com 2020a, 2020b). The rise of digitalisation and the rapid diversification of investment portfolios caused a market change, which has facilitated art investment across the world. In 2020, the COVID-19 pandemic grew rapidly and unexpectedly became a global market crisis; without losing much momentum, it continued to impact markets well into 2021. COVID-19 took countless lives and created intense pressure on trade networks, government administrative systems and health structures (United Nations Conference on Trade and Development [UNCTAD] 2020).

The art market was also greatly disrupted by the impact of COVID-19 (Jei 2020). However, the art market proved to be more resilient during the pandemic than during the 2008 financial crisis – in 2020, the global fine art auction turnover dropped just under 21%, compared to the 36% drop in 2008 (Artprice.com 2020a, 2020b). Of growing interest is the manner in which art is traded through digital platforms. Digital platforms have altered not only the content of the visual arts but also the manner in which art is invested in and how the value is transferred. Most art institutions and artists are now using specialised servers and online agents that incorporate vast databases (Arora & Vermeylen 2013).

Art market indices usually use these databases to calculate sentiment using auction historical sales and prices that are weighted to reflect different styles and forms of fine art (Artprice.com 2020a, 2020b). However, Filipiak and Filipowska (2016) argue that there is no agreement on an ultimate and robust method to measure overall art market performance as the equations used to develop market indices can yield incomparable results and selection bias. In the 2021 Artprice Global Index

Report, Novakocic (2021) claims technological shifts were prominent within the 2020 global art market. This resulted in new and incumbent digital platforms that linked global markets together, accelerating the transition into a virtual economy; the online art market doubled in value within the year (McAndrew 2021).

Trade in creative goods is a very powerful driving force for an economic region. Its contribution to the gross domestic profit (GDP) and share of global trade is only likely to increase as it intersects with the digital economy and e-commerce, with many opportunities emerging from the developing regions (UNCTAD 2018). This chapter aims to investigate the relationship between financial market performance and art market sentiment at a time when markets came under severe pressure because of the market shock induced by COVID-19 engulfing the global economy. Given the growing role of social media, this chapter estimates art market sentiment by analysing sentiment expressed in social media using the Twitter API.

This chapter contributes towards the field through the approach that has been used to explore the perceived art market sentiment during the early onset of COVID-19 between December 2019 and April 2021 and examines the relationship between art market sentiment and a selection of global financial market indices. Ultimately, this chapter outlines the trend and the relationships between financial market performance and art market sentiment, which is then used to estimate the nature of the art market as an alternative investment during times of economic stress.

Background

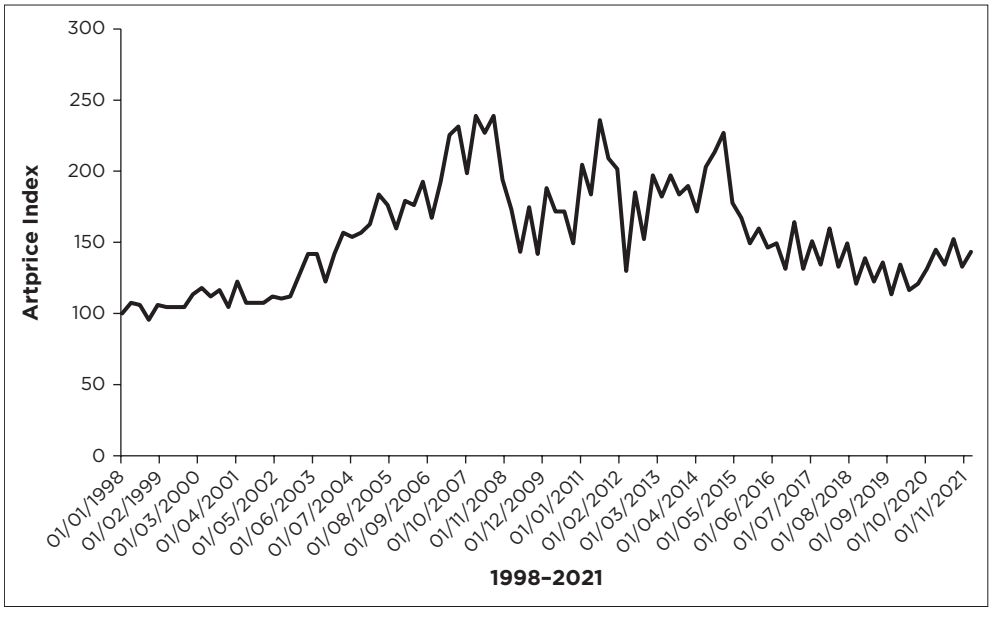
Because of its propensity to retain value, art can serve as a substitute for traditional investment assets and has many appealing attributes as an investment item. Such assets are chosen by some investors to diversify portfolios while reducing market risk. As the global economy began to falter under the influence of COVID-19, investors explored alternative investment bundles to seek out portfolio diversification strategies. However, post-2020, many financial markets continue to be impacted by the influence of the COVID-19 virus (Redmond 2021). Investment into alternative assets is increasing, such as private equity[10] and infrastructure, which has grown from US$3.1 trillion in 2008 to US$8.8tn in 2017 and is forecasted to grow to US$14tn by 2023 (Burgess 2020).

While COVID-19 severely affected the global art market, it also forced the art market into an unprecedented digital revolution (Artprice.com

10. Private equity is the ownership or interest in an entity that is not publicly listed or traded (Segal 2020).

2020a, 2020b). The rise of digitalisation and the rapid diversification of investment portfolios necessitated a market change to facilitate continued art investment across the globe. Yet, the level and extent of the recovery of the Artprice Global Index remain sluggish because of the impact of COVID-19. The Artprice Global Index (see Figure 7.1) is measured in quarterly data and offers a good indication of global art market trends. However, it must be noted that the primary purpose of calculating the Artprice Global Index is to measure the art sector's financial performance, indirectly evaluating the diversification of a potential portfolio and analysing the trends within the market.

Art market indices are primarily used to describe market trends, measure volatility and flag economic events influencing the art market. An art market index operates differently from a conventional financial index as the methodologies used in typical financial markets are generally not applicable to non-homogeneous goods, such as art. Reservations thus need to be applied to such an index; it would be of little use to a potential investor as the art market is a combination of several interdependent markets, each with its own characteristics. Therefore, it was reported that it is not attractive to invest in a broad portfolio of paintings because of the extent of uncertainty in the market (Charlin & Cifuentes 2017). Yet, if a low correlation of returns exists between various art markets, diversifying



Source: Econometrics@Artprice.com (2021).

FIGURE 7.1: Artprice Global Index, quarterly data, 1998–2021 (base 100 in January 1998).

across these markets may allow investors to reduce portfolio risk while holding expected returns constant (Worthington & Higgs 2004). Another view suggests that directing portfolios to specific styles of art or investing in top-selling artists may add value to portfolios (Kräussl & Wiehenkamp 2012) by mitigating some of the uncertainty within the art market.

Open data sources are available via digital platforms to provide additional high-quality data collection and analysis avenues, yet there is no set pricing standardisation and clear-cut transparency within the market. Art fund managers rely on Mei/Moses Fine Art Index, Artprice.com or art market research (Mamarbachi, Day & Favato 2008), but these indices, while widely used by portfolio managers, have not been fully incorporated into formal rating agencies. The increasing popularity of social media, such as the rising interest (reflected in the number of mentions on social media) in intangible goods as investment items, is measurable by applying certain tools, including machine-learning, to monitor trends and analyse the impact of investment decisions in art as an alternative form of portfolio diversification (Filipiak & Filipowska 2016).

Shared market opinion has grown in volume as digitalisation moved the global art market online. In addition, shrinking national budgets for art institutions, a significant increase in the number of museums and competition and the general increase in demand for cultural activities have made social media adoption necessary (Arora & Vermeylen 2013). Evolving digitalisation and the use of technological innovations also create greater engagement for existing and new market players (Marr 2018). Thierry Ehrmann of Artprice.com (2020a, 2020b) mentions that, with the outbreak of COVID-19, the level of innovative marketing displayed within the art market grew more rapidly within the private sector than in public institutions (Ehrmann 2020). This innovativeness was apparent in the digital sector, as the art market laid new platforms from which to build a wider infrastructure. This allows platforms such as Twitter to distribute more information on art, artworks, artists and current or previous ownership of art, thereby enhancing market credibility and increasing market transparency (Cipollini & Bonomi 2019).

Investment into the art market

In 2020, Patrick Lawlor of Investec reported that investors increasingly look at the art market (and other collectables) as an alternative to traditional investment assets (Lawlor 2020). The United States of America (USA) maintained its position as the largest art market globally, with 44% of the global market share in 2019. The United Kingdom (UK) followed with 20%, and then China with 18%. Art is considered an asset class that holds its

value; across all collecting categories, art has a stronger positive correlation with the price of gold than with other asset classes.

The portfolio value of an investment is entwined with the effect of selection bias, the potential of overstating returns and understating risks associated with the art trade (Lawlor 2020). However, because of the high levels of subjectivity (a work of art has no specific method of quantifying its value), it has no more value in monetary terms than the materials from which it is constructed. This pricing subjectivity means it is more challenging for 'experts' to ascribe a 'real' value to the artwork being invested in. This high subjectivity that is built into the index also makes it difficult for the investor to hedge against such an index.

The problem of liquidity challenges this notion; while a commodity can be converted back to a liquid asset rather rapidly, an art investment may take some time to be re-auctioned, and there is no guarantee of the price or return that an investor may receive in the primary art market. The question of why art is chosen as an investment is attributed to factors beyond the market fundamentals or even that of the singular 'profit' motive (Baur & Els 2015), creating the possibility of psychic returns.[11]

As a result, measuring the psychic return of art investments is an ongoing concern in cultural economics (Candela, Castellani & Pattitoni 2013). Investments in financial assets typically yield only a financial return, while the investment and possession of art could yield both a financial return and a psychic return from the pleasure and social esteem associated with owning art. The psychic return is a function of taste, preference and the sheer enjoyment of collecting something that may be perceived as having value beyond price. However, information is required in order to mitigate the risks associated with the cultural artefact (Baur & Els 2015), which lies beyond psychic returns.

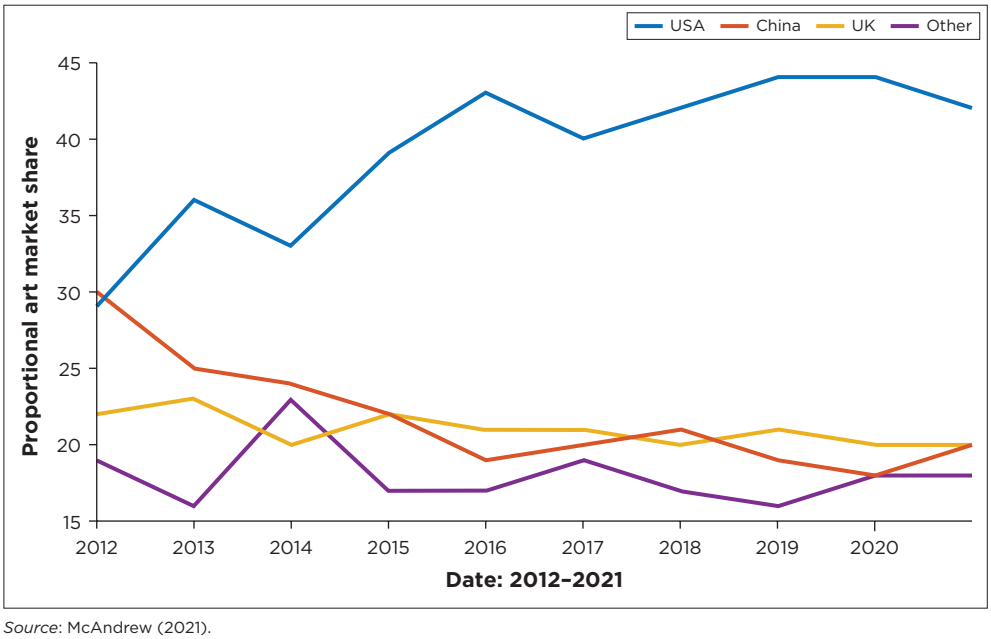
Many investors in art rely on information provided by institutions such as Sotheby's and Christie's, which manage such information. Well-known works of art are auctioned more frequently as owners look to gain large profits on them, and auction houses typically only place items on sale which they believe will generate profits (Lawlor 2020). The COVID-19 pandemic forced many auction houses to suspend live auctions for much of the year, and online-only auctions and other new formats took a more central role. The move to digital channels was already well underway before 2020 and the auction sector was generally deemed to have made

11. Psychic returns include, but are not limited to, aesthetic returns and any other prestige and complementarity effects. In other words, psychic returns are those returns given to an object of art which offers a return to the investor beyond the material from which it is constructed. As such, art can be seen as a superior consumption good (Atukeren & Seçkin 2007).

significant progress on this front in recent years, more so than dealers. Also, with restricted capacity, some of the major auction houses experimented with new online formats (McAndrew 2021), and by 2020, reliance on the Internet was higher than ever. Even galleries that did not partner with an online art marketplace still reported digital channels as their top source of sales in 2020. Galleries are, therefore, also becoming more confident in their online strategies – 48% of galleries were confident in their online strategies in 2019, while in 2020, that number increased to 54% (Artsy 2021).

In the last decade, the USA made enormous contributions to the overall art market performance (see Figure 7.2). The United States (US) market retained its principal position in the global art market between 2011 and 2020, while the Chinese art market lost much momentum during the same period but remained a significant competitor in the art market. Significant sales at the upper end of the auction market helped China to remain on par with the UK statistically. The UK retained a weakening share of global sales, amplified by COVID-19 and a difficult BREXIT from the European Union (EU).

Though it was predictable that the art industry would see a reduction in art gallery sales in 2020, the increase in sales through social media was unexpected. Many artists who may not have traded through the formal



Source: McAndrew (2021).

FIGURE 7.2: Global art market share, 2011–2020.

market infrastructure, such as art galleries, began using social media as a means of marketing their work. This did not stop the galleries from using the same mechanism. It was determined that an average gallery's marketing budget for social media increased by 92% from 2019, and social media ranked third in the top sales channels. Art markets reported that their preferred sales tactics to trade art on social media in 2020 included organic posts, stories and direct messages such as Twitter (Artsy 2021).

Methodology

In support, the UK Economic and Social Research Council (ESRC) claimed that Twitter has become increasingly popular with academics, students, policymakers, politicians and the general public. Twitter is deemed one of the world's most popular digital platforms (Forsey 2019) from which to transmit information. Moreover, increasing transparency within the art market could be synonymous with the transfer of information, access to information and availability of such information in the art market (ESRC 2021). According to Forsey (2019), Twitter's primary purpose is to connect people and allow them to share their ideas with large audiences. Since its launch, Twitter has developed into one of the world's leading distributors of information on social and topical events (Zeevi 2013).

Market sentiment was collected from a social media platform using the Twitter API for a range of art market topics, specifically focused on the art market, art price, art investment and art trade. The data for this chapter were collected from 14 December 2020 to 22 April 2021 (a total of 130 days), and 157,000 tweets were analysed. The time frame explored in this analysis was to highlight the shift in art market trends as COVID-19 began to have an impact on financial market behaviour. From May 2021, financial market recovery occurred across different markets at different rates, given the regional social, economic and political climate. A specialised sentiment intensity index was developed and analysed. The base period used in the index was set to 01 January 2021. The sentiment analysis was correlated against a selection of international financial market indicators across different financial markets globally. These indices include the Deutscher Aktien-Index 30 (DAX), Dow Jones (DOW), Nikkei 225 (NIK), Standard and Poor's 500 (S&P 500), Hang Seng (HANG), Cotation Assiste en Continu (CAC), Johannesburg Stock Exchange (JSE), Dow Jones Shanghai (SHANG) and Morgan Stanley Capital International (MSCI) world index. The international gold price in US Dollars (US$) was also used in this analysis.

The approach for this chapter was based on a study by Khan et al. (2021), who analysed social media. The process applied included data extraction, data pre-processing and topic detection. A sentiment score

was established using the VADER approach.[12] It should be noted that the analysis was limited to Twitter, using an API that is a set of programmatic endpoints used to learn from and engage with conversations on Twitter. This API allows researchers to find, retrieve and engage with the data (Twitter 2021).

Moreover, language is a major factor in sentiment analysis because of significant differences in lexicons, syntax and semantics among languages (Antonakaki, Fragopoulou & Ioannidis 2021). All available 'English Language' tweets were collected between December 2020 and April 2021. It should be noted that beyond language, there was also the possibility of evaluating 'psychometrics'. Psychometrics is a family of methods that attempt to assess various psychological traits among users based on the activity and content of their online profiles. In cases where this research focused on 'happiness', the term 'Hedonometrics' is also used (Antonakaki et al. 2021), but this falls outside the scope of this chapter.

Once the data are imported and cleaned, stemming, word tokenisation and data normalisation are applied. Data cleaning filters and modifies the data, making it easier to explore and understand by removing unnecessary data and any duplications. Normalisation changes slang linguistic jargon into commonly used terms, stemming converts past tense verbs into present tenses and tokenisation creates tokens in relation to the assigned roles in a sentence, for instance, adverb, noun, suffix, verb and adjective (Khan et al. 2021).

The sentiment data analysis was carried out using correlation criteria, factor analysis and a LDA model. The LDA model is a 'topic model' that explores underlying topics in a collection of documents and infers word probabilities to the words within the documents in order to extract individual topics. These topics can then be analysed collectively and independently. In other words, 'topic modelling' refers to the extraction of abstract 'topics' from the collection of responses made by participants during data collection.

According to Nguyen (2014), LDA can also augment the inputs to machine-learning and clustering algorithms from documents. It is a generative model using machine-learning applied to text data analysis. This text analysis process attaches topical content to text documents, and each document is viewed as a mix of multiple distinct topics. An advantage

12. The process of data extraction is done using R, where four independent searches are calculated weekly and stored as daily data. Data pre-processing, topic detection and a sentiment score is established using VADER approach using MATLAB (2021) software. This is then used to develop a sentiment score and add visuals to individual topics with word cloud techniques. Hutto and Gilbert (2014) report that the VADER lexicon performs exceptionally well in the social media domain.

of the LDA technique is that one does not have to know what the topics will look like in advance. By tuning the LDA parameters to fit different dataset shapes, one can explore the topic formation[13] and resulting document clusters (Nguyen 2014).

However, the LDA methodology is not without criticism. The fundamental problem often cited is that the assignment of topics to each of the collections of words within the documents may not appear to be sensible. Sometimes, the topics themselves are extremely challenging to describe in a semantically meaningful way – they often appear as arbitrary lists of words (Kulshrestha 2019).

The choice of using Twitter data for this study

Twitter is a social networking site launched in 2006 by Dorsey and Williams, which experienced exponential growth post-2007 (Forsey 2019). Twitter is a 'microblogging' system that allows users to transmit short posts called 'tweets'. Tweets can be up to 140 characters long and include links to relevant websites and resources (ESRC 2021). Today, Twitter is undoubtedly one of the most popular social media platforms available, with 100 million daily active users and 500 million tweets sent daily (Forsey 2019).

Tweets may contain photos, videos, quotes and article links, among others. Each tweet can also have replies from other individuals, creating real-time conversations around specific topics, breaking news and new content. Vanam and Retna Raj (2021) mention that a benefit of this platform is the large diversity of people who use the microblogging site to comment on various topics, making Twitter a valuable source of information expressed by a wide audience, from celebrities to presidents. Text messages from various social and interest groups can also be downloaded from users worldwide (Vanam & Retna Raj 2021). Twitter differs from point-to-point messaging systems, such as emails, by providing a one-to-many interface for rapid content delivery and searching. This open networking environment has also led to an entire ecosystem being built around the Twitter platform, coined the 'Twitterverse' (Zeevi 2013).

The process adopted by 'tweeting' is similar to a causal-chain framework that is used to express the inter-relationships of different research dimensions and constructs that link to causes and the results of user behaviour in the adoption of social media. This framework is based on an input–moderator–mediator–output model (Ngai, Tao & Moon 2015).

13. Typically, the LDA model is unsupervised by nature, hence it does not need predefined dictionaries. This implies that it finds topics automatically and it cannot control the kind of topics it finds. However, it could be extended to a supervised model, and for the purpose of this study, the analysis used a supervised process of model training.

According to Antonakaki et al. (2021), the study of Twitter trends provides valuable information on the importance of the duration and impact of real-world events. Twitter remains one of the most popular platforms for academic research, and it provides its data via several APIs. While it may not be possible to access information from all social media platforms, Twitter still offers valuable qualitative and quantitative research material (Ahmed 2019).

Social media, such as Twitter, are also faced with many socio-psychological challenges (Ngai et al. 2015) that should be considered within research. Firstly, information is linked to people's personal experiences, opinions, thoughts and ideas in various modes (Khan et al. 2021). Given the socio-psychological element and limited word count, it is sufficient to establish an objective opinion (Forsey 2019). Future research may include the adoption of concepts related to ontologies of the semantic web, which should establish ample, structured and extensible sets of characteristics. Because of the increasing use of social media platforms among art collectors, it also seems reasonable to include these data sources in art market research (Filipiak & Filipowska 2016).

Second, individuals may choose to follow people and organisations with similar academic and personal interests. However, organisational orientation, social power, cultural differences and the impact of social media (Ngai et al. 2015) could distort information in the production of new tweets or remove context in the process of 'retweeting' (forwarding) information (ESRC 2021).

Finally, natural and imposed technological limits are implemented via a social media platform or API. These include data restrictions or technological barriers, such as the large computational requirements to process the data. To put this into perspective, the computational complexity requires 10^{20} calculations for a sufficient sample size, and accurate modelling therefore remains questionable (Antonakaki et al. 2021).

Sentiment analysis

One of the most promising methods for content analysis in social media is sentiment analysis (Antonakaki et al. 2021). Sentiment analysis is also one of the most popular fields in natural language processing (NLP) that can be used in conjunction with machine-learning to extract opinions from text data. This process transforms large-scale unstructured text data into structured and quantitative measurements of sentimental opinions expressed through the data. Sentiment analysis is applied to monitor the sentiment trend in social media, news and blog articles (Ma 2020).

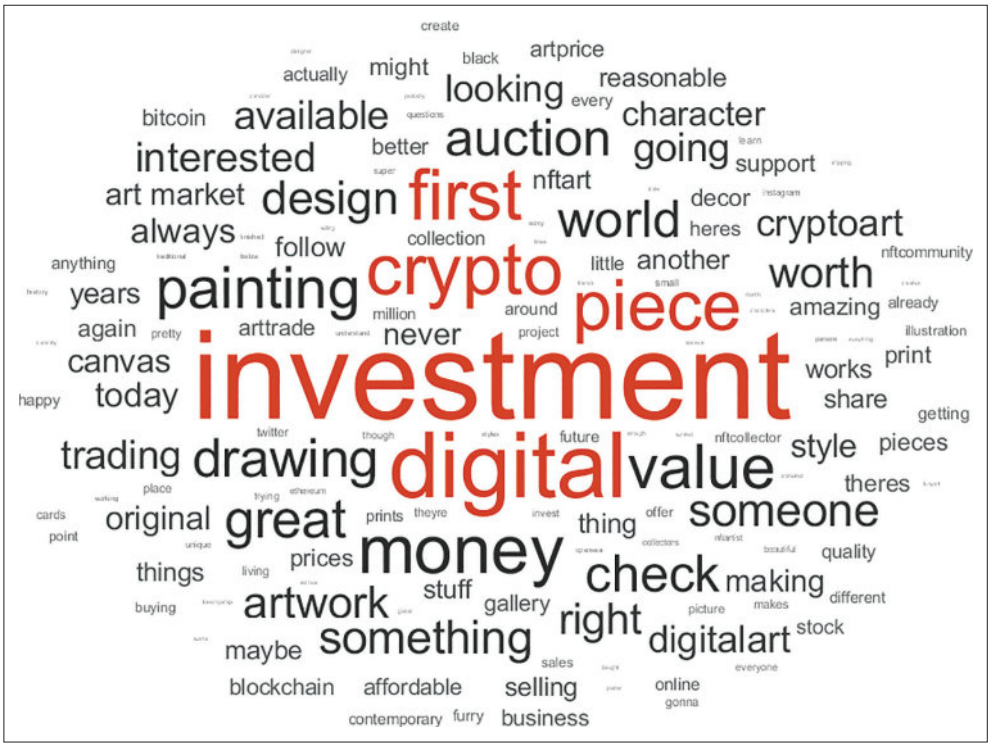
Sentiment analysis, sometimes referred to as opinion analysis, is also conducted to estimate the 'emotions' expressed within the collected and analysed data (Lexalytics 2020). Sentiment analysis[14] is useful when analysing the influence of uncertainty within a market or across markets over a period of time. During periods of market uncertainty, the market may show 'negative' sentiment, proceed as if good news were forgotten and exaggerate negative news. Conversely, during periods of market growth, the market may appear to have a 'positive' sentiment, with certain investors even becoming risk seekers and overbuying risky assets, pushing asset prices higher than usual. Thus, market sentiment may partially justify large and unexplained changes in the valuation of risky investments during market uncertainty (Dupuy 2009).

'Sentiment' is a view or opinion that is held or expressed within a contextual framework and can be determined from a phrase or words used in discussions. In sentiment analysis, the term 'valence' is usually taken to mean 'contextual polarity' and is quantified through a process into a value. Each of these variables can take a range of values, allowing for multiple sentiments to be assigned to a single word. This means that certain words can have both positive and negative sentiments. Moreover, we can generate additional 'meta-features' based on these values, namely 'subjectivity' and 'polarity'. Subjectivity is the ratio of 'positive' and 'negative' scores, while polarity is the ratio of 'positive' to 'negative' scores derived from the words used in the analysis (Antonakaki et al. 2021). Figure 7.3 lists the top 20 quoted words derived from the art market analysis.

It is evident from Figure 7.3 that 'art & investment', 'art & digitalisation' and 'art & crypto' are key terms identified in this analysis. While both investment and digitalisation have been discussed briefly, 'crypto' requires some clarification. The crypto art market relies on transferring unique non-fungible tokens (NFTs). This is an early approach to organising underlying block-chain technology to be used in transferring unique digital assets. The crypto art market has developed rapidly to include artists who are using new technology platforms to tokenise their artworks and sell them to a 'new generation' of art collectors. These platforms have been described as lowering the entry barriers for artists to create and collectors to buy and sell tokens representing digital artworks (Hencz 2021).

This study applied supervised machine-learning to the collection of data to 'cluster' words into either a positive or negative sentiment. 'Clustering' is the process of organising a set of data into groups (Pownall 2005) so that

14. Sentiment analysis, or 'opinion mining', is a natural language processing technique used to determine whether the text data is positive, negative or neutral. There are many electronic platforms from which to conduct market sentiment today, and in some cases specialised lexicons are created to process such data.



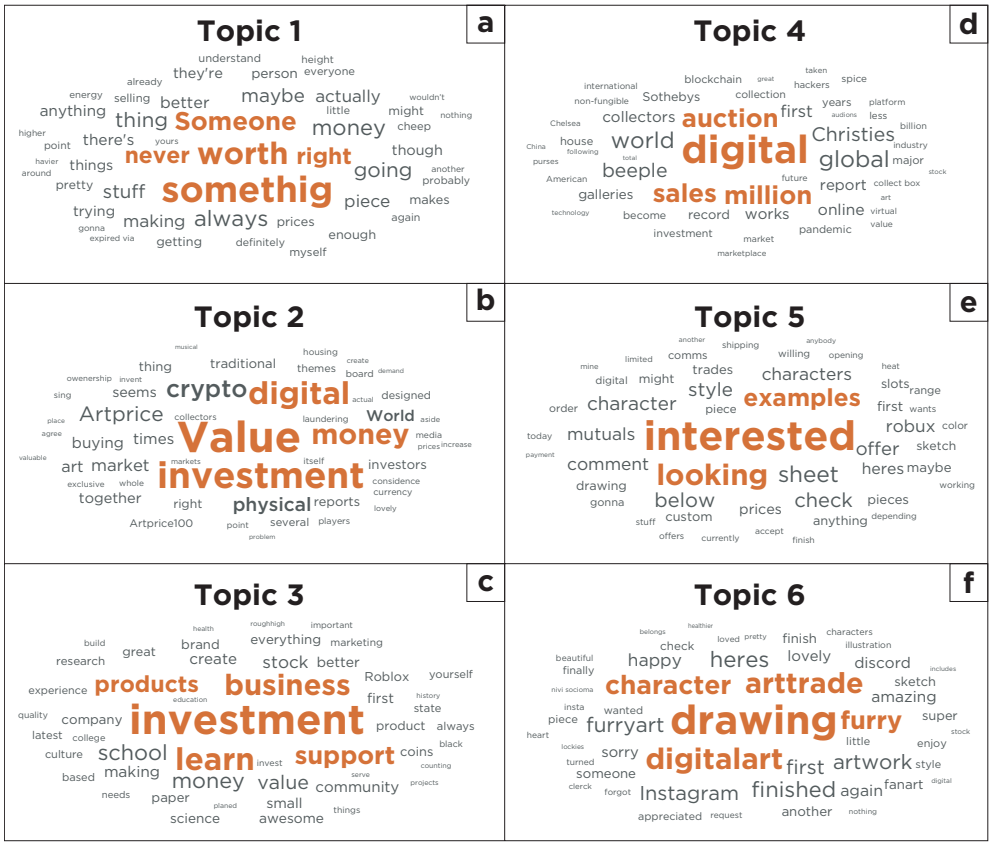
Source: Derived from Twitter API (2021).

FIGURE 7.3: Word cloud representing the top sentiment expressed in the social media in this analysis on art market sentiment.

observations within a group are more similar to each other than they are to observations belonging to a different cluster (Martinez & Martinez 2005). The results generated in this analysis revealed several topics that determine the motivation supporting the decision-making process. Sixteen individual topics were identified using machine-learning, and six topics displaying the greatest probability in order of highest to lowest are presented here as 'word clouds'.[15]

As presented in Figure 7.4, Topic 1 refers to seeking 'value', both financial and intrinsic, yet also unique to the individual making the transaction. This moves the object from being purely profit-driven and highlights the importance of psychic value. According to Velthuis (2002), pricing is not just an economic act, but also a signifying act. Prices are considered symbolic, and markets thus manage to express a range of cognitive and cultural meanings through price-setting behaviour.

15. A word cloud is a visual representation of the words used in a particular piece of text, with the size of each word indicating its relative frequency. Word clouds (also known as text clouds or tag clouds) are a collection or cluster of words depicted in different sizes.



Source: Derived from Twitter API (2021).

FIGURE 7.4: Word cloud art market sentiment using Twitter application programming interface on the global art market.

Topic 2 indicates that while the concept of psychic value is still relevant, the investment should maintain some focus on future gain. Worthington and Higgs (2004), Mamarbachi et al. (2011) and Jegadeesh et al. (2015) mention that gains from portfolio diversification are an important component of the decision-making process and play a significant role for all stakeholders, from investors, collectors and museums to dealers, traders galleries and auction houses.

Topic 3 shows that, for the investor, shifting or transferring investment into the art sector is a slow and gradual process. The level of uncertainty and lack of sufficient information, mainly due to institutional influence, means the decision to invest in art is one that is framed by the value of the information the investor has at their disposal. It is not so much the quantity of information that is important but how reliable and valuable that information is to the investor. This is very specific to the investor making

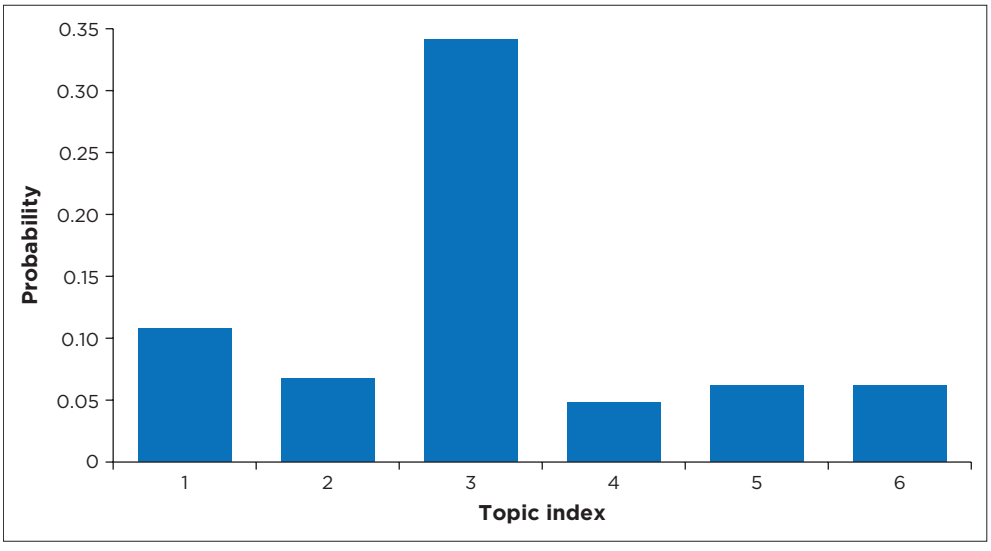
the investment decision (Baur 2017). Baye et al. (2003) claim it takes time for the investor to adjust, and the rate of adjustment is slow because of the digital divide. This is observable in the role of digital currencies or the structure and nature of crypto art into which the investor may wish to diversify.

Topic 4: Auctions allow individuals or companies to sell their goods efficiently and with little action or effort required (Turban 2007). This alludes to the importance of a digital platform from which to drive investment, and further motivates a profit motive for investing in the art market by using a digital platform. The Art Market Report (2019) highlighted the importance of the digital platform pre-COVID-19. It was also reported that online platforms had been the greatest entry point for new art buyers (McAndrew 2021).

Topic 5 and Topic 6: Social media remained an important tool for building brand awareness (McAndrew 2021). Despite the rise in sales facilitated via social media, it appears social media is primarily used in the online sector as a wide-ranging marketing tool, igniting interest in offline experiences and sales while generating market confidence in the art market by providing information to the sector. This also feeds directly into topic 6, emphasising that many other new and promising technologies (beyond block-chain) are being used to enhance the online buying and selling experience in the art market. These include both virtual reality (VR) and augmented reality (AR)[16] approaches offered in the virtual media space.

Figure 7.5 highlights the probability of each topic appearing within the text. Topic 3 appears to have the highest probability, indicating art as an investment utility. Topic 1 indicated both an intrinsic and financial investment followed but with a far lower probability of appearing within the text. The value of an artwork equals the sum of the implicit prices for the different characteristics it possesses. This possibly signifies that art itself, as a financial instrument has more than one key value. This includes a return, to the investment and some intrinsic or aesthetic value to the investor. This hedonic approach, as suggested by Kräussl and Wiehenkamp (2011), implies that the quality of an artwork may be attributed to several different attributes. This means that investors in art may value the utility held within the characteristics of the art being traded. These hedonic prices are defined as the implicit prices of many different attributes. However, while the qualities remain constant, the inherent values may change, which is what makes the price of an artwork change.

16. By utilizing a smartphone's camera, AR frequently adds digital components to a live scene. Virtual reality alludes to an experience that completely blocks out the outside world. Mixed reality technology offers a combination of the two (Gupton 2020).



Source: Derived from Twitter API (2021).

FIGURE 7.5: Probability of each topic appearing within the social media analysed.

Following art market sentiment

Sentiment analysis applies a rule-based system to identify subjectivity, polarity or the subject of an opinion. These rules may include various NLP techniques developed in computational linguistics, such as tokenisation and lexicons.[17] The foundation of sentiment analysis rests on NLP and machine-learning algorithms (MLAs) to automatically determine the emotional tone behind online conversations (Banerjee 2020).

A lexicon approach can be used to develop a sentiment analysis over time. In this study, a VADER lexicon[18] and rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in social media, such as Twitter, were used. These were applied to texts that have both polarities (positive/negative). It reflects how much of a positive or negative emotion the text has and expresses the level of intensity of that emotion (Hutto & Gilbert 2014). In order to visualise the level of the 'intensity', a sentiment intensity index was developed (see Figure 7.5).

In Figure 7.6, the distance between the estimated sentiment score and the chosen baseline is used as a proxy for 'sentiment intensity'. This intensity may be positive or negative, and the distance reflects the intensity levels.

17. Lexicons are lists of words and expressions imported into the model.

18. Hutto and Gilbert (2014) applied a rule-based model to assess the sentiment of tweets, and found that the VADER algorithm outperformed individual human subjects and proved to generalise more favourably across contexts than any other algorithm used in the analysis.

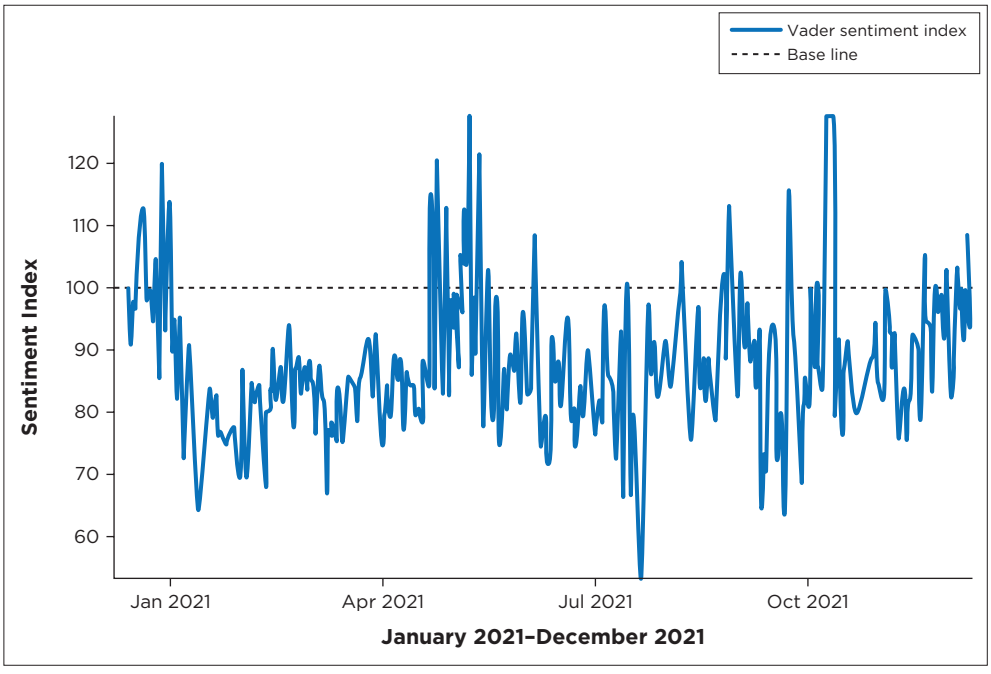


FIGURE 7.6: Art market sentiment index, December 2020 to December 2021.

For example, from the data analysed in this study, two periods of intensity were particularly evident: the first in late January and the second in early March. Ironically, it was during this period that the EU intensified lockdown measures against the effects of COVID-19. From April 2021 to December 2021, the change in sentiment following the dip from December to April 2021 indicates a gradual upward movement as financial markets recover.

By using 01 January 2021 as the base period, between December 2020 and April 2021, the art market sentiment index was performing lower than the estimated base period date. Working from the assumption that the art market is an alternative investment, the period between December 2020 and April 2021 saw a slow but gradual market recovery in many financial indicators. As such, the art market indicator should be below a base of 100 during this period. This appears to correlate with Figure 7.1, as can be seen between the last quarter of 2020 and the final quarter of 2021.

Choice of financial market indicators

This study analysed ten financial markets indices,[19] namely the DAX, DOW, NIK, JSE, HANG, S&P 500, SHANG, CAC, MSCI and Morgan Stanley

19. For the purpose of this chapter, the choice of the 'financial market indices' refers to a selection of market indices from markets representing the countries that represent the top art market turnover regions in the

Capital International for the Emerging Markets (MSCIE), Financial Times Stock Exchange (FTSE) and the international gold price (GOLD) measured in US$.

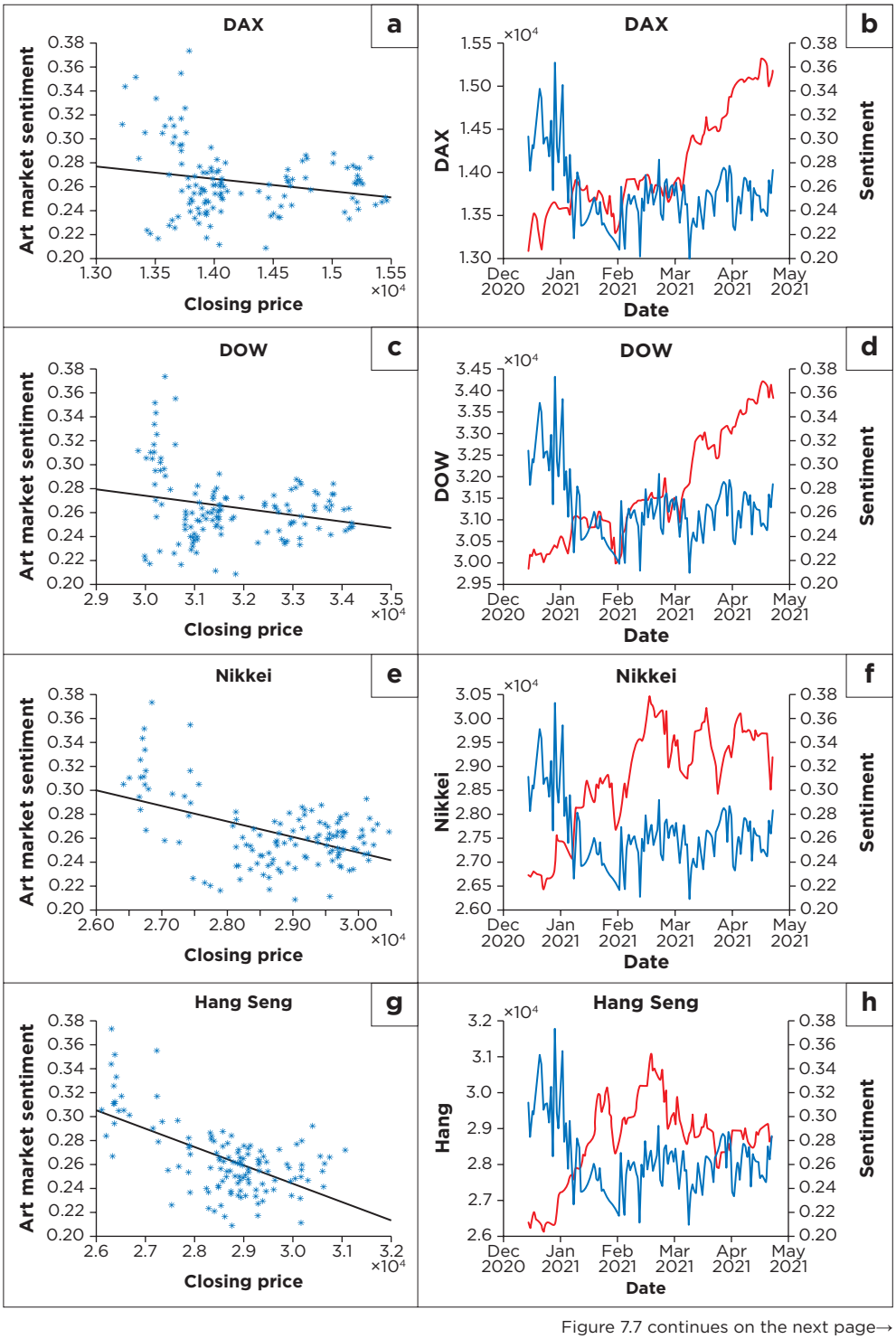
While the DAX, DOW, NIK, JSE, HANG, S&P 500, SHANG, CAC, MSCI world index, MSCIE and the FTSE indices all measure market performance, the gold price (GOLD) (in US$) is an important index when observing market risk. The relationship between the art market indices and the financial market performance is reflected in Figure 7.6.

The left-hand column of Figure 7.7 uses a scatter plot to compare the daily sentiment score calculated from within the art market to the performance of each of the financial markets based on the market closing price. Mamarbachi (2008) and Jegadeesh, Kräussl and Pollet (2015) mention that the relationship between the daily art market sentiment and financial market performance is negatively related, which is apparent for each of the individual financial market indicators analysed in this study. This implies that as the financial markets' performance worsens, the sentiment regarding the art market increases. The negative impact on the financial markets was largely because of the uncertainty brought about by COVID-19 (Sansa 2020), and the degree of uncertainty was reported by the high levels of volatility found in the financial markets during this time (Albulescu 2021).

This negative relationship is supported by the work of Jegadeesh et al. (2015), who indicate that art investments within portfolio investments have a negative or low correlation with other asset classes within those investment portfolios (refer to the works of Ashenfelter & Graddy 2003; Mei & Moses 2002).

Similarly, as the financial markets' performance improves, investors may adjust their portfolios away from art markets (Mamarbachi et al. 2008) in search of alternative investments (Campbell 2005). Two ideas may be derived from this. First, the move between the financial market and the art market is relatively rapid (almost instantaneous), and secondly, the art market has greater liquidity possibility because of digitalisation and the nature of art market trades in the face of crypto art. The first proposition is supported by the high level of autocorrelation, combined with little or no evidence of a random walk. The second is supported by the sentiment analysis as per the LDA approach, highlighting the importance of digital crypto-investment in the top three words identified in the art market sentiment (refer to Figure 7.3). The relationship between art market sentiment and financial market performance is illustrated in Table 7.1.

(footnote 19 continues...)
world, namely, Germany (3%), France (5%), USA (27%), Japan (2% of Asian turnover), China (39%), UK (15%) (Artprice.com 2020a, 2020b) and South Africa as an emerging market comparison.



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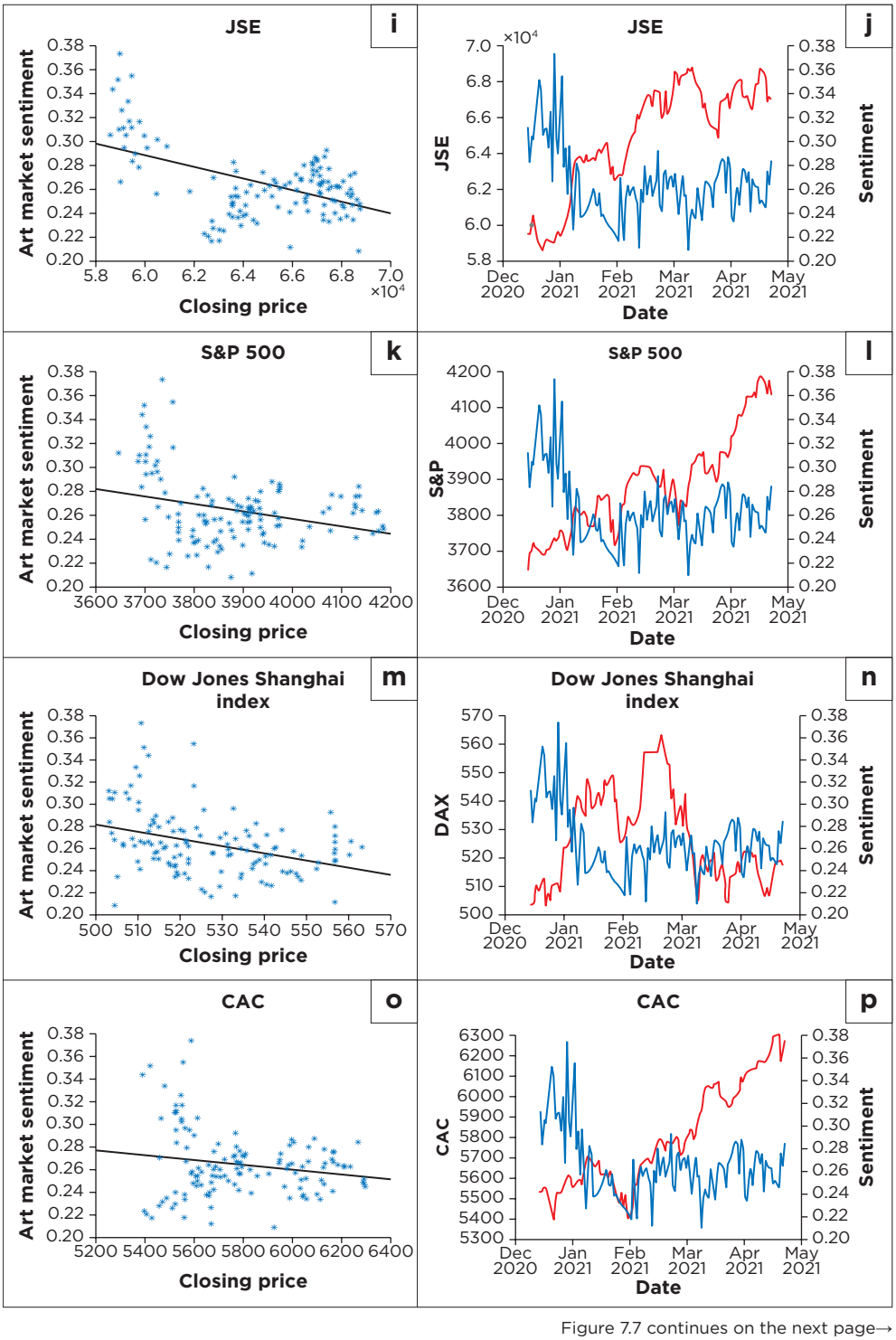

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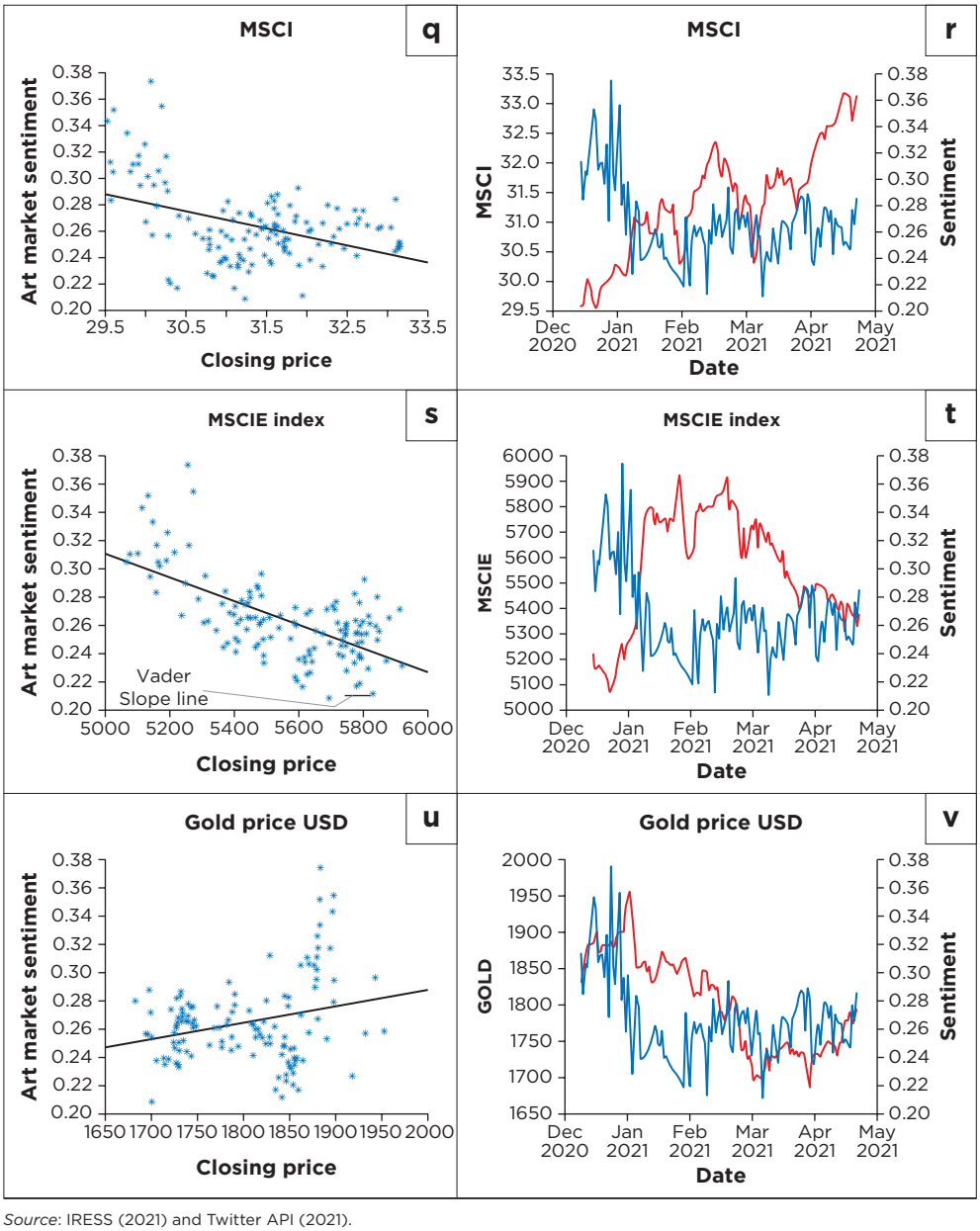


Source: IRESS (2021) and Twitter API (2021).
Key: DOW, Dow Jones; JSE, Johannesburg Stock Exchange; CAC, Cotation Assistée en Continu; MSCI, Morgan Stanley Capital International; MSCIE, Morgan Stanley Capital International for the Emerging Markets.

FIGURE 7.7: A graphical representation between art market sentiment and financial market indices, December 2020–December 2021.

Table 7.1 examines the cross-correlation between the growth function of art market sentiment and market performance. During the early phase of COVID-19 in 2020, there appeared to be a significant negative correlation between the sentiment score and the market performance indices. The positive correlation of the market returns appears to be consistent with the views expressed by Chan (1993), stating that as markets adjust their prices, even within a noisy environment, pricing errors appear to be correlated with other signals within the market. As markets adjust after observing the true value of the previous price changes, the returns to equities as seen in the market indicators become positively autocorrelated. The Durban Watson statistic of 2.6819e-04 indicates that a positive autocorrelation exists within the data. This could imply a degree of momentum associated with art market sentiment; thus, as sentiment improves, it fuels sentiment over the next period.

Figure 7.8 shows the spatial relationship between the correlations of art market sentiment to financial market location. Art correlation coefficients are strongest between MSCIE, HANG and the JSE indices.[20]

However, correlation coefficient statistics between art market sentiment and the financial market performance remain relatively low, potentially because of the variation that exists across the different art markets (Worthington & Higgs 2004). Similar to that, the poor correlations could also be attributed to the fact that artwork is not a very liquid asset, is rarely divisible, has high transaction costs and has significant delays between the decision to sell and the actual sale. Digraphs show the interaction between the markets as direction-indicating graphs. These digraphs have directional edges connecting the nodes. Each node represents a respective market or sentiment indicator.

The diagram in Figure 7.8 highlights the relationship between art market sentiment and the performance of the financial markets using the cognitive distance between how people feel about the art market and financial market performance. The DAX and DOW are most closely related to art market sentiment. The French CAC, FTSE, JSE and MSCI appear to have a larger cognitive distance between the sentiment expressed in social media and the markets compared to some of the other markets analysed in this research. This is further supported in Figure 7.9, which looks at the geographical positioning of the correlation coefficients between financial market indices and art market sentiment between December 2020 and April 2021.

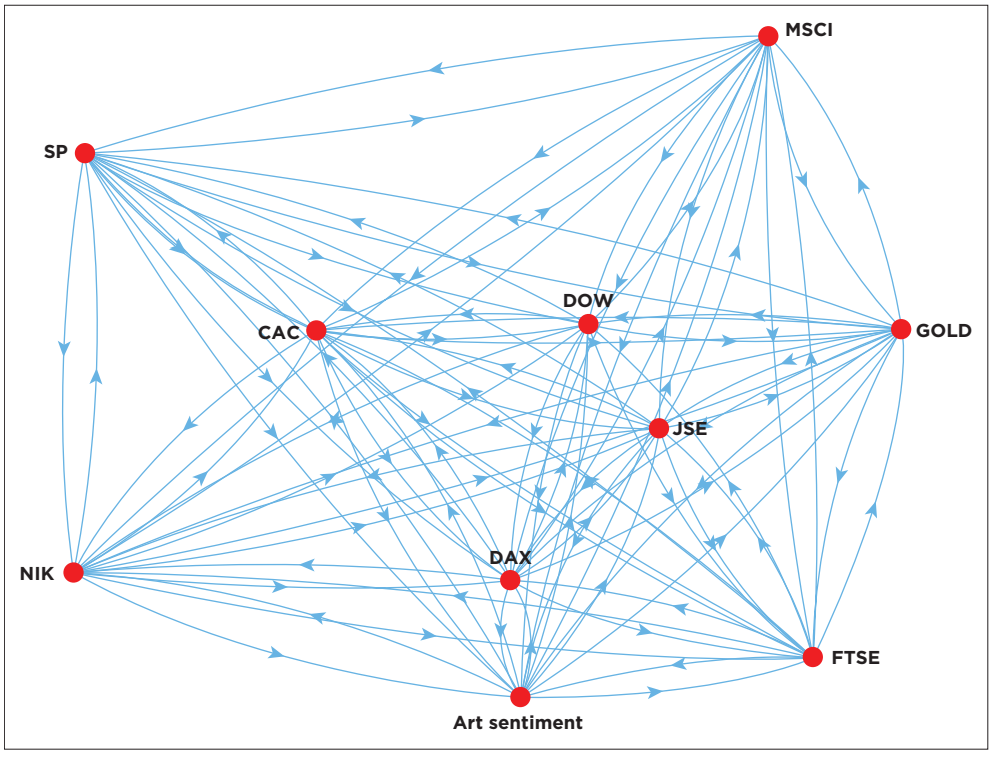
This distribution could be further explained through market segmentation. The art market is highly segmented and institutionalised, and the heterogeneous nature of the art itself, combined with a limited

20. All data (*except for those points in italics*) are statistically significant at the 95% confidence interval.

TABLE 7.1: Cross-correlation between art market sentiment (Valence Aware Dictionary for sEntiment Reasoning) index and the respective financial markets indices, December 2020–April 2021.

	VADER	DAX	DOW	NIK	HANG	JSE	S&P 500	GOLD	SHANG	CAC	MSCI	MSCIE	FTSE
VADER	1.000	-	-	-	-	-	-	-	-	-	-	-	-
DAX	−0.211	1.000	-	-	-	-	-	-	-	-	-	-	-
DOW	−0.227	0.973	1.000	-	-	-	-	-	-	-	-	-	-
NIK	−0.484	0.629	0.709	1.000	-	-	-	-	-	-	-	-	-
HANG	−0.606	0.251	0.340	0.845	1.000	-	-	-	-	-	-	-	-
JSE	−0.516	0.698	0.765	0.912	0.743	1.000	-	-	-	-	-	-	-
S&P 500	−0.290	0.927	0.954	0.762	0.475	0.774	1.000	-	-	-	-	-	-
GOLD	0.268	−0.701	−0.747	−0.713	−0.399	−0.835	−0.650	1.000	-	-	-	-	-
SHANG	−0.368	−0.334	−0.269	0.349	0.700	0.188	−0.093	0.241	1.000	-	-	-	-
CAC	−0.189	0.966	0.975	0.687	0.288	0.769	0.908	−0.781	−0.317	1.000	-	-	-
MSCI	−0.403	0.847	0.873	0.856	0.653	0.821	0.954	−0.595	0.142	0.835	1.000	-	-
MSCIE	−0.643	−0.109	−0.047	0.539	0.811	0.484	0.082	−0.127	0.817	−0.092	0.289	1.000	-
FTSE	−0.287	0.796	0.796	0.520	0.264	0.612	0.761	−0.449	−0.106	0.798	0.742	0.075	1.000

Source: IRESS (2021) and Twitter API (2021).
VADER, Valence Aware Dictionary for sEntiment Reasoning; DAX, Deutscher Aktien-Index 30; DOW, Dow Jones; NIK, Nikkei 225; JSE, Johannesburg Stock Exchange; HANG, Hang Seng; S&P 500, Standard and Poor's 500; GOLD, gold price in US$; SHANG, Dow Jones Shanghai; CAC, Cotation Assistée en Continu; MSCI, Morgan Stanley Capital International; MSCIE, Morgan Stanley Capital International for the Emerging Markets; FTSE, Financial Times Stock Exchange.

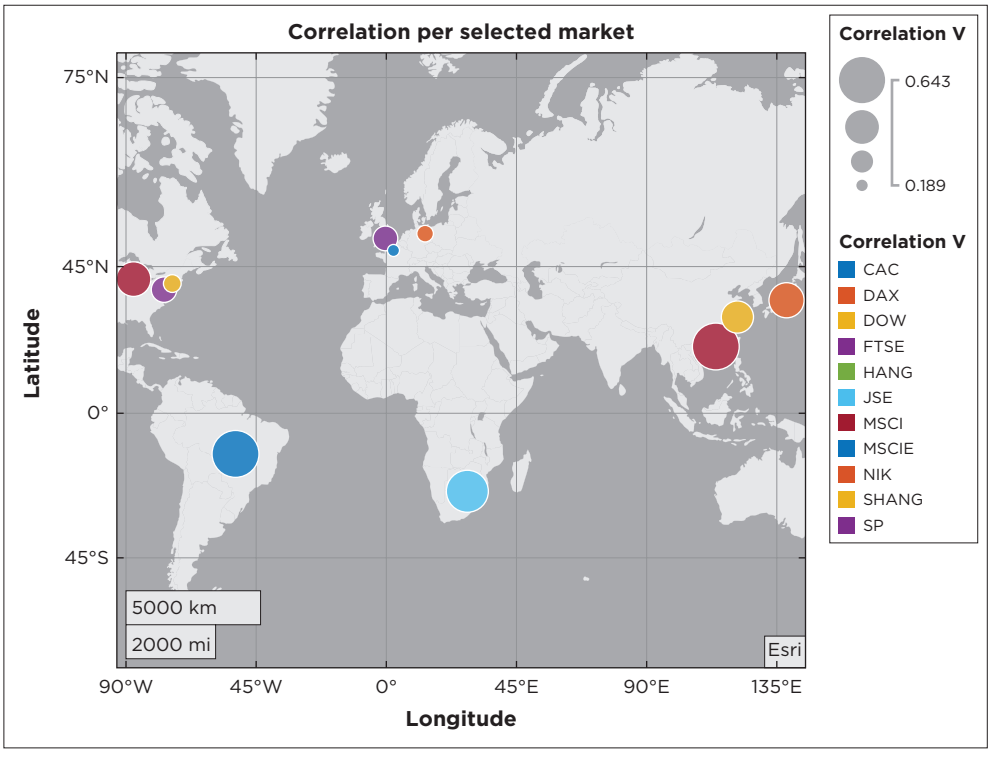


Source: Author's own work
Key: DOW, Dow Jones; NIK, Nikkei 225; JSE, Johannesburg Stock Exchange; S&P 500, Standard and Poor's 500; GOLD, gold price in US$; CAC, Cotation Assistée en Continu; MSCI, Morgan Stanley Capital International; FTSE, Financial Times Stock Exchange.

FIGURE 7.8: Digraph examining the respective relationship between media sentiment and the financial markets indices, December 2020–April 2021.

supply, all add to the low correlation figures between the art market sentiment and financial market performance. Furthermore, some studies have indicated that while not all art delivers the same return on investment, most returns on art investment are less than what one would expect in the financial markets. The risks appear much higher than in the equity markets (Worthington & Higgs 2004).

Many recent developments within the art market may counter this argument. Improvements in efficiency, brought on by digitalisation (as stated in this analysis), increase the liquidity and growth of the art trade through online auctions. There is also improved access to information, deepening globalisation, access to better and faster financing options and decreasing transaction costs through the use of technology (Aye et al. 2018). Therefore, in time, the correlation coefficients between financial market performance and art market sentiment should improve.



Source: Author's own work.
Key: DOW, Dow Jones; NIK, Nikkei 225; HANG, Hang Seng; JSE, Johannesburg Stock Exchange; S&P 500, Standard and Poor's 500; GOLD, gold price in US$; CAC, Cotation Assistée en Continu; MSCI, Morgan Stanley Capital International; FTSE, Financial Times Stock Exchange; SHANG, Dow Jones Shanghai; MSCIE, Morgan Stanley Capital International for the Emerging Markets.

FIGURE 7.9: Global representation of correlation coefficients between financial market indices and art market sentiment, December 2020–April 2021.

Gold price (measured in US$) was used as a proxy for market uncertainty within this study, especially systemic risk,[21] as reflected by price volatility (Artigas et al. 2013). The relationship between art market sentiment and gold price is positively correlated. In other words, as the level of art market uncertainty increases, the market gold price increases too; this is opposite to the relationship between the gold price and other financial market indicators. The relationship is also a lot weaker than the relationship between financial market performance and gold price. Moreover, the threat of systemic risks can cause investors to change their risk-management practices (Artigas et al. 2013) and strengthen their investment portfolios accordingly.

21. Systemic risk is the part of an investor profile that is correlated with the market. It is the part that cannot be removed with portfolio diversification and, as such, is an important part of this analysis (Dupuy 2009).

This phenomenon may be attributed to the gold price being influenced by several additional factors beyond market risk, including international currencies, global inflation and interest rates, consumer spending, income growth, short-term investment flows and commodity supply side issues. Furthermore, gold bullion (in US$) is an asset that can also act as a 'store of value' (Artigas et al. 2013), with the potential for rapid liquidity while diversifying risk away from the currency markets, especially against depreciation.

Developing a descriptive model to further examine the relationship between financial markets and market sentiment

A regression analysis was developed in this study to gain a deeper understanding of the dynamics underlying the relationship between art market sentiment and the performance of the financial markets. The model used in this analysis was constructed using a linear model, and all tests were conducted using the ordinary least squares (OLS) method. The model is based on a multiple linear regression equation; all non-linear data are considered to be converted to linear form. The model used daily data from December 2020 to April 2021, and there were only 130 days used in this analysis, specifically focusing on the impact of COVID-19 on the relationship between art market sentiment and financial market performance.

The model presented here serves as an analysis to further discuss the impact of the art market within a selection of indices from within the financial markets. A linear model was applied to the analysis, and the tests were conducted using the OLS method. The model uses a multiple linear regression equation, and all non-linear data are converted to linear form. Where necessary, the log of both the dependent variables and independent variables is used. The variables are measured using daily data. The Gauss–Markov theorem recommends that a linear regression model should ensure that the sum of the errors should be zero and further ensure that all errors are uncorrelated and errors within the model should have equal variances, and this is achieved using the Best Linear Unbiased Estimator (BLUE). The analysis of the data will maintain the integrity of the data being analysed. To this effect, unless otherwise specified, all variables are tested and are to be considered consistent with the Gauss–Markov theorem.

Independent variables used in this model include the range of market indices. Different combinations of financial market indices were examined in this analysis. The variables are measured using daily closing price of markets and the dependent variable was determined from the art market

sentiment index calculated from a collection of tweets covering the topics of art and investment, art and market, art and price and art and trade. Using a VADER, a sentiment score was calculated and converted to an average daily value. This was then indexed against a base period to estimate the change in art market sentiment. Market indicators' closing prices were calculated using market closing prices and similarly indexed against the same base period to calculate market change.

The linear regression model, using the OLS method, will take the form of:

$$Sentiment \sim 1 + log\beta_{1.}GOLD_{(t)} + log\beta_{2.}DAX_{(t)} + log\beta_{3}(HANG+NIK)_{(t)} + log\beta_{4.}CAC_{(t)} + log\beta_{5.}JSE_{(t)} + log\beta_{6.}SHANG_{(t)} + log\beta_{7.}FTSE_{(t)} + log\beta_{8.}(S\&P\ 500+DOW)_{(t)} + u_{(t)} \quad \text{[Eqn. 7.1]}$$

The *R*-squared measures the closeness of fit of the data within the regression line. The coefficient of determination for the multiple regression is measured by the adjusted *R*-squared value, which is adjusted to consider the range of predictors used in the model. In this model, the adjusted *R*-squared value of 0.471, which implies that 47.1% of the variation in the dependent variable, namely, the art market sentiment (VADER), is explained by the independent variables (GOLD, DAX, HANG, NIK, CAC, JSE, SHANG, FTSE, S&P 500, DOW). In this analysis, the S&P 500 and the DOW are combined to reflect the US markets, and the NIK and HANG are combined to reflect the Asian markets. This indicates a reasonably small fit, but clearly, there are elements in this analysis that are not fully explained by this model but may be explained by the loss of non-exhaustive contextual information. This could include issues such as discourse context, attitudes or epistemic context, spatio-temporal properties, physical and perceptual context or social context (Benamara, Inkpen & Taboada 2018).

While it is challenging to determine the significance of the sign (positive or negative) of the correlation coefficients in the model, in Table 7.2, the size of the correlation coefficient may have some interpretive significance. The *F*-statistic indicates that the model used to describe this event better suites the data than a model which has no independent variables. The tests for stationarity using the Augmented Dickey–Fuller (ADF) examines the data for a unit root which is a feature of some stochastic processes that can cause problems in statistical inference involving time series models. Similarly, the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test analyses the null hypothesis by measuring the degree of stationary against the alternative of the model having a unit root (Radek & Sekni 2012).

A one-way analysis of variance (ANOVA) test was applied to this model to determine the independence of each of the independent variables. Tests indicate that the data are sampled from populations that have different

TABLE 7.2: Linear regression model 1: Estimated coefficients VADER and financial market performance indicators.

Independent variables	Estimate	SE	tStat	*p*	Total
(Intercept)	0.015348	0.062473	0.24567	0.80635	-
GOLD	−0.43332	0.21877	−1.9807	0.049895	-
DAX	−1.2448	0.33563	−3.7088	0.00031576	-
CAC	1.3824	0.34454	4.0124	0.00010452	-
HANG + NIK	−0.73864	0.24322	−3.037	0.0029274	-
JSE	−1.0047	0.29122	−3.4501	0.0007722	-
SHANG	0.50788	0.18646	2.7238	0.0074085	-
FTSE	−0.33719	0.13428	−2.5111	0.013355	-
S&P 500 + DOW	0.92046	0.34341	2.6803	0.0083802	-
Number of observations	-	-	-	-	**130**
Error degrees of freedom	-	-	-	-	**121**
Root mean squared error	-	-	-	-	**0.712**
R-squared	-	-	-	-	**0.503**
Adjusted *R*-squared	-	-	-	-	**0.471**
f-statistic vs. constant model	-	-	-	-	**15.3**
p-value	-	-	-	-	**2.2e-15**

Key: VADER, Valence Aware Dictionary for sEntiment Reasoning; SE, standard error; DOW, Dow Jones; NIK, Nikkei 225; JSE, Johannesburg Stock Exchange; HANG, Hang Seng; S&P 500, Standard and Poor's 500; GOLD, gold price in US$; SHANG, Dow Jones Shanghai; CAC, Cotation Assistée en Continu; FTSE, Financial Times Stock Exchange.

sample means. In other words, the samples within this model are all independent of each other. Data proved to be homoscedastic using an arch test, where there was no systematic change in the spread of the residuals over the range of measured values.

The presence of 'multi-collinearity' describes a condition in which several explanatory variables within a multiple regression model are considered to be linearly related. The presence of multi-collinearity between the independent variables in the model is tested using Belsley's collinearity diagnostics. In this model, multi-collinearity does not appear to have a negative impact. All the variables used within this model appear to be stationary. Variables are homoscedastic with a normal distribution of the error term. Furthermore, a variance ratio test is used to test for 'random walk'. To this effect, a variation ratio test was applied to the model to test for any 'random walk' within the art market sentiment (Erdos & Ormos 2010). To estimate if the variance is created by 'white noise', the Ljung–Box statistic is used (Wijnants et al. 2013).

When applying the Ljung–Box statistic to this model, there appears to be no indication of white noise detected by the model (*p*-value: 0.0019). This helps to decide if the variation in the movements in the art market sentiment is random or if there is some form of unexplored or undiscovered underlying structure in the model (Aye et al. 2018). There is no evidence of a 'random walk' in this model. There is clearly structure and space underlying

the art market sentiment used within this model. Similarly, there is no evidence of 'white noise' in the model (Moffatt 2018).

An additional analysis included testing the data for 'white noise'. White noise is a random collection of variables that are uncorrelated with the dependant variable. The presence of white noise in the art market could influence the distribution of information contributing to market inefficiency (Aye et al. 2018).

Gold price showed a negative slope. This is possibly because of investors' preference for hedging gold over other alternative investments within portfolios. Ultimately, a variation ratio test was applied to the model to test for any 'random walk' within art sentiment. The results showed that the null hypothesis of random walk is strongly rejected. This rejection of the random walk hypothesis could reflect the existence of autocorrelation between the financial indices used in this analysis (Munteanu & Pece 2015). Furthermore, the skewness coefficient is positive, illustrating a high probability of increasing, rather than decreasing, expected returns when investing in art. The kurtosis coefficients recorded a very low positive value, showing that the return distributions are flatter than the normal distribution.

The possibility of variance between the estimated and the historical variables could be related to 'white noise', which is considered an unsystematic error (Moffatt 2018) since the Ljung–Box Statistic indicated there is no evidence of white noise in the market. The Augmented Dicky Faller test and the KPSS tests were applied to the model to test for stationarity, and the data proved stationary.

Any variance existing in the model, which can neither be explained with 'white noise' or 'random walk', may be attributed to human behaviour (psychic returns). Most studies on art investment have been unable to quantify psychic returns associated with art in order to develop our understanding of the perceived returns generated from art as an investment (Baur & Els 2015). Moreover, as the market for art is segmented, this may account for some of the behavioural anomalies within the art market (Worthington & Higgs 2004), which are often less understood.

Trade in cultural goods and local economic development

According to UNCTAD (2018), the trade in cultural goods within developing economies, such as China, has bolstered the economies of these countries during economically challenging times. This is a sure indicator to expand the creative industries (UNCTAD 2018). The report highlighted that the trade in creative products within the developed economies was more than double

that of all services. Because of this higher growth rate, the share of creative services in total trade in services has steadily increased despite the global slowdown in overall trade in services observed in 2014 (UNCTAD 2018).

The development of cultural industries contributed significantly to an increase in the production and sale of cultural goods. In 2018, South Africa's export of cultural goods was valued at USD446.5 million. The main trading partners receiving cultural goods from South Africa are the USA, Africa, China and the EU. Despite the possible spill-overs, cultural industries are not synonymous with poor or rural sectors and fill a much larger national spectrum of associated industries, providing many employment opportunities (comprising approximately 3.6% of total employment) on a national level (South African Cultural Observatory [SACO] 2020).

Reeves (2002) proposes that the arts have a special character to offer local development through urban renewal efforts mainly by engaging creativity. These are vital components of LED which transform developmental regions into economic growth hubs (Reeves 2002).

The flow of cultural products driven by financial market uncertainty is a significant contribution towards LED. The growth of technological networks, the spread of social media and the growing global appetite for cultural products is a significant counter-cyclical flow which results in job creation and growth in sectors of the economy which are significantly overlooked as areas of economic growth, which has the potential to support sustainability in LED.

Conclusion

This chapter explores the perceived art market sentiment and then examines the relationship between that art market sentiment and a selection of global financial market indices. The analysis was conducted using a VADER lexicon to develop a sentiment score for the art market. To that end, four fundamental elements of the art market were explored, namely market, price, investment and trade. A sentiment score was calculated from this data, and a sentiment index was created by setting a base period.

Eight leading financial market indices were analysed, including the DAX, DOW, Nikkei, S&P 500, HANG, CAC, JSE, SHANG and FTSE. Gold price commodity was used to estimate market risk. The international gold price in US$ was also used in this analysis, and the sentiment scores were then cross-correlated with the financial market indices to determine statistical reliability and significance.

The cross-correlations showed that the art market sentiment estimated in this model has a negative relationship with financial market performance.

This was consistent with the literature indicating that the art market is a suitable alternative investment strategy for investment portfolios. This view is exceedingly apparent as the art market becomes increasingly digitalised and new market instruments are created, such as crypto art. The relationship between the gold price and art market sentiment also reflected a positive relationship, implying that art markets are possibly used as a hedge against financial market risk.

Because of market segmentation and the heterogeneous nature of art, a regression analysis was used as a descriptive model to show the relationship and influence of and between the individual financial market indices and the art market sentiment. The model indicated that not all markets are working simultaneously in the same direction. There appears to be substantial and dynamic motion within and across markets, giving the same effect as waves across a pebbled shore, with the financial markets being the pebbles and the art market sentiment being the waves.

Given this, recommendations for future studies post-COVID-19 would indicate building econometrics using the sentiment analysis, as applied in this study, which would better respond to the varying degrees of economic recovery as countries recovered at different rates from the COVID-19 pandemic. The analysis should also explore other key economic shocks.

Art market sentiment appears to display substantial volatility as expressed in human emotion, and the depth of this emotion has been amplified through global digitalisation. The digital age has not hindered the works of the great masters, nor has it overruled the joys of expression. Instead, the digital age has linked the financial markets and developing regions through a counter-cyclical mechanism which inadvertently spurs LED during periods of uncertainty, when investors shy away from the financial market to seek refuge in developing economies.

Chapter 8

How resilient are local economies in times of a global pandemic? The case of a local region in South Africa

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Abstract

As globalisation, increased trade openness and new technology have brought global economies closer, local economies are becoming more susceptible to global economic shocks. The coronavirus disease 2019 (COVID-19) pandemic has left economies across the globe in disarray and has highlighted the importance of building sustainable, more resilient economies. As local economies become more resilient, they can better withstand economic shocks and recover quicker from these events.

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Resilience within local economies is complex and understanding how industries are impacted by times of economic crises is crucial in developing sound economic policies. For this reason, this chapter aims to discover how resilient local economies within a developing country are. This study employs a quantitative approach to determining the economic resilience of a local region in South Africa pre- and post-COVID-19. These results could aid policymakers in understanding local disparities, highlighting the need for improved locally-based strategies and policies ranging across industries to combat development challenges.

Introduction

Recent decades have seen local economies continuously having to adjust and adapt to global changes in an effort to remain competitive as new technology, trade openness and globalisation are bringing economies closer. This leaves local regions particularly vulnerable to global economic shocks and crises. COVID-19 has exposed global and regional vulnerabilities, crippling economies and hampered the progress made in sustainable development (United Nations Human Settlements Programme [UN-HABITAT] 2020, p. 4). In 2020, global gross domestic profit (GDP) decreased by 3.4% and to put this into perspective, over 2 trillion US Dollars in economic output was lost with a 3.4% decrease in economic growth (Statista 2022). What is more, local governments from across the world have seen a decrease in tax revenue as business activities slowed down, consumer demand and disposable income decreased, investment diminished and unemployment increased as the effects of the pandemic continue to linger (UN-HABITAT 2020, p. 2). As local government's tax revenue decreased, local governments were unable to sustain adequate investment in infrastructure and basic service delivery, further hampering local economic development (LED).

Adequate infrastructure and basic service delivery are paramount in the sustainable development of regions, forming the basic structure of local economies. As Van Der Waldt (2018, p. 706) emphasises, having a strong economic foundation, which consists of skills development, poverty alleviation and job creation, is crucial for sustainable economic resilience. Although there is no set, agreed-upon definition of economic resilience, it can be described as an economy's ability to anticipate and recover from crises and shocks and ultimately return to a new state of equilibrium (Folke et al. 2010, p. 15; Okafor, Khalid and Burzynska 2022, p. 304). Okafor et al. (2022, p. 305) state that in national and regional economies, resilience plays a key role in aiding recovery from crises and disasters. Unfortunately, the COVID-19 pandemic has not only impacted the resilience of local regions but exemplified how economic resilience is lacking, especially in

developing countries. A study by Kim and Marcouiller (2015) found that stronger – and more resilient – economies can recover quicker when exposed to exogenous shocks than economies with less resilience. Economic shocks have varying degrees of severity and levels of impact on local regions and affect local economies differently (Capello, Caragliu & Fratesi 2016, p. 115). Local economies will play a crucial role in economic recovery following the COVID-19 pandemic. UN-HABITAT (2020, p. 3) highlights the fact that the success of cities and local economies in driving recovery will largely depend on how resilient their economies are on the path forward.

As there is no set definition of resilience, various indicators for measuring resilience have been used by authors. More recent empirical studies that focus on exploring economic resilience have made use of indicators such as unemployment, employment and GDP (Cellini, Di Caro & Torrisi 2014; Fratesi & Rodríguez-Pose 2016; Kitsos & Bishop 2016). Although theoretical and empirical research relating to economic resilience has been gaining popularity amongst scholars, there is still a lack of understanding of resilience in local regions, especially from a practical point of view (Di Caro & Fratesi 2017; Sensier, Bristow & Healy 2016). This is especially true for the case of developing countries such as South Africa, where there is a lack of empirical research examining resilience in local economies to the author's knowledge. As South Africa's unemployment rate was a staggering 33.9% in quarter two of 2022 (Trading Economics 2022) and because of the aforementioned shortcomings, this study uses employment as the dependent variable to examine the economic resilience of local regions pre- and post-COVID-19. It is assumed that the informal economy would be hardest hit by the effects of the pandemic. The informal economy is the section of the economy that is not governed by any form of government regulation, nor is it taxed (World Economics 2022). In South Africa, the informal economy is estimated to consist of over 28% of the country (World Economics 2022) and, therefore, should be included in the analysis of economic resilience.

Focusing on the economic and financial hub of South Africa, the City of Johannesburg, this chapter aims to contribute to the understanding of economic resilience in local regions by exploring how resilient economies were to the pandemic, showcasing disparities and the need for improved localised LED policies and strategies. As the UN-HABITAT (2020, p. 3) writes, it is expected that cities assume the lead role in stimulating economic growth, development and revitalisation. By ultimately understanding what makes regions more resilient to economic shocks and which industries can recover more effectively from these shocks, regions would be better equipped to guide policies and strategies towards a more sustainable growth and development path.

Literature review

The term economic resilience was adapted from the field of ecology, which was later adopted by various fields such as engineering, psychology and, more recently within the field of economics (Faggian et al. 2017, p. 396; Holling 1973, p. 2). Originally, resilience is derived from the Latin word which means 'rebound' (Xie et al. 2018, p. 1307). In ecology, resilience refers to the various motions of growth occurring in a system after a shock, whereas in engineering it refers to an area's ability to essentially 'bounce back' after a shock (Di Caro 2014, p. 275; Martin 2012, p. 2). Even though the term resilience has different connotations in the varying fields of study, they share a common theme, mainly asserted to systems absorbing, adapting or restoring normal system operations following an external shock (Rose 2007, p. 384). Martin and Sunley (2014, p. 3) define economic resilience as the characterisation of a region according to its complex set of institutional, social and economic features, which allows the region to adjust to structural changes, recover from shocks, modify or continue its long-run growth outlook and possibly move to a new developmental path.

Therefore, resilience is not so much about countering shocks but rather about the ability to minimise the effects of these shocks, keeping losses at a minimum, as well as adapting and innovating current regional policies and strategies. As Hynes et al. (2020, p. 178) write, resilience highlights the fact that following a shock, adaptation and recovery are the two most important aspects. The authors further point out that the key to building economic resilience is to acknowledge the fact that shocks could and will occur at some point in time but that it is imperative to ensure that current systems have the capacity to adapt, recover and perhaps, more importantly, make the most of new opportunities to build on and improve existing systems. Thus, adaptive capacity-building is a key part of building resilience, as it could allow for the creation of improved systems and a more sustainable development path (Kitsos & Bishop 2016, p. 331).

More often than not, economic resilience policies are more effective in making up for losses in production when they are implemented once the shock has started to subside (Prager, Wei & Rose 2017, p. 17). Xie et al. (2018, p. 1308) explain that economic resilience concentrates on measures that aid in reducing the disruption of the flow of services and goods. It is important to note, however, that this does not suggest that action only be taken after the occurrence of a shock but rather that a robust economic system be pursued in order to allow for the adaptation and alteration of existing policies to accommodate the effects brought on by external shocks. According to authors such as Rose (2004, p. 308) and Xie et al. (2018, p. 1307), there are two types of economic resilience. The first is *static economic resilience,* which refers to the capacity or ability of a region to

use its resources in an effective and efficient manner in order to continue and maintain production during the event of a shock. The second type described by the authors is known as *dynamic economic resilience*. This term deals with the use of resources to aid recovery and includes the duration of the recovery period (Rose 2004, p. 308; Xie et al. 2018, p. 1307). The COVID-19 pandemic has revealed how imperative it is for local economies to use resources sustainably in order to ensure that in the event of a shock, systems are able to adapt and recover more quickly (Hynes et al. 2020, p. 175).

The difference in resilience between regions could be because of various factors on a national and regional level, such as social, institutional and economic (Di Caro & Fratesi 2017, p. 237). It has been found that economies showing strong growth are able to recover earlier in the wake of an external shock than those showing weaker growth (Kim & Marcouiller 2015, p. 960). Furthermore, Fratesi and Rodríguez-Pose (2016, p. 55) state that regions that were competitive before the event of an external shock have been found to be more resilient. According to Di Caro and Fratesi (2017, p. 239), the main determinants of a region's resilience can be found in the region's competitiveness before the onset of a shock, including factors such as human capital and innovation. In addition, researchers such as Kellenberg and Mobarak (2008) and Okafor et al. (2022, p. 306) scribe that a region's adaptability is improved when there are effective social institutions, economic development and adequate infrastructure. Factors such as investment, resource availability and economic conditions are listed by the theory of path dependency as having the ability to either enhance or hinder a local region's ability to adapt and recover from a shock (Kitsos & Bishop 2016, p. 1762; Lee 2014, p. 1762). Moreover, as Novelli et al. (2018) surmise, inadequate financial and human resources as well as ineffective government policies and structures, further hamper the response and resilience of localities in times of economic crises.

It goes without saying that it would be ideal to effectually measure a region's general level of resilience to external shocks within local economies, but this is not possible. In accordance with Anderies et al. (2013, p. 5) and Faggian et al. (2017, p. 395), external shocks in economic resilience cannot be precisely replicated as done in the field of engineering or ecology because of the fact that economies are dynamic and consist of a multitude of systems. What is more, Faggian et al. (2017, p. 396) state that a local economy might be resilient to a particular shock yet not resilient to another shock. As such, the various methods and indicators used by researchers across the globe in examining economic resilience vary greatly. Studies investigating resilience are often focused on developed nations, with very few exploring resilience in developing nations (Di Caro & Fratesi 2017, p. 236). Focusing on resilience within the tourism industry in local regions

post-COVID-19, Watson and Deller (2022) found that resilience is reduced as dependency increases. However, the authors also found that in certain local regions of the United States of America (USA), economic resilience is increased with the occurrence of greater dependency. Also focusing on resilience within the tourism industry, Okafor et al. (2022) found in their study of 113 countries that tourism businesses within more resilient nations mitigate the effects of COVID-19 better than those less resilient, thus requiring less government assistance. Examining resilience and patterns of growth within regions of Italy, Di Caro (2014) established the fact that when comparing the average for employment and industrial growth, the ability of local economies to bounce back after a shock where there is a countrywide recession is reduced by six quarters.

Additionally, in their study of economic vulnerability and resilience, Briguglio, Cordina and Farrugia (2009) used social development and governance measures to examine resilience within regions. Using qualitative methods, Kahsai, Yu and Middleton (2015) developed a resilience index comprising the indicators of physical, human and social capital, entrepreneurship, industrial diversity, business dynamics and geographical elements. Studies by Davies (2011) and Fingleton, Garretsen and Martin (2012) analysed the response to a shock using indicators such as employment, unemployment and output within their study of the European region. Although making valuable contributions, these studies are applicable only to developed countries. Using GDP and investment, Xie et al. (2018) found that following the Wenchuan earthquake, losses could have been reduced by 47.4% during the recovery phase of 2008–2011 had adequate resilience strategies been in place. Faggian et al. (2017) found heterogeneous resilience results for the Italian labour system following the recession of 2008 by using employment as an indicator. In another study exploring resilience following the global financial crises in Europe, Capello, Caragliu and Fratesi (2015) determined that resilience is greater in more developed, urban regions.

In a similar study, Kitsos and Bishop (2016) studied the economic resilience of local regions in Great Britain after the global recession (2008/09) using factors such as employment, initial economic conditions, geography, age structure, urbanisation and human capital. The authors concluded that these factors did have variable effects in aiding economic resilience. Looking at the South African scenario, Van der Waldt (2018) explored the relationship between resilience and LED and concluded that a strong, sound economic base is crucial for sustained resilience. This study provides valuable insight and discussions on the importance of resilience within local regions; however, as it follows a discussion approach, it does not comprehensively investigate economic resilience within South African regions. It is for this reason that an investigation such as this is essential in

order to provide empirical guidance on the importance of local economic resilience within a developing country such as South Africa. The subsequent section provides the methodology used in this study.

Methodology

This study will investigate the economic resilience within a developing country during the COVID-19 pandemic by using a balanced panel dataset of municipalities within Johannesburg's metropolitan municipality. Johannesburg is considered the country's economic and financial hub, and the impact of the pandemic will most probably be strongly felt in this area. Figure 8.1 illustrates the cities that are included in this municipality. Because of data availability, only seven of the eighteen cities will be included in the empirical analysis. The cities are Alexandra, Johannesburg, Midrand, Orange Farm, Randburg, Roodepoort and Soweto.

The empirical methodology used in this chapter will be based on the work covered by Kitsos and Bishop (2016). The authors used several quantitative employment indicators to determine the impact of the 2008 global financial crisis (GFC) on local authority districts in Great Britain. A pooled panel regression will be utilised as a preamble to test the resilience exhibited by municipalities in Gauteng, South Africa. The labour market indicators that will be included in the analysis range from 1994 to 2021 and were sourced from Quantec (2022). According to Kitsos and Bishop (2016), labour market indicators are mainly used because the data are more reliable and available, especially on lower geographical levels, which is also the case for South Africa. Furthermore, Fingleton et al. (2012) state that labour markets are one of the significant possibilities for firms to cut costs during a crisis. Therefore, the effect of a crisis might be more pronounced in this market.

The dependent variable, which represents economic resilience, is based on labour market dynamics. Kitsos and Bishop (2016) considered employment, unemployment and claimant data to represent resilience in the labour market. The authors ultimately decided to use employment data because of the disadvantages of using one of the other variables. Unemployment data, for example, exclude people who retire early and claimant data are biased towards lower-income groups (Kitsos & Bishop 2016). It was subsequently decided to use employment data for this study as well. The dependent variable, labelled 'impact', measures the difference between the average employment rate from 2010 to 2018 (a period of relative stability in South African labour markets) and the employment rate in year t of municipality i. The average of 2010–2018 is used because it 'acts as an initial point against which subsequent performance can be measured' (Kitsos & Bishop 2016, p. 334).

Source: Municipalities of South Africa (2022).
FIGURE 8.1: Cities in Johannesburg Metropolitan Municipality.

The explanatory variables considered in this study are based on the variables used by Kitsos and Bishop (2016) and Lee (2014). A summary of the variables is provided in Table 8.1. It can be seen that a range of different variables is used to account for the dynamics in the employment market.

TABLE 8.1: Variables considered for the empirical model.

Variable type	Variable	Type	Description
Dependent variable	Impact	Continuous	Difference between the average employment from 2010 to 2018 and the current employment in year *t* for municipality *i*
Explanatory variables	Initial employment	Continuous	Employment rate in 2018 as an indicator of initial conditions before the pandemic
	Employment: informal	Continuous	Employment share of the informal sector
	Employment: formal	Continuous	Employment share of the formal sector
Location quotients in the primary sector	CA AFF	Continuous	Comparative advantage to employment in the agriculture, forestry and fishing sector
	CA MQ	Continuous	Comparative advantage to employment in the mining and quarrying sector
Location quotients in the secondary sector	CA M	Continuous	Comparative advantage to employment in the manufacturing sector
	CA EGW	Continuous	Comparative advantage to employment in the electricity, gas and water sector
	CA C	Continuous	Comparative advantage to employment in the construction sector
Location quotients in the tertiary sector	CA WRCA	Continuous	Comparative advantage to employment in the wholesale and retail trade, catering and accommodation sector
	CA TSC	Continuous	Comparative advantage to employment in the transport, storage and communication sector
	CA FIRB	Continuous	Comparative advantage to employment in the finance, insurance, real estate and business services sector
	CA G	Continuous	Comparative advantage to employment in the general government sector
	CA CSP	Continuous	Comparative advantage to employment in the community, social and personal services sector
	Functionally illiterate	Continuous	Persons 20 years and older with highest level of education less than Grade 7 as % of labour force
	Functionally literate	Continuous	Persons 20 years and older with highest level of education between Grade 7 and 12 as % of labour force
	Functionally literate 2	Continuous	Persons 20 years and older with highest level of education more than Grade 12 (completed a diploma, degree, etc.) as % of labour force
	Population 20 to 34	Continuous	Persons between the ages of 20 and 34 as % of total population in the municipality
	Population 35 to 49	Continuous	Persons between the ages of 35 and 49 as % of total population in the municipality
	Population 50 to 64	Continuous	Persons between the ages of 50 and 64 as % of total population in the municipality
	Population density	Continuous	Number of persons per square kilometre
	Area	Continuous	*D* = 1 for Orange Farm, Soweto and Alexandra *D* = 0 for Johannesburg, Randburg, Roodpoort and Midrand
	GFC	Continuous	*D* = 1 for 2008 onwards to accommodate for a potential structural break because of the GFC

Source: Easy data (2022).
Note: Variable codes in the 'Variable' column are expanded and described in the 'Description' column.
Key: GFC, global financial crisis.

The employment rate in 2018 is included to control for initial economic conditions. The effect of the pandemic was felt in varying degrees in the formal and informal sectors of the South African economy. Therefore, the employment share of each sector was considered in the model.

Kitsos and Bishop (2016) and Lee (2014) included variables for industrial diversity or specialisation of sectoral employment in their analyses. According to Lee (2014), areas with more varied economic formations will experience minor increases in unemployment. Finding a similar variable available on a municipal level for South Africa was challenging. It was decided to make use of the location quotient relative to the local municipality. Quantec (2022) indicates that the location quotient shows the comparative advantage of an economy in relation to its production and employment. The location quotients for the different sectors in the primary, secondary and tertiary sectors were all considered as possible explanatory variables in the model.

A significant influence on the resilience of an area to shocks like a pandemic is the skills of the labour force (Lee 2014). Three variables that measure the literacy of the labour force were included as possible determinants: the proportion of the labour force that is functionally illiterate, literate and highly literate. A person is classified as functionally illiterate if their highest level of education is less than Grade 7. People who have completed a part of high school (Grades 8–11 or Grade 12) are considered functionally literate. In contrast, people who have completed Grade 12 or any other qualification after that are considered highly literate.

A few demographic variables were also included. The share of three age groups (20–34 years, 35–49 years and 50–64 years) of the population as well as the population density statistics, were available on a municipal level. Lastly, two dummy variables were considered to accommodate for the differences in the municipalities' developmental levels and the structural break caused by the GFC in 2018.

Results and discussion

The results of the final pooled panel regression model are represented in Table 8.2. There is significant collinearity between some variables; therefore, not all the considered variables could be included in the final regression model. The expectation is that positive coefficients will imply a more profound impact on employment and vice versa. All of the variables that were included in the final model had a statistically significant effect on the dependent variable.

The results in Table 8.2 show that the initial employment rate (as a proxy for initial economic conditions) is significant with a negative sign.

TABLE 8.2: Pooled panel regression model results with impact as the dependent variable.

Variable	Coefficient	Probability
C	−80.5771***	0.0000
Initial 2018	−1.4858***	0.0000
Employment: Informal	−84.5838***	0.0000
Competitive advantage: Manufacturing	48.7634***	0.0000
Competitive advantage: Finance, insurance, real estate and business services	59.1340***	0.0000
Competitive advantage: Wholesale and retail trade, catering and accommodation	38.3253***	0.0000
Functional illiteracy	−1.1558***	0.0000
Functional literacy 2	0.2469***	0.0009
Population 20 to 34	0.3326***	0.0016
Population 35 to 49	3.2588***	0.0000
Population 50 to 64	0.5605**	0.0431
Area dummy	−6.2970***	0.0000
Adjusted *R*-squared	0.9154	
F-statistic	192.6987	
Prob (*F*-statistic)	0.0000	

Key: *, **, *** 10%, 5% and 1% level of significance, respectively.

This indicates that municipalities with greater employment rates before the pandemic had a lesser decrease in employment in the period after the pandemic. This result contrasts with the findings of Kitsos and Bishop (2016), who discovered a positive sign in their study. The results for the employment share of the informal sector are also negatively related to the impact variable. An increased informal sector employment share in the municipalities had a negative effect on employment after COVID. This is to be expected, considering that as the lockdown started, people operating within the informal sector had to cease operations immediately. As a result, numerous people were left without a source of income, in contrast to those employees in the formal sector who still had some form of income, although in many instances, incomes were reduced. This is in accordance with Lee (2014, p. 1764), who states that the skilled workforce is generally more resistant to economic shocks. In addition, a study by Gregg and Wadsworth (2010) highlights the fact that more highly skilled workers are less likely to be retrenched as their recruitment tends to be costly.

The three location quotients that were included in the model all indicated a positive relationship with the dependent variable. The comparative advantage of the manufacturing sector, the finance, insurance, real estate and business services sector, as well as the wholesale, retail trade, catering and accommodation sector, had positive effects on employment after the pandemic. Kitsos and Bishop (2016) did not find a

significant impact on any of the sectors included in their study, whereas Lee (2014) discovered negative, significant effects on employment in the construction, financial services and manufacturing sectors. This suggests that these industries within the region were, to some extent, more resilient to the effects of the pandemic. The reason for this might be because of the notion that this region is seen as the economic hub of South Africa, thereby assuming a relatively strong foundation when compared to other regions in the country. Researchers such as Creţan and Light (2020) as well as Krzysztofik, Kantor-Pietraga and Spórna (2020) write that marginalised regions are likely to experience higher social and economic disruptions because of the COVID-19 pandemic. Furthermore, Krzysztofik et al. (2020) found in their study that apart from tourism, mining and shrinking cities were impacted the greatest in Poland.

The results on the comparative advantage of the industries in Table 8.2 could also be attributed to the size and diversification of the region under investigation, as Lee (2014, p. 1768) states that large cities usually have a broad range of niche industries, which makes them less vulnerable to shocks in demand. The author also notes that in these large cities, innovation and knowledge-based activities are generally at the forefront of economic activity, aiding economic resilience. This could further explain the significant negative impact found in the informal sector, as new technology and innovation are not prevalent amongst informal traders. Wholesale, accommodation and catering were the least resilient, which could be expected as catering and accommodation form a vital part of the tourism industry. The tourism industry was among the hardest-hit industries across the globe. In a study of 113 countries, Okafor et al. (2022) found that in more resilient regions, tourism businesses were better able to manage the effects brought on by the pandemic than those in less resilient regions. The authors further stated that by improving resilience within regions with the use of appropriate strategies, the industry would be better equipped to deal with future shocks.

Further analysing the results in Table 8.2, the most resilient industry was finance, real estate and services. This is in contrast to the results of Lee (2014, p. 1775), who found that financial services had the largest unemployment rates in the UK, thus being less resilient. However, the study by Lee (2014) focused on the impact of the financial crisis in 2008; thus, it could, to some extent, be expected that this industry was among the hardest hit. It is worth noting that referring to specific industries as more resilient does not suggest that the pandemic did not significantly impact them. Not one industry was spared from the devastating effects of the pandemic, but stating that one proved more resilient than others implies that these industries could absorb and progress quicker on the road to recovery than the others.

Regarding human capital, the model shows that the share of the population classified as functionally illiterate negatively affected labour employment post-pandemic. In contrast, persons categorised as highly literate positively impacted employment. Di Caro and Fratesi (2017, p. 239) found that human capital is a key determinant for determining the resilience of a region. A study by Watson and Deller (2022) found that the higher the education levels, the more resilient the region. As the pandemic caused most levels of interaction and operations to adapt to digital platforms, illiterate people could not partake in these activities. Moreover, a study by Alsubaie (2022) found that not all students had equal access to teaching materials during the pandemic, which negatively impacted literacy rates. With the implementation of a full lockdown, all face-to-face education came to a standstill and had to move to digital platforms (Hanekom 2020). Hanekom (2020) writes that only 67% of public school pupils could continue home learning in South Africa.

The demographic age groups all indicate a positive relationship with employment. Nonetheless, looking at the results, the youngest group, those aged 20–34, proved the least resilient of the age groups. This is similar to the results of Polyakova et al. (2020), who found that employment displacement was most significant among the youngest group, aged similar to this study group, because of the pandemic. In addition, Belot et al. (2021) found that young people have been affected the most economically by the pandemic. This result might be attributed to the fact that people within this age group are new to the labour market and often the first to be retrenched in the wake of difficulties. This result further highlights the problem the country faces in terms of youth unemployment, where in the third quarter of 2022, the country recorded a youth unemployment rate of a staggering 59.6% (Trading Economics 2022). In investigating the economic impact of the pandemic on the different age groups in America, Gould and Kassa (2020) established that leading up to and following the pandemic, the youth had the most considerable employment losses. The middle-aged group, those aged 35–49, are the most resilient of the age groups. This could be expected as people within this category are more likely to assume senior or established positions within the workplace. This result supports research by Belot et al. (2021), who also found that the middle age group was the least affected. Furthermore, Udalova (2021) reports that employment displacement decreased with age during the pandemic.

Conclusion

This chapter investigated the economic resilience of municipalities within the economic and financial hub of South Africa during the COVID-19 environment. Economic resilience is related to an economy's ability to

anticipate and recover from shocks and return to a state of equilibrium. It was established that local economies in developing countries constantly have to adjust to global changes, leaving them vulnerable to economic shocks and crises like the COVID-19 pandemic. Furthermore, regions would be better equipped to guide policies and strategies toward a more sustainable growth and development path if an economy is economically resilient.

A pooled panel regression model of municipalities using Johannesburg's metropolitan was used to identify the area's significant determinants of economic resilience. The results showed that the better the initial economic conditions (employment levels), the better the economic resilience during a crisis. This is especially true for formal sector employment. The models showed that informal sector employment had a negative effect on economic resilience in a specific municipality. This trend reflected the lack of job opportunities during hard lockdown levels in the country.

The models also exhibited a positive effect of the comparative advantage in manufacturing (secondary sector), wholesale and retail trade and the finance and business services sectors (both tertiary sectors) on economic resilience. These industries were more resilient than others and could absorb the devastating effects of the pandemic more quickly. This is likely because of these sectors' degree of development and formal employment levels.

In terms of human capital, the results showed that the more literate the working force is, the better it is for economic resilience. The greater the share of the illiterate population in a municipality, the greater the negative influence on resilience. Lastly, although all age groups positively impacted resilience, the younger group (20–34 years old) was the least resilient. This trend is likely because of the significant youth unemployment in the country.

It seems that the South African government should emphasise locally-based strategies that focus on the unemployment issues in the country to improve economic resilience. Special attention should be paid to youth unemployment and upskilling the labour force in the country. Improved resilience would be beneficial to municipalities and the country as a whole. Future studies could expand the econometric models used in this study and include the use of comparative models to see how different regions compare and how resilience differs from industry to industry.

Chapter 9

A comparative assessment of the impact of COVID-19 on the Gauteng regional economy: Evidence of structural change

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Abstract

The global coronavirus disease 2019 (COVID-19) health pandemic started at the beginning of 2020 and has negatively impacted developed and developing countries and regions. The pandemic is still ongoing today, and the real effects on the economy, politics, society and the environment are still being determined. Regions across the world, whether they are leading or lagging, are affected differently depending on their resilience. Limited

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research has been conducted on the impact of COVID-19 on the regional and sub-regional levels, and this research aims to assess the impact in terms of possible structural change in a regional economy. The theory states that structural change leads to sustained economic growth and development, which is needed to uplift South Africa, which has been reporting low growth rates for the past few years. The study region is the Gauteng province with its five sub-regions, of which three are metropolitan, municipal regions (leading regions) and two are district municipal regions (lagging regions). The methodology is based on a comparative analysis using indexes. Structural change indicators included in the analysis are gross value added per sector, diversification across sectors, location quotient, capital formation, human development index (HDI) and unemployment rates. The study uses pre-COVID-19 as well as current time series data sets. Initial results are that COVID-19 negatively impacted the possibility of structural change in the economy and the recessionary environment, evident even before the pandemic's start. The contribution of this study is significant and unique as it provides detailed insights into the impact of the health pandemic on socio-economic conditions in the main economic region in South Africa. It also provides recommendations to potentially activate structural change in the future, which is needed to secure sustained economic growth. The results of the study have implications for other developing regions.

Introduction

Worldwide, the COVID-19 health pandemic, which began in early 2020, has had a detrimental impact on both developed and developing countries and areas (Meyer et al. 2021). According to the OECD (2020a), developing countries were hit hardest by the pandemic as most of these countries faced additional challenges before the addition of COVID-19-related burdens. Many developing nations have been dealing with structural vulnerabilities such as persisting social and economic inequality, violence and forced displacement, diminishing faith in government, climate change consequences and environmental instability even before the onset of COVID-19 (OECD 2020b). Many of these countries were set back by decades of developmental progress because of extreme economic and social consequences. Gurara, Fabrizio and Wiegand (2020) refer to this as a lost decade and finding sustained solutions to either minimise the economic impact of the so-called 'lost decade' or provide relevant solutions to trigger economic growth and development in these countries or regions remains of significant importance. Although we acknowledge that COVID-19 affected all countries and economies (developed and developing), albeit at different levels, developing countries were most affected. Many of these developing countries are situated in Africa and Asia, making research on regions within these countries relevant. Developing regions were already

vulnerable pre-COVID-19 and dealing with issues such as high public debt levels, high unemployment, inequality with low human development and weak healthcare systems (Gurara et al. 2020). The shock of the pandemic rippled through these economies and added additional burdens, such as sharp contractions of real export coupled with lower export prices, loss in demand and reduced capital inflow, especially in tourism-dependent countries (Organization for Economic Co-operation and Development [OECD] 2022). The OECD (2020) opines that the effects of the COVID-19 crisis will be long-lasting and exacerbate the existing development challenges many economies face, especially in developing regions. The epidemic is still underway, and the real consequences for the economy, politics, society and the environment are yet unknown. Regions throughout the world, whether they are leading or lagging, were and are still affected differently based on their resilience. There have been very few studies on the influence of COVID-19 on regional and sub-regional levels (OECD 2021), and this research examines the impact of potential structural change in a regional economy.

According to the existing theory, structural transformation leads to long-term economic growth and development, which is required to pull South Africa out of its slump. Drastic interventions are needed to reduce the low and negative economic growth and development rates experienced in recent years. Therefore, this study aims to analyse the five sub-regions in the Gauteng province of South Africa, three of which are metropolitan, municipal regions (leading regions) and two are district municipal regions (lagging regions). The examination includes structural change elements or indicators such as gross value added per sector, sector diversification, location quotient (LQ), capital formation, HDI and unemployment rates. The study employs both pre-COVID-19 and current time series data sets. According to preliminary findings, COVID-19 had a detrimental influence on the prospect of structural change in the economy and the recessionary climate even before the pandemic began. This study makes an important and unique addition by providing thorough insights into the impact of the health pandemic on socio-economic circumstances in some of South Africa's key economic areas. It also makes recommendations for future structural changes, which are required to ensure long-term economic growth. The study's findings have repercussions for other fields.

Literature review

Although the initial impact of the COVID-19 pandemic was immediate and hard-felt, the long-term ripple effects are still being experienced. Some initial impacts included massive constraints on health care facilities, an almost complete standstill for international trade and value chains, massive

restrictions on human movement (locally and internationally) and drastic policy amendments and implications (OECD 2020a). Many studies refer to pre- and post-COVID-19 time markers. However, while cases and deaths have declined, COVID-19 is still very much part of our daily lives and far from being classified as 'post' with current global reported cases still in excess of millions and still causing lagged social and economic consequences (World Health Organization [WHO] 2021). Gurara et al. (2020) suggest that the COVID-19 pandemic can have a massive impact on global poverty, adding more than half a billion people (approximately 8% of the global population). In addition, 130 million more people may face severe food insecurity (Food Security Information Network [FSIN] 2020). It is further estimated that the pandemic will (and already has) reduce global growth, trade and value chains significantly. It is estimated that a loss of $50 billion in exports and a potential decline of between 30% and 40% in foreign direct investment will be caused by the crises (United Nations Conference on Trade and Development [UNCTAD] 2020).

COVID-19 reached South Africa slightly later than Europe, but the impact was severe as the country already faced a frail economy. At that time, real gross domestic product (GDP) was estimated at 0.3% and 0.9% for 2019 and 2020, respectively (Arndt et al. 2020). The African Development Bank (2019) reported real GDP growth at 0.2%, even lower than originally predicted. The immediate shocks resulting from the COVID-19 pandemic and lockdown in South Africa were divided into four categories. These included forced production reduction, reduced demand, disruptions in global production and supply chains and business investment uncertainty. Unfortunately, even with markets reopening, these four categories remained weak and did not recover to pre-COVID status (Arndt et al. 2020). Regrettably, as most global economies are recovering from the recent pandemic, South Africa is challenged with other major issues. For example, high crime levels and corruption have led to business closure, the decline of traditional central business districts and loss of investment. It is estimated that the South African government spends around $67 billion annually to try and contain crime (Management Study Guide 2022). According to the Global Peace Index, crime in South Africa constitutes about 19% of GDP. The effects of crime are immense, with the cost of running prisons and law enforcement rising and increasing small business closures and employee retrenchments leading to higher unemployment rates. The cost of crime is dragging down the South African economy. Another critical factor is the lack of infrastructure, which is currently considered a serious problem, with all forms of basic infrastructure (i.e. roads, rail, water, sewer and electricity) massively declining in recent years. The most crippling of all has been the rolling blackouts South Africa has been experiencing for the last few years and especially the last few months of 2022 and 2023. In late 2022, Statistics

South Africa reported a decrease of 0.7% in the GDP because of the current electricity crisis. The Bureau of Economic Research predicted a similar GDP decline because of load shedding (BusinessTech 2022).

Another serious constraint is the lack of governance and implementation of public policy, leading to serious service delivery challenges. South Africa has had many service delivery demonstrations by communities and municipalities since 2019. The demonstrations are primarily motivated by a water shortage, sanitation concerns, a lack of electricity, inadequate road infrastructure upkeep and various other community grievances. The *Local Government: Municipal Systems Act 32 of 2000* (MSA), *Municipal Structures Act 117 of 1998* and *Local Government: Municipal Finance Management Act 56 of 2003* (MFMA) are all appropriate legislation with good intentions that, if implemented correctly, may help towns avoid many of the demonstrations that occur regularly. Municipalities, on the other hand, receive unfavourable audit results annually, most of which are the consequence of non-compliance with MFMA policy requirements. This has a detrimental impact on municipal budget allocation. Municipalities are not adhering to the supply chain management policy (Block et al. 2022).

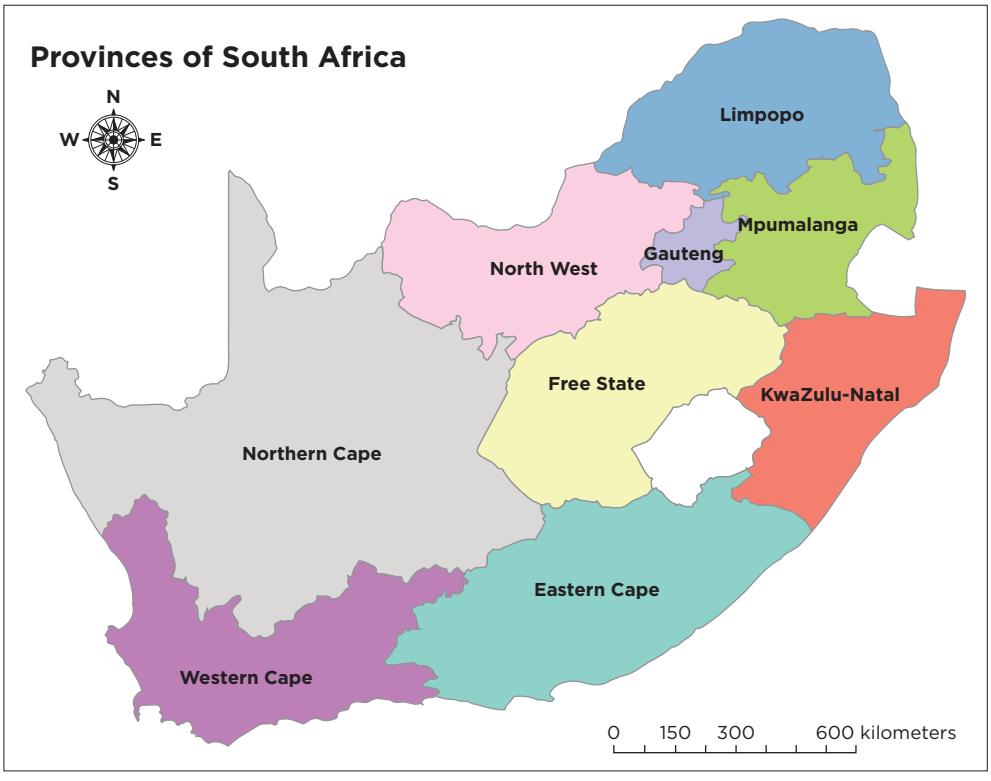
The recent electricity shortages are estimated to result in around R4 billion loss in GDP per day (BusinessTech 2022). Small, medium and micro enterprises (SMMEs), which are a massive driver of employment and GDP, are being hit hardest. With many still trying to recover from the impact of COVID-19, the current situation might be the last nail in the coffin of many SMMEs. According to BusinessTech (2022), the current electricity crisis is a silent killer leading to direct and indirect loss of employment because of businesses not growing and employing more staff, global reputational damage, loss of confidence in government and massive skills emigration. Perkins et al. (2005) analysed economic infrastructure and its relationship with economic and business growth in South Africa, focusing on electricity, roads, ports, railways and air travel using time series methods. Results indicate long-run relationships and causality from government investment in economic infrastructure and development as capital stock to GDP and causality from roads to cause changes in GDP. More findings indicate that economic infrastructure and economic growth have a bi-directional relationship. In contrast, low levels of infrastructure on investment create blockages for growth. Kumo (2012) assessed the relationships between economic infrastructure investment, employment and economic growth in South Africa from 1960 to 2009, utilising an econometric model including a vector autoregression (VAR) and Granger causality tests. The study's important short-run findings indicated significant bi-directional causality between economic infrastructure investment and GDP growth, indicating dynamic, positive effects in both directions. More investments in infrastructure lead to more growth, and more growth leads to more

investment in infrastructure. In addition, investment in infrastructure also has a bi-directional causal relationship with public sector employment (Chen et al. 2020). More investment leads to more jobs, increasing aggregate economic demand and growth opportunities for local businesses.

Although the focus of this chapter is not on aspects of crime, governance, infrastructure and business growth, these are critical elements that hinder the potential for structural change and sustained long-term economic growth. Indirectly, all the negative situations listed above have an indirect effect on the indicators investigated in this study (i.e. gross value added per sector, sector diversification, LQ, capital formation, HDI and unemployment rates) and are thus worthy of mentioning.

Considering all the factors and indicators mentioned above, not all countries, economies or regions are equally affected. Some are considered leading, and some lagging. When a region leads, it shows demographic growth, which outperforms GDP development compared to other regions (Ejdemo & Örtqvist 2021). The Growth Pole Theory of Perroux (1983) explains this concept well. The core notion of the growth poles concept is that economic development and growth do not occur uniformly within an area or region but rather revolve around a unique pole (or cluster). This pole is frequently characterised by core (important) sectors that grow related industries, mostly through direct and indirect impacts (Perroux 1983). Regions with strong growth poles tend to lead. On the contrary, a lagging region shows signs of contraction in various indicators such as population and GDP (Ejdemo & Örtqvist 2021). Leading regions are often characterised by high specialisation and agglomeration of economies, which can be traced back to the work of Ricardo (1817) and Smith (1776), who added to the comparative advantage theory. Another well-known economist, Krugman (1991), defined comparative advantage as a county or region's ability to benefit from taking advantage of its differences. This is especially important for regional growth. This study focuses on five regions in South Africa, of which three are considered leading (the City of Johannesburg [CoJ]), City of Tshwane [CoT], City of Ekurhuleni [CoE]) and two lagging regions (West Rand and Sedibeng). Figure 9.1 shows the study region in the South African context.

Another prominent growth theory is that of Lewis, which focuses on structural change (Lewis & Soligo 1965). The model by Lewis describes how a rising economy might stimulate the development of a new 'capitalist sector' that will employ a growing percentage of the excess labour. When markets or functions within the economy shift, the term structural change is often referred to (Ganti 2021). These dramatic shifts are generally brought on by major developments or changes in the economy. The IMF (2013) defines structural change as when a country (or region) shifts from being mainly focused on agricultural activities to a more service or



Source: Mappr (2023).
FIGURE 9.1: Map of South Africa and the Gauteng province.

industry-related country. This change leads to economic developments and is seen as a positive change or transformation. Another definition by the MBA Skool (2015) defines economic structural change as a long-term shift in the central structure of an economy, which generally has a trigger effect on growth and development. Without structural change, it is often not possible for economies to achieve sustained long-term economic growth. Syrquin (1988) emphasises that structural change is mostly about long-term developments and should include form industrialisation. Perez (1983) mentions that disseminating novel organisational production forms, which require a new set of skills, triggers change, leading to shifts in income and demand patterns. Structural change is often also referred to as structural transformation. Oyelaran-Oyeyinka and Lal (2016) define structural transformation as the shift from lower productivity to a more labour-intensive economy, leading to higher productivity and skill-intensive activities. Likewise, Beylis et al. (2020) define this concept as a typical situation where economic growth is seen as a result of increased income and rising standards of living, which overlaps with the allocation of economic activity over the various economic sectors (agriculture, industry and services).

Atolia et al. (2018) refer to structural transformation as when a change in the predominant source of population income experiences a major shift. An example of this is when the main source of income was generated from the agriculture sector (normally the least productive sector) to a more manufacturing-orientated income-based sector. These are more traditional definitions, and the process leading to actual economic structural change was easier to notice during the 1970s and 1980s. The phenomenon of textbook economic structural change, such as that defined by, for example, Lewis and Soligo (1965), Perez (1983) and Syrquin (1988), has been influenced and challenged by various economic changes emanating from globalisation and technological development (Atolia et al. 2018). However, as economies are adaptable and flexible, because of occurrences such as globalisation, natural events, et cetera, economic structural change leading to sustained long-term growth is still possible (MBA Skool 2015). Other changes, such as political systems, access to services (i.e. availability of electricity, road conditions, etc.), global shifts in skills, labour and capital and availability of natural and other resources, may affect the possibility of structural change (Etchemendy 2009; Pasinetti 1981; Sharp 1980; Thwaites et al. 2021). Several positive factors could trigger structural change, mostly leading to sustained growth results. However, historically, structural change has not always been entirely positive. This was exemplified by Korea's partition and the various pathways of growth pursued by each state. Korea was largely homogeneous in the economic structure under the Japanese administration, but during World War II, the two nations suffered significantly divergent structural changes because of drastically different political frameworks (Foley 2003).

Rosenstein-Rodan's (1961) Big Push theory explains how the role of public policy is critical to kick-start economic development and stimulate structural transformation. The government should play a significant role in ensuring that infrastructure is provided and maintained and creating an enabling environment for businesses, thus ensuring proper functioning markets. In addition, the government should also act as a catalyst in addressing and coordinating problems within the private sector, which will lead to investment and employment.

The current situation in South Africa is not conducive to long-term economic and structural change. Not only is the country still recovering from the aftermath of the recent COVID-19 pandemic, but an almost daily struggle to stay safe and 'keep the lights' on, amongst other challenges, is seriously hindering any future growth prospects. Researchers and economists alike continue to be interested in structural transformation because of its close connections to trends in productivity, regional income convergence, labour force participation, urbanisation, business cycles, wage inequality and many other aspects of development – connections

that frequently open the door to policy interventions contending that the current allocation of activity across sectors is inefficient (Beylis et al. 2020).

Methodology

The methodology utilised to achieve the research goals is a comparative assessment of the possible economic shocks or impacts of COVID-19 on the Gauteng province and its sub-regions. The research is quantitative in nature and based on the functionalist theoretical paradigm. The comparative assessment focuses on the five sub-regions of the Gauteng province, which consists of three metropolitan regions, namely the CoE, the CoJ and the CoT. These are the leading economic regions in South Africa. The other two regions are peripheral (lagging) regions with rural areas, including the Sedibeng district (SD) region and the West Rand district (WRD) region. Time series data were collected from the Quantec Easydata economic dataset from 1995 to 2021. Although data for every year for this period were collected, we only focused on 1995, 2000, 2005, 2010 and 2015 five-year intervals and then 2019 as the final year before the onset of the COVID-19 pandemic. These are all the pre-COVID-19 years included in the study. Then, we also collected data for 2020 and 2021 as the two current (in COVID-19) years. Statistical data for 2022 is not yet available for Quantec Easydata. The variables or indicators used in the study to assess the economic shock that could possibly lead to structural change included the following: HDI, employment index, the TRESS index, gross value added (GVA) sectoral analysis, Gross fixed capital formation (GFCF), the LQ index and productivity. More details on each variable are listed in Table 9.1. These seven variables were selected as the most suitable to indicate possible economic shocks with a focus on how well-diversified the economy is across the sectors, the contribution of the various sectors to the GVA, domestic investment in the main economic sectors, the competitiveness of the various economic sectors, changes in employment and the impact on productivity.

The next step in the methodology was the formulation of an index for the Gauteng province. The purpose of the index is to create an annual value representing changes over time from 1995 to 2021. All seven variables or sub-indexes were included in the composite index. The main benefit of an index is the simplified view of complicated data sets. All variables were converted into positive trending values. For example, the TRESS index was inverted to indicate a rising value as a positive change compared to the normal TRESS index, where a declining value means a positive change. To compare changes, all variables were also converted into sub-indexes between 0.0 and 100.0. All variables were allocated equal weights, meaning the seven contributed 14.3% to the composite index.

TABLE 9.1: Summary of variables included in the study.

Variable	Description	Index conversion
HDI	The HDI is divided into four tiers: very high human development (0.8–1.0), high human development (0.7–0.79), medium human development (0.55–0.70) and low human development (below 0.55). An increase in HDI values is because of the progression in development in a region. A higher value means positive progress (World Population Review 2023).	All values were converted from 0.0 to 1.0 to a range from 0.0 to 100.0. To achieve this, all values were multiplied by 100.
Employment index	The total number of employed people, including formal and informal employment, as a percentage of the total labour force	The unemployment rate was used as the base data set as a percentage of the total labour force. The data were transformed to indicate the employment rate. This was achieved by subtracting the unemployment rate from 100.
TRESS index	This index indicates the level of diversification or concentration of the economy across all the sectors. A value of 0.0 indicates a totally diversified sectoral economy and a value of 100 means the economy is only concentrated in one of the economic sectors. A rising value over time means the economy is becoming less diversified and rising vulnerability.	The TRESS index values have been inverted to allow rising values to represent positive change
GVA	GVA at basic prices is commonly used as a regional measure of production output, which is GDP on the regional level at market prices, excluding subsidies and taxes on products which are not available on a municipal level	For the inclusion of GVA in the index, the percentage contribution of the region concerning a base economy is used, in this case, the South African GVA values
GFCF	GFCF is the total capital domestic investment in the economy across all the asset types. Values are listed at constant prices or as a percentage of total investment.	For the inclusion of the GFCF in the index, the percentage contribution of the region in relation to a base economy is used; in this case, the South African GFCF values
LQ	LQ indicates the comparative advantage of an economy in terms of its production and employment. An LQ of less than one indicates limited specialisation, and products and services must be imported, while an LQ above one means specialisation and export potential.	The LQ values of the primary, secondary and tertiary sectors were aggregated, and the average values for the three sectors were calculated
Productivity index	For the purpose of this study, productivity is calculated as the total GVA in constant prices divided by total employment, resulting in a GVA per employed person	GVA divided by the total number of employed persons in the economy provides an index value

Source: Quantec (2023).
Key: HDI, Human development index; GVA, Gross value added; GDP, gross domestic product; GFCF, Gross fixed capital formation; LQ, Location quotient.

Results

Descriptive analysis

The descriptive analysis includes all of the variables listed in Table 9.1. The Gauteng province and all five sub-regions in the province were analysed

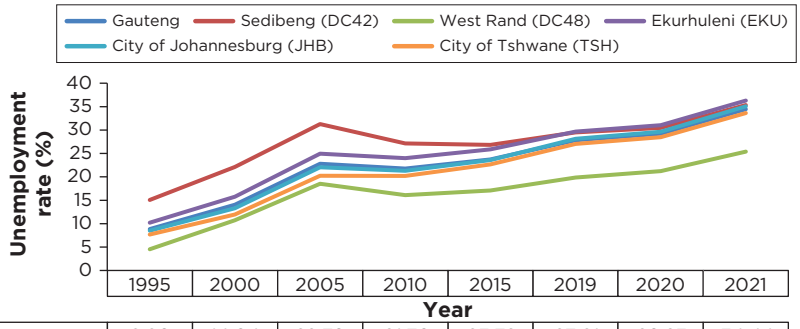
and compared. The analysis commences with HDI. Table 9.2 provides a summary of the HDI environment in the Gauteng region. With its five sub-regions, Gauteng started in 1995 at a relatively high level of between 0.67 and 0.69, relating to a medium level of human development. But this relatively good start declined to the lowest values over the total study period of 26 in 2005 to mid-0.5 values, relating to medium to low levels of human development. All regions started to recover in 2010 with increasing HDI values, with CoT reporting the highest index of 0.659, with SD the lowest at 0.639. The regions reached their peak in 2015, with all regions except for the SD achieved values of more than 0.7 index. From 2015, the country, including Gauteng, experienced low economic growth. By 2019, all regions declined, with only two of the metros – CoT and CoJ – above the 0.7 level, indicating high levels of human development. As indicated in Table 9.2, surprising results show that within the COVID-19 period of 2020 and 2021, all regions achieved high levels of 2015, but only with a slight decline in 2021. This slight increase in the COVID-19 period could be explained by the relatively high levels of government-welfare grants. The three metropolitan regions achieved the highest levels of HDI of above 0.7, indicating high levels of human development. Regarding HDI improvement over the study period, annual growth rates were generally low. Still, the highest was achieved by CoJ and CoT at 0.194%, while SD had the lowest improvement rate over the study period.

Next, the employment situation is analysed as summarised in Figure 9.2. For this part of the analysis, unemployment is the focus. In 1995, Gauteng province had an unemployment rate of only 8.9%, with the WRD having the lowest rate of 4.6% and SD having the highest rate of 15.1%. The unemployment situation, however, drastically deteriorated from 1995 to 2021. By 2019, the Gauteng province had reached an unemployment rate of 27.8% and only WRD at 19.9% and CoT at 27.0% had lower rates than the province. The average annual increase in the unemployment rate over this

TABLE 9.2: Human development index.

Region with sub-regions	Pre-COVID-19						During COVID-19		Annual growth rate
	1995	2000	2005	2010	2015	2019	2020	2021	1995–2021 (%)
Gauteng province (GP)	0.674	0.584	0.554	0.648	0.706	0.700	0.706	0.703	0.166
Sedibeng (SD)	0.674	0.578	0.544	0.639	0.697	0.690	0.696	0.693	0.113
West Rand (WRD)	0.668	0.579	0.549	0.644	0.702	0.695	0.702	0.699	0.173
Ekurhuleni (CoE)	0.675	0.585	0.555	0.649	0.706	0.699	0.705	0.702	0.155
City of Johannesburg (CoJ)	0.674	0.586	0.558	0.652	0.710	0.705	0.711	0.708	0.194
City of Tshwane (CoT)	0.680	0.592	0.565	0.659	0.718	0.711	0.717	0.714	0.194

Source: Quantec (2023).



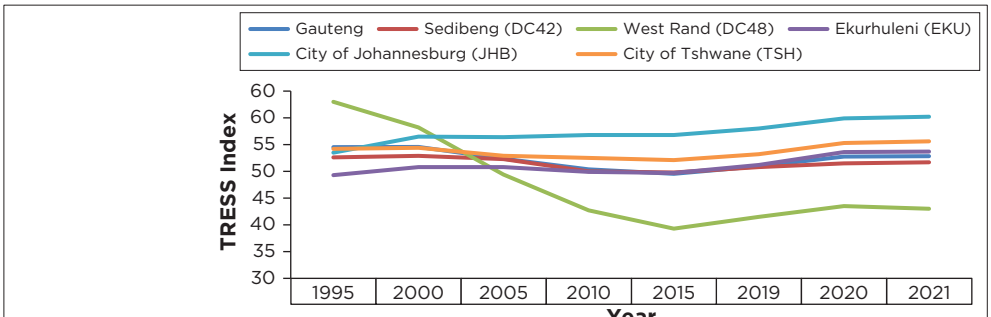
	1995	2000	2005	2010	2015	2019	2020	2021
Gauteng	8.86	14.04	22.79	21.76	23.72	27.81	29.23	34.44
Sedibeng (DC42)	15.08	22.10	31.27	27.13	26.83	29.49	30.46	35.35
West Rand (DC48)	4.55	10.74	18.53	16.11	17.09	19.86	21.22	25.39
Ekurhuleni (EKU)	10.21	15.75	24.95	23.99	25.88	29.68	31.06	36.31
City of Johannesburg (JHB)	8.51	13.30	22.05	21.31	23.58	28.12	29.65	35.06
City of Tshwane (TSH)	7.69	11.96	20.24	20.21	22.67	27.04	28.47	33.62

Source: Quantec (2023).

FIGURE 9.2: Unemployment rates.

period was 8.9% for Gauteng province. With the onset of COVID-19 in March 2020, unemployment rates even escalated more than in the previous 24 years. By 2021, the Gauteng province unemployment rate escalated to 34.4%, relating to an annual increase of 11.9%, compared to the annual increase in the period before COVID-19.

The TRESS index, or level of economic diversification, is the next indicator to be analysed. Figure 9.3 contains a presentation of the regional analysis from 1995 to 2021. A value closer to zero indicates a well-diversified economy, with all sectors contributing equally. A value above 50.0 and closer to 100 means that only a few sectors dominate the economy. The Gauteng province has maintained a value of around 50, with a peak value of 54.6 in 2000 and a most diversified value of 49.6 in 2015. Since the onset of COVID-19, the TRESS Index for Gauteng has deteriorated from 50.9 in 2019 to 52.8 in 2021. This could be a result of the impact of the pandemic on specific sectors, such as tourism. From 1995 to 2005, CoE had the most diversified economy of all the sub-regions, but since 2010, the WRD has dramatically improved the level of diversification from 49.4 in 2005 to 41.5 in 2019. This could be attributed to some growth in the primary sector, which led to expansion in the secondary sector. All the other regions had a TRESS index of more than 50.0. From 2019 towards 2020 and 2021, within the COVID-19 period, all regions experienced a deteriorating trend in the index as the shock of 'lockdowns' started to impact the economy. The CoJ has the most undiversified economy, with an index value of 60.2 in 2021, followed by CoT, with a value of 55.6. These two metropolitan regions are well-developed and leading in South Africa, and as modern regional economies, the tertiary sector is dominating these economies.



Gauteng	54.52	54.56	52.36	50.38	49.54	50.94	52.76	52.84
Sedibeng (DC42)	52.60	52.90	52.30	50.00	49.80	50.80	51.50	51.70
West Rand (DC48)	63.00	58.20	49.40	42.70	39.30	41.50	43.50	43.00
Ekurhuleni (EKU)	49.30	50.80	50.80	49.90	49.70	51.20	53.60	53.70
City of Johannesburg (JHB)	53.50	56.50	56.40	56.80	56.80	58.00	59.90	60.20
City of Tshwane (TSH)	54.20	54.40	52.90	52.50	52.10	53.20	55.30	55.60

Source: Quantec (2023).

FIGURE 9.3: Regional TRESS index.

This next section analyses the contribution of the main sectors to GVA in the regions. Table 9.3 is a summary of the Gauteng regional analysis with a focus on the three broad sectors, the primary, secondary and tertiary sectors and two sectors that were hugely impacted by COVID-19, namely the manufacturing sector and catering and accommodation sector representing the tourism sector. The economic shock of the pandemic is evident in Table 9.3. The strong traditional sector, the primary sector, consisting of agriculture and mining, has drastically declined, indicating the modernisation of the province's economy. The primary sector has declined from a contribution of 6.6% in 1995 to 2.7% in 2021.

Interestingly, the sector has shown some resilience in the COVID-19 period by increasing its contribution to the total economy from 2.3% in 2020 to 2.7% in 2021, which is a substantial increase over the short run. This is mostly because of a strong performance in the agricultural sector. What is a real problem for the Gauteng economy is the decline in the secondary sector from 42.1% in 1995 to only 29.6% in 2021. This decline has continued during the COVID-19 period. A part of the problem is the rapid decline in the manufacturing sector from a contribution of 34.8% in 1995 to only 24.0% in 2021. This decline needs to be reversed if the province's economy is to achieve higher levels of growth. The tourism sector was stable until before COVID-19; in this period, the sub-sector declined by more than 50%. This sub-sector of the economy had the highest impact from the shocks of the pandemic.

The GVA growth rates for the Gauteng province are listed in Table 9.4. The impact of COVID-19 is clearly evident from the data. The total economy

TABLE 9.3: Gauteng contribution to gross value added.

Sectors	Pre-COVID-19 (%)						During COVID-19	
	1995	2000	2005	2010	2015	2019	2020	2021
Primary sector	6.59	4.50	3.72	2.88	2.58	2.31	2.27	2.68
Secondary sector	42.07	41.45	40.73	38.12	35.43	33.20	30.30	29.59
Tertiary sector	51.34	54.05	55.55	59.00	61.99	64.49	67.43	67.73
Manufacturing	34.83	35.00	34.10	30.36	27.88	26.46	24.19	24.01
Catering and accommodation services (a proxy for the tourism sector)	1.17	1.10	1.23	1.24	1.19	1.13	0.52	0.53

Source: Quantec (2023).

TABLE 9.4: Gross value added annual growth rates for Gauteng province.

Sector	GVA growth from 1995 to 2021	GVA growth from 2019 to 2021
Primary sector	–0.33	7.11
Secondary sector	2.24	–5.96
Tertiary sector	7.57	1.89
Total	**4.81**	**–0.59**

Source: Quantec (2023).
Key: GVA, gross value added.

achieved high growth rates up to 2019, but from 2019 to 2021, the province realised a negative growth rate. The opposite is true regarding the primary sector, while the secondary sector was severely negatively impacted by COVID-19. The tertiary sector also faced a huge slump during the COVID-19 period.

Regarding the analysis of the five sub-regions, Table 9.5 summarises the contributions of the main sectors to GVA. The five regions actually presented similar results over the study period. Firstly, for all five regions, the primary sector declined from 1995 to 2019, but the COVID-19 period resulted in growth in the contributions of the sector to GVA. The two more rural regions, WRD and SD, had the largest primary sectors with contributions of 14.9% and 3.9%, respectively, in 2021. This increase was mainly because of growth in the agricultural sector and, in the case of the WRD, the mining sector.

The secondary sector has, in general, declined within all the sub-regions. COVID-19 has accelerated this decline in all regions. This sector has the highest contribution in SD, with a contribution of 47.3% in 2021, down from 58.2% in 1995. This decline is having extreme impacts on the regional economy with the steel industry's decline. The secondary sector has the lowest contribution in the GVA of CoT at only 25.9% in 2021, down from 37.5% in 1995.

Overall, the tertiary sector has expanded its contribution to GVA in all five sub-regions. This trend indicates the modernisation of regional economies. The COVID-19 period has accelerated this sector's contribution

TABLE 9.5: Gross value added contributions in the main sectors in the regions in Gauteng.

Region	Sector	1995	2000	2005	2010	2015	2019	2020	2021
SD	Primary sector	2.08	1.62	2.36	2.64	3.13	3.07	3.33	3.95
	Secondary sector	58.22	58.49	57.45	54.95	52.79	50.85	48.03	47.25
	Tertiary sector	39.70	39.90	40.18	42.41	44.07	46.08	48.64	48.80
	Manufacturing	48.14	49.87	49.30	45.91	44.29	43.25	40.92	40.78
	Catering and accommodation services	0.76	0.77	0.89	0.97	0.98	1.01	0.48	0.49
WRD	Primary sector	49.79	39.81	29.37	20.51	15.58	13.80	12.68	14.95
	Secondary sector	23.47	27.83	33.05	36.41	37.29	37.09	35.49	34.20
	Tertiary sector	26.75	32.37	37.58	43.08	47.13	49.11	51.83	50.85
	Manufacturing	19.48	23.47	27.79	29.34	29.99	30.42	29.28	28.67
	Catering and accommodation services	0.61	0.73	0.94	1.05	1.06	1.05	0.50	0.50
CoE	Primary sector	3.29	2.25	2.35	2.12	2.18	2.03	2.02	2.36
	Secondary sector	51.48	49.68	48.54	44.21	39.85	36.80	33.89	32.97
	Tertiary sector	45.22	48.07	49.11	53.67	57.97	61.17	64.10	64.67
	Manufacturing	44.03	43.21	41.85	36.32	32.14	29.85	27.55	27.20
	Catering and accommodation services	0.89	0.86	1.02	1.12	1.17	1.20	0.57	0.58
CoJ	Primary sector	1.66	1.20	1.53	1.36	1.36	1.21	1.24	1.46
	Secondary sector	39.78	38.16	36.67	34.36	32.14	30.18	27.47	26.89
	Tertiary sector	58.56	60.64	61.80	64.27	66.50	68.61	71.29	71.66
	Manufacturing	32.01	31.41	29.84	26.54	24.59	23.44	21.40	21.30
	Catering and accommodation services	1.55	1.39	1.49	1.41	1.28	1.16	0.52	0.53
CoT	Primary sector	1.56	1.11	1.48	1.38	1.42	1.25	1.40	1.59
	Secondary sector	37.47	36.97	36.38	34.12	31.77	29.72	26.49	25.94
	Tertiary sector	60.98	61.92	62.15	64.50	66.81	69.03	72.12	72.47
	Manufacturing	30.72	30.87	30.12	26.71	24.57	23.36	20.79	20.72
	Catering and accommodation services	1.26	1.14	1.22	1.21	1.13	1.07	0.48	0.49

Source: Quantec (2023).
Key: SD, Sedibeng district; WRD, West Rand district; CoE, City of Ekurhuleni; CoJ, City of Johannesburg; CoT, City of Tshwane.

level as the other main sectors declined. The three metropolitan regions have the highest contributing tertiary sectors, with CoT the highest at 72.5% in 2021 from 60.9% in 1995, followed by CoJ with a contribution of 71.7% in 2021, up from 58.6% in 1995.

When assessing the manufacturing sub-sector, which is part of the secondary sector, similar trends are reported for the secondary sector for all the regions. Again, the COVID-19 period has accelerated the decline in this economic base sector, having a substantially negative impact on the

regional economies. The SD has the highest manufacturing contributing sector of 40.8% in 2021, down from 48.1% in 1995. All the other regions have sector contributions between 20% and 30% in 2021, except for the WRD, where the sector increased from 1995 to 2021.

Regarding the catering and accommodation sector, all five regions have experienced a major decline in the COVID-19 period of approximately 50%. Regarding GVA growth rates, the three metro regions experienced the highest growth rates from 1995 to 2021, with CoJ the highest at 6.2%, followed by CoT at 5.6% and CoE at 3.8%. The two more rural regions have experienced much lower growth rates over this period, of 2.9% for SD and 1.9% for WRD. If the COVID-19 period GVA growth rates are analysed, the impact of the pandemic is severe. From 2019 to 2021, all five regions experienced a negative growth rate except for CoJ, which achieved a growth rate of only 0.03%. The other four regions were in major decline with respective growth rates of –2.3% for SD, –1.1% for WRD, –1.6% for CoE and –0.2% for CoT.

The next phase of the analysis, the LQ for all the regions, with a focus on the main sectors, is analysed (see Table 9.6). The LQ reflects on the competitiveness and specialisation in a specific economic sector with a value of above 1.0, indicating that the region has a comparative advantage in the specific sector compared to the national economy. The primary sector is a relatively small sector in the urbanised economy of the Gauteng province, with a low LQ of only 0.23 in 2021, showing a steady decline as the region's economy moves away from the economic base to the more modern tertiary sector. The secondary sector has shown a steady decline since 1995 to a value of 1.04 in 2021, just above the threshold of 1.0. The same trend is followed within the manufacturing sector, which is part of the secondary sector. This economic base sector needs to grow for the total regional economy to improve, but it is currently in decline. The modern tertiary sector has had a steady LQ value of just above the threshold from 1995 to 2021 and has shown a slight increase in the COVID-19 period.

TABLE 9.6: Summary of location quotient for Gauteng province.

Sector	1995	2000	2005	2010	2015	2019	2020	2021
Primary sector	0.477	0.409	0.348	0.294	0.261	0.230	0.213	0.233
Secondary sector	1.147	1.110	1.103	1.063	1.057	1.053	1.042	1.040
Manufacturing	1.248	1.202	1.191	1.133	1.125	1.117	1.114	1.108
Electricity, gas and water	0.959	0.888	0.875	0.878	0.866	0.856	0.852	0.852
Construction	0.819	0.862	0.931	0.959	0.954	0.949	0.902	0.897
Construction	0.819	0.862	0.931	0.959	0.954	0.949	0.902	0.897
Tertiary sector	1.055	1.068	1.063	1.066	1.069	1.070	1.076	1.079
Catering and accommodation services	0.808	0.794	0.812	0.827	0.841	0.835	0.818	0.826

Source: Quantec (2023).

The next section analyses the LQ for the main sectors of the five regions of Gauteng province (see Table 9.7). The SD has a comparative advantage in the secondary sector with its steel manufacturing sub-sector, with an LQ of 1.75. With specific reference to the manufacturing sector, a sub-sector of the secondary sector, this sub-sector has an LQ of 2.00. The focus of the SD region is on the manufacturing sector, which needs to be supported and expanded in the future. The WRD has performed well regarding the primary and secondary sectors, with LQ values of 1.66 and 1.25, respectively, mostly because of its mining activities supported by manufacturing. These sectors have even shown a positive trend over time. The CoE has achieved LQ values of above 1.0 for the secondary and tertiary sectors. The LQ for the secondary sector has been declining over time, including the manufacturing sector. The tertiary sector has shown a slightly positive

TABLE 9.7: Location quotient in the sub-regions of Gauteng province.

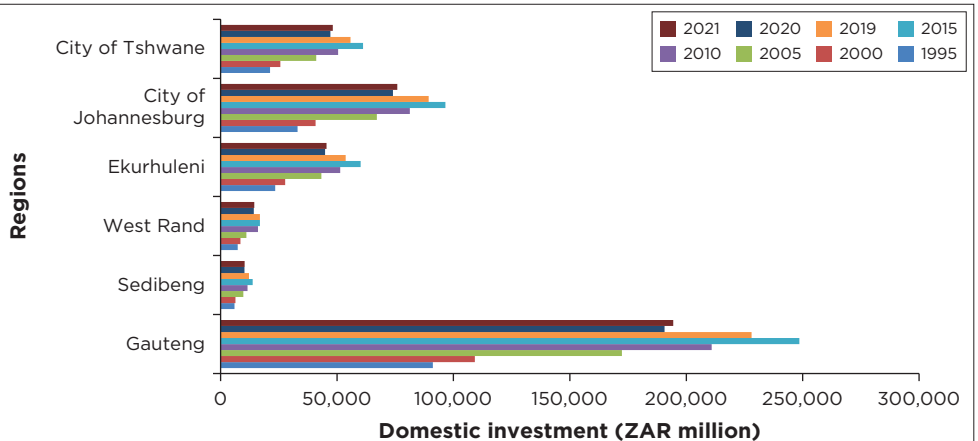
Region	Sector	1995	2000	2005	2010	2015	2019	2020	2021
SD	Primary sector	0.121	0.120	0.174	0.212	0.279	0.315	0.309	0.323
	Secondary sector	1.744	1.710	1.711	1.639	1.686	1.726	1.754	1.752
	Manufacturing	1.832	1.832	1.902	1.831	1.924	1.977	2.018	2.004
	Tertiary sector	0.913	0.920	0.891	0.896	0.884	0.879	0.890	0.893
	Catering and accommodation services	0.572	0.611	0.646	0.727	0.783	0.832	0.838	0.852
WRD	Primary sector	3.820	3.698	3.171	2.667	2.048	1.595	1.453	1.661
	Secondary sector	0.610	0.689	0.864	1.010	1.136	1.244	1.277	1.248
	Manufacturing	0.666	0.747	0.945	1.101	1.248	1.372	1.424	1.386
	Tertiary sector	0.559	0.628	0.722	0.794	0.840	0.869	0.882	0.862
	Catering and accommodation services	0.421	0.499	0.609	0.713	0.784	0.838	0.846	0.829
CoE	Primary sector	0.245	0.210	0.209	0.203	0.219	0.206	0.188	0.199
	Secondary sector	1.504	1.447	1.404	1.290	1.231	1.198	1.188	1.175
	Manufacturing	1.713	1.636	1.588	1.440	1.355	1.302	1.301	1.280
	Tertiary sector	0.974	0.991	0.986	1.006	1.023	1.033	1.043	1.050
	Catering and accommodation services	0.670	0.683	0.727	0.794	0.871	0.923	0.923	0.937
CoJ	Primary sector	0.101	0.089	0.106	0.104	0.113	0.114	0.107	0.112
	Secondary sector	1.075	1.019	0.988	0.956	0.957	0.956	0.947	0.952
	Manufacturing	1.140	1.076	1.028	0.984	0.987	0.983	0.983	0.984
	Tertiary sector	1.158	1.154	1.137	1.122	1.115	1.109	1.111	1.115
	Catering and accommodation services	1.035	0.967	0.948	0.909	0.883	0.830	0.804	0.811
CoT	Primary sector	0.076	0.070	0.095	0.093	0.104	0.110	0.111	0.111
	Secondary sector	0.943	0.911	0.917	0.909	0.911	0.906	0.882	0.884
	Manufacturing	1.008	0.962	0.960	0.940	0.944	0.942	0.923	0.924
	Tertiary sector	1.211	1.193	1.162	1.138	1.129	1.123	1.127	1.132
	Catering and accommodation services	0.819	0.779	0.778	0.778	0.770	0.762	0.736	0.746

Source: Quantec (2023).
Key: SD, Sedibeng district; WRD, West Rand district; CoE, City of Ekurhuleni; CoJ, City of Johannesburg; CoT, City of Tshwane.

increase over time. The CoJ has an above-one LQ index for only the tertiary sector of 1.12, indicating a declining secondary sector overall and a weak primary sector. This is a concern as the economic base sectors are declining. The same situation is evident in the case of CoT with declining economic base sectors and an improving tertiary sector.

The domestic investment, also known as the GFCF environment, is analysed in the next section. Figure 9.4 summarises the level of domestic investment and annual growth rates. Before COVID-19, CoJ had the highest level of GFCF of all the regions and contributed 39.1% to the provincial GFCF, followed by CoT at 24.5%. In 2021, this situation changed, and all regions, as well as the province, experienced a decline in GFCF, but the contributions remained similar. The SD had by far the smallest level of investment, at only 5.3% in 2021. For the province and its sub-regions to grow, much higher domestic and foreign investment levels are critical.

From 2019 to 2020, during COVID-19, the economic downturn and electricity load shedding significantly negatively impacted the level of



	Gauteng	Sedibeng	West Rand	Ekurhuleni	City of Johannesburg	City of Tshwane
2021	194,403	10,315	14,487	45,493	75,914	48,194
2020	190,663	10,270	14,254	44,920	74,044	47,175
2019	228,059	12,233	16,883	53,725	89,392	55,825
2015	248,586	13,772	16,920	60,135	96,596	61,163
2010	210,889	11,613	16,101	51,407	81,290	50,478
2005	172,348	9,787	11,088	43,269	67,117	41,087
2000	109,182	6,429	8,535	27,741	40,807	25,669
1995	91,151	5,960	7,366	23,464	33,103	21,258

Source: Quantec (2023).

FIGURE 9.4: Domestic investment (South African rand millions).

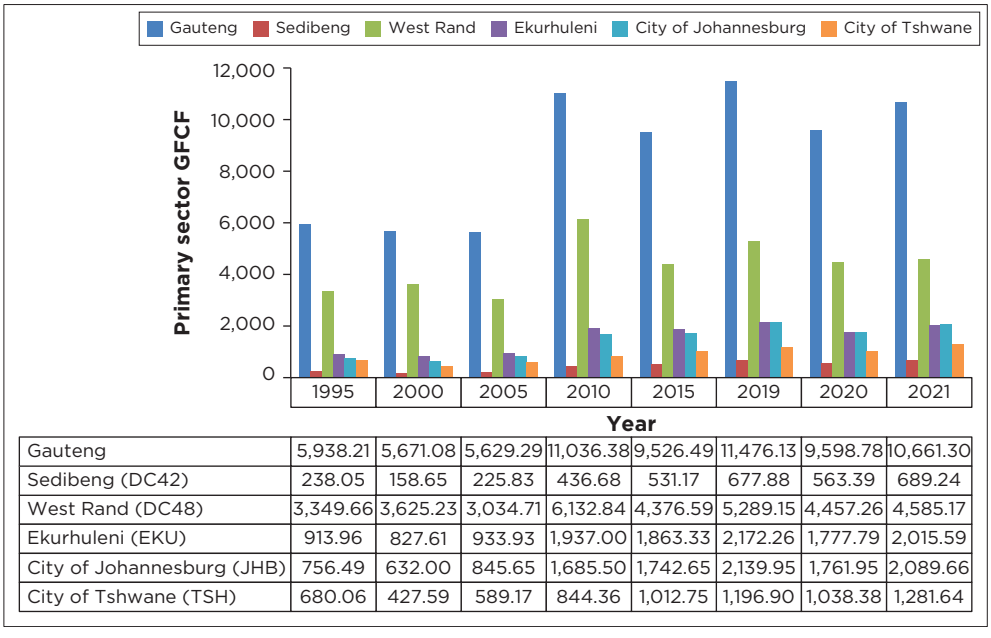
GFCF in the province and its five regions. The province, with its sub-regions, has been equally negatively affected by all these shocks simultaneously. Table 9.8 is a summary of GFCF annual growth rates. From 1995 to 2019, Gauteng province had an annual growth rate of 4.4%, but from 2019 to 2021, during the COVID-19 period, the annual growth rate for investment slumped to a negative rate of –7.4%. Similar data were recorded for all the sub-regions, indicating widespread deterioration of the investment environment.

Figure 9.5 presents the GFCF summary for all regions in the primary sector (agriculture and mining). The WRD had the highest contribution across the period, contributing 43.0% to the provincial investment. Primary sector investment increased annually by 3.1% over the period but fell by –3.5% from 2019 to 2021 during the COVID-19 period.

TABLE 9.8: Gross fixed capital formation annual growth rates in percentage.

Region	1995 to 2021	2019 to 2021
Gauteng (GP)	4.36	–7.38
Sedibeng (SD)	2.81	–7.84
West Rand (WRD)	3.72	–7.09
Ekurhuleni (CoE)	3.61	–7.66
City of Johannesburg (CoJ)	4.97	–7.54
City of Tshwane (CoT)	4.87	–6.84

Source: Quantec (2023).



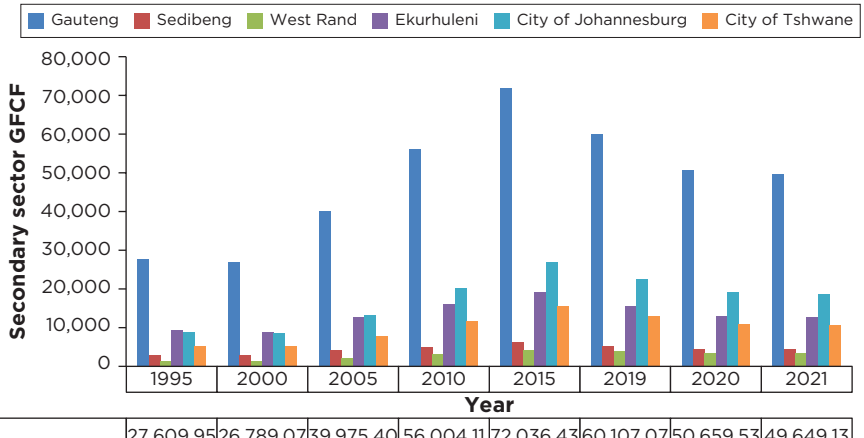
Gauteng	5,938.21	5,671.08	5,629.29	11,036.38	9,526.49	11,476.13	9,598.78	10,661.30
Sedibeng (DC42)	238.05	158.65	225.83	436.68	531.17	677.88	563.39	689.24
West Rand (DC48)	3,349.66	3,625.23	3,034.71	6,132.84	4,376.59	5,289.15	4,457.26	4,585.17
Ekurhuleni (EKU)	913.96	827.61	933.93	1,937.00	1,863.33	2,172.26	1,777.79	2,015.59
City of Johannesburg (JHB)	756.49	632.00	845.65	1,685.50	1,742.65	2,139.95	1,761.95	2,089.66
City of Tshwane (TSH)	680.06	427.59	589.17	844.36	1,012.75	1,196.90	1,038.38	1,281.64

Source: Quantec (2023).
Key: GFCF, gross fixed capital formation.

FIGURE 9.5: Primary sector gross fixed capital formation (South African rand millions).

Figure 9.6 presents the GFCF summary for all regions in the secondary sector (mainly manufacturing). The CoJ had the highest contribution across the period, contributing 37.8% to the provincial investment. The secondary sector investment increased annually by 3.1% over time but fell by 8.7% from 2019 to 2021, during the COVID-19 period.

Table 9.9 summarises Gauteng province's productivity level and all its sub-regions. The productivity index was calculated annually for all regions by dividing the total GVA by the total number of employed people in the region. In 1995, the base year for the analysis, CoE had the highest productivity index of 42.0, while the WRD had the lowest productivity. All regions achieved high levels of improved productivity, and by 2019, all



Gauteng	27,609.95	26,789.07	39,975.40	56,004.11	72,036.43	60,107.07	50,659.53	49,649.13
Sedibeng (DC42)	2,943.06	2,781.69	4,064.78	5,031.11	6,169.57	5,276.81	4,435.95	4,311.59
West Rand (DC48)	1,338.28	1,353.26	2,140.66	3,101.03	4,269.40	3,935.54	3,364.43	3,363.23
Ekurhuleni (EKU)	9,232.28	8,985.37	12,810.83	15,964.64	19,066.08	15,504.64	12,965.86	12,633.51
City of Johannesburg (JHB)	8,846.61	8,590.92	13,160.36	20,200.17	27,006.92	22,509.35	19,038.75	18,760.89
City of Tshwane (TSH)	5,249.72	5,077.84	7,798.78	11,707.16	15,524.46	12,880.72	10,854.55	10,579.91

Source: Quantec (2023).
Key: GFCF, gross fixed capital formation.

FIGURE 9.6: Secondary sector gross fixed capital formation (South African rand millions).

TABLE 9.9: Productivity index.

Region	1995	2000	2005	2010	2015	2019	2020	2021
Gauteng (GP)	39.45	48.79	55.44	57.76	58.11	57.49	58.67	63.40
Sedibeng (SD)	37.13	42.48	48.58	49.76	53.77	58.46	55.34	57.87
West Rand (WRD)	36.70	44.36	48.78	48.64	49.88	50.12	49.30	54.62
Ekurhuleni (CoE)	42.04	52.55	57.63	58.38	57.14	54.98	55.23	59.43
City of Johannesburg (CoJ)	38.67	47.90	55.33	58.90	59.65	59.54	61.45	66.50
City of Tshwane (CoT)	39.45	48.49	56.28	59.26	60.08	60.08	61.99	66.64

Source: Quantec (2023).

regions had indexes above 50.0, with CoT achieving the highest level of 60.1, with the WRD still the lowest at 50.1. With the onset of COVID-19, mixed results were achieved. The province, CoE, CoJ and CoT improved their index while SD and WRD moved backwards from 2019 to 2020. All regions, however, recovered with rapid improvements from 2020 to 2021, indicating a different level of productivity and possible changes in production processes to improve productivity within the COVID-19 environment.

Index development

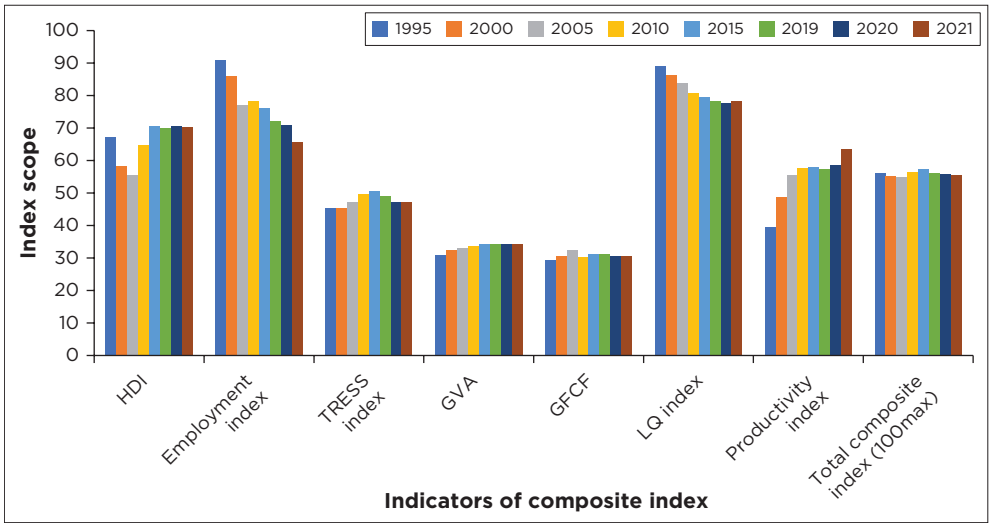
In the second main section of the analysis, a composite index was developed, as indicated in the methodology section. The index consists of seven variables or indicators with equal weighting, as explained in Table 9.1. All variables were converted into indexes between 0.0 and 100.0. Table 9.10 and Figure 9.7 present the index for Gauteng province as baselined against the South African economy. The province's overall composite index has been relatively stable from 1995 to 2021. The index value started at 56.1 in 1995; by 2019, it had exactly the same value. The index value then declined to 55.7 in 2020 and 2021 with the onset of COVID-19. The composite index peaked in 2015 with a value of 57.2 because of the excellent economic development rates achieved during that period. Regarding the seven sub-indexes or variables, the HDI gradually improved and achieved a maximum value of 70.6 in 2015, indicating high human development. This level has been maintained through the COVID-19 period up to 2021.

Employment levels significantly declined over the study period from an index of 91.1 in 1995 to 72.2 in 2019. The index was severely affected by COVID-19, and in 2021, the employment index was down to a value of 65.6, indicating rising and high unemployment levels. The TRESS index is known as an index that does not change much over time, only in a case where severe shocks are experienced, as in this case, COVID-19, a health shock. The index showed a steady improvement from 1995 to 2015 of just

TABLE 9.10: Composite index for Gauteng province.

Variable	1995	2000	2005	2010	2015	2019	2020	2021
HDI	67.4	58.4	55.4	64.8	70.6	70.0	70.6	70.3
Employment index	91.1	85.9	77.2	78.2	76.3	72.2	70.8	65.6
TRESS index	45.5	45.4	47.4	49.6	50.5	49.1	47.2	47.2
GVA	30.9	32.5	33.2	33.6	34.2	34.4	34.4	34.3
GFCF	29.3	30.5	32.3	30.3	31.2	31.1	30.6	30.5
LQ index	89.2	86.2	83.8	80.8	79.6	78.4	77.7	78.4
Productivity index	39.5	48.8	55.4	57.8	58.1	57.5	58.7	63.4
Total composite index (100 max)	56.1	55.4	54.9	56.4	57.2	56.1	55.7	55.7

Source: Quantec (2023).
Key: HDI, Human development index; GVA, Gross value added; GFCF, Gross fixed capital formation; LQ, location quotient.



Source: Quantec (2023).
Key: HDI, Human development index; GVA, Gross value added; GFCF, Gross fixed capital formation; LQ, location quotient.
FIGURE 9.7: Gauteng composite index.

above 50.0. But, in the COVID-19 period, the index (level of diversification) declined to a low point of 47.2, indicating an economy that is less diversified with specific sectors such as tourism and manufacturing declining in their contribution (the index was inverted for the purpose of the compilation of the composite index).

The provincial contribution of GVA has been steadily increasing from 1995 to 2021 and has been stable from 2015 to 2021 at a value of 34.3. Regarding the levels of GFCF, the provincial contribution has been stable at around an index of 30.0. Domestic investment has been declining in South Africa, and these index values also indicate this trend. It is interesting to note that the Gauteng province contributes 34.3% to the South African economy with its nine provinces but only 30.0% to the domestic investment in the country. In terms of the LQ index, the values declined over the study period from 89.2 in 1995 to 78.4 in 2021. This trend indicates the changes in the economic structure and a declining comparative advantage across economic sectors. Lastly, the productivity index has been stable at around 55.0–57.00, and the COVID-19 period did not significantly impact it.

Discussion

Globally, COVID-19 had and is still having significant negative impacts on economies (OECD 2020a). This health pandemic is an economic shock; many regions worldwide are still trying to recover from the impact. South

Africa was also affected as a developing country by the pandemic, which resulted in a recessionary environment. The country was already experiencing a low growth environment from 2015 because of policy uncertainty leading to low levels of investment and a lack of infrastructure capacity, especially regarding electricity supply. The Gauteng province is the economic hub of South Africa, and the study investigated the impact of COVID-19 on this leading regional economy with its five sub-regions (BusinessTech 2022). Could the impact, with all the other impacts, lead to structural change in the economy? The study, through its comparative analysis methodology of Gauteng, with the five regions, found significant changes in the province's economic structure if pre and in-COVID-19 conditions are compared. Seven economic structure variables were analysed over 26 years, from 1995 to 2021, and a composite economic change index was developed. The analysis indicates that the three metropolitan regions have more advanced economies compared to the two more rural district municipalities. The HDI for all the regions was not severely impacted as HDI changes are felt more in the long run, and government interventions supported people in need during the pandemic with additional financial support. However, COVID-19 significantly impacted employment, with many people losing their jobs permanently. Gauteng province's unemployment rate increased significantly from 27.8% in 2019 to 34.4% in 2021. Specific sectors, such as tourism and manufacturing, were the most affected. The employment or labour market has been affected permanently or at least in the long run.

Regarding the diversification of the provincial economy across the sectors, evidence from the data analysis indicated that the economy was less diversified in 2021 compared to 2015. This is because of the fact that the tertiary sector is growing faster than the primary or secondary sectors as the regional economy modernises over time. The danger of this type of concentration is that external shocks could significantly impact the regional economy (Kumo 2012). Another problem is that the economic base sectors are continuing to lose traction. This ongoing concentration towards the tertiary sector is clear. In 1995, the primary and secondary sectors contributed 48.7% to GVA. By 2019, just before COVID-19, this contribution declined to 35.5%, and within the pandemic period in 2021, the contribution was just 32.3%. The impact of COVID-19 is best seen when GVA growth rates and domestic investment are analysed. From 1995 to 2019, the annual average growth rate was 4.8%, but from 2019 to 2021, the region achieved a negative growth rate of –0.6%. Domestic investment in 2021 was below that of 2015, with declining levels of investment, specifically in the primary and secondary sectors. The LQ analysis confirms the growing importance of the tertiary sector. Although the province still has a limited comparative advantage regarding the secondary sector of just above the 1.0 threshold,

this advantage is slowly diminishing. Lastly, the productivity index improved through the COVID-19 period, indicating improved labour practices. For example, people work online, saving time to do more work instead of travelling. From the above analysis, the shock induced by COVID-19 had enough impact to cause structural changes to the economic structure of Gauteng province. Critical policy changes are required to ensure that these changes could lead to future growth. Recommendations are listed at the end of this section.

The composite index results are interesting because the total values declined just slightly over 26 years, even after taking the COVID-19 shock into account. Specific sub-indicators have shown large movements, but the overall index remained relatively constant. The details of the index provide strategy development information.

Conclusion

This paper contributes to the knowledge of regional and local economic development (LED) as one of the first research projects which analysed the Gauteng provincial economy, compared all five sub-regions in this detail over 26 years and assessed the impact of COVID-19. The research also contributes by developing a composite index to assess possible economic structural changes. The study's limitations are that other factors could impact the economy. Although seven main economic development indicators were included, it could be possible that other economic indicators could have been taken into account. Future research could be related to comparing other regions in South Africa with these findings, as well as international comparisons.

The final recommendations from this study are: (1) In the South African environment, structural change is required in terms of the following aspects but not limited to changes in labour legislation to allow for employment creation, ease of conducting business processes, the enabling environment for business success including improved infrastructure capacity and support for economic base sectors; (2) a diversified economy could provide better protection against economic and other types of shocks; (3) for economic development high levels of economic growth are required, and this could be achieved via both foreign and domestic investment, but the investment is possible only if a stable and positive investment strategy is in place; and (4) COVID-19 has accelerated the use of technology leading to improved productivity, and these lessons should be refined and allowed to the benefit of the regional economy.

Chapter 10

Investment and local economic development: How has COVID-19 impacted local investment?

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Abstract

The global COVID-19 health pandemic has brought unprecedented challenges, adversely impacting developed and developing countries. Local economies are especially instrumental in the post-pandemic recovery. There is a pressing concern that local regions will have to innovate and adapt new policies and strategies to promote sustainable economic growth and development. Innovation and the use of new technology have been reshaping economies, bringing new challenges to local economies in not only ensuring competitiveness but also preventing communities from being left out of the economic cycle. This chapter aims to conduct a comparative

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analysis of the levels of investment within local economies pre- and post-COVID-19. This will shed light on how the pandemic has influenced investment within local regions. These findings could provide insight into whether or not investment within local regions is adequate and effectively distributed amidst times of economic crises.

Introduction

As the aftermath of the COVID-19 pandemic continues to linger throughout the globe, the devasting impact on people's lives and livelihoods is far from remedied. Economies worldwide are entering a recovery phase that calls for innovative solutions in response to unprecedented challenges. As Tonnoir et al. (2021, p. 2) point out, regions and economies are all impacted differently and some industries are more adversely affected than others. Even though the total economic impact of the pandemic will only be evident in the years to come, it is possible to analyse short-term impacts and predict long-term effects in an effort to guide policy and strategy makers on the way forward. Without a doubt, the impact of the pandemic on global trade, poverty and unemployment has been immense. Still, it has also had a significant effect on investment globally (Badmus, Bisiriyu & Alawode 2022, p. 1). Undeniably, investment forms a key component of sustainable economic growth and development. Gross fixed capital formation (GFCF) is the main component of investment and is referred to as investment throughout this chapter. Gross Fixed Capital Formation could be defined as the procurement of second-hand or new assets, indicating the level of new value-added assets that are invested in the economy instead of being consumed (Stupnikova & Sukhadolets 2019, p. 2).

Stern et al. (2020, p. 4) stress that for regions to recover robustly and sustainably, there is a need for policies, strategies and investment aimed at stimulating short-run demand, where investment needs to be directed towards sustainable productive assets that will increase productivity, grow capacity, preserve environmental assets and ultimately build resilience over the medium to long run. Yet, even before the pandemic, the global economy has been plagued by disparities in growth and development. As Lukasz and Smith (2015, p. 5) write, investment in productivity has been too little while global savings have been significant. The Organization for Economic Co-operation and Development (OECD 2019, p. 13) further states that even though investment was under pressure following the 2008 global financial crisis (GFC), present-day investment remains lower than pre-GFC levels. This could be attributed to the fact that developed countries are shifting their traditional investment focus from physical to more knowledge-based investment (Allain-Dupré, Hulbert & Vincent 2017, p. 10). In contrast to these developed countries that invest only in the maintenance of well-developed infrastructure, developing countries such as South Africa still

have the need to acquire significant investments in complex infrastructure in order to promote economic growth and development. The OECD (2022a) reiterated that South Africa needs to increase its investment in developing higher-quality infrastructure, including railways, roads, communication, healthcare and educational services, if the country is to recover from economic hardships worsened by the pandemic. Moreover, the OECD (2022b, p. 3) states that local governments are at the centre of ensuring adequate investment policies within their regions, highlighting the importance of local economic development (LED). The agency further writes that in Africa, the local government only accounts for a mere 11% of all public investment and, together with a low budget and unskilled workers, is unable to effectively and sustainably implement development policies. These factors negatively impact investment, productivity, revenue collection and the region's attractiveness to foreign investors (OECD 2022b, p. 4).

This chapter provides an overview of investment trends within a local region in South Africa, showcasing how investments within the main industries of the country have been affected by the pandemic. The findings could provide insight into whether or not investment is adequately directed towards the sectors most in need and how economic crises seem to impact investment in local regions within a developing country.

Literature review

Even though the COVID-19 pandemic was a global phenomenon, it is regional factors that contributed to the pandemic's impact on businesses and communities (Königs & Vindics 2021, p. 3). While the entire economy has felt the negative effects of the pandemic, some industries have been more adversely affected than others, as some industries, such as pharmaceuticals, have indeed benefited from the pandemic (Roy, Dutta & Ghosh 2021, p. 5). As mentioned, this study makes use of GFCF as the main indicator of investment. Gross fixed capital formation is a measure of the value of existing or new fixed assets or produced assets that private households, businesses and government acquire (Okoye, Mbakwe & Igbo 2017; Rauf et al. 2018, p. 5). This means that only assets that occur by means of production processes are included in the measurement; thus, the acquisition of natural resources or land are examples of elements not included in this measure (OECD 2023). Södersten, Wood and Hertwich (2017, p. 55) write that in terms of resources and monetary turnover, GFCF makes up a significant share of the total demand for services and goods. The authors further note that GFCF plays an essential economic role globally as it accounts for 25% of the final global demand, enabling a continuous flow of long-term investment aimed at promoting production capacity. What makes this investment even more significant is the fact that investors use this measure as a descriptor of whether or not to invest in a

country or region (Badmus et al. 2022, p. 11). Furthermore, Cohen, Freiling and Robinson (2012, p. 5) point out that fluctuations in investment are a predictor of economic growth, business confidence and business activity.

Investment is one of the key components of sustainable local development, and for decades the importance thereof has been reiterated throughout economic theories, ranging from Keynesian to Domer's economic models. Saghir and Khan (2012, p. 44) attribute this to the fact that investment encourages new production techniques that improve a region's productive capacity, thereby giving investment a central role in various economic theories. Tobin (1965) writes that Keynes adopted the view that an economy's aggregate demand is increased because of an influx of additional and new investment. Additionally, various authors point towards endogenous growth and neo-classical growth models, which highlight investment's potential contribution.

As regional economies are reshaped following the pandemic, investment will be imperative in the recovery phase. The OECD (2022c, p. 6) states that investment is imperative in aiding LED as it plays a supporting role in encouraging productivity, creating jobs, enhancing innovation and skills development, as well as enabling sustainable development. This view is also supported by Doroshenko, Malykhina and Somina (2020, p. 917), who explain that regions that are successful at attracting investments are ultimately able to concentrate the value chains within their region, which provides the basis for sustainable economic development. Unfortunately, external and internal shocks, such as the pandemic, hamper these benefits (Badmus et al. 2022, p. 2). According to Mefteh and Romdhane (2022, p. 299), the pandemic saw a significant decline in investment in construction, housing, machinery and equipment. Badmus et al. (2022, p. 11) write that the pandemic resulted in unprecedented fluctuations within economic indicators, which further led to a global deterioration of economic activity and investment. With the peak of the pandemic in 2020, there was a significant drop in trade, production and service delivery and thus, investment further deteriorated (Ozili 2021, p. 403). Mefteh and Romdhane (2022, p. 308) stress that economic growth was further impacted by unemployment because of the negative relationship between unemployment and economic growth, as the decline in investment contributed to a rise in unemployment. A study by Di Persio, Garbelli and Wallbaum (2021) confirms that the pandemic led to substantial volatility within risky assets and investments. In times of uncertainty, such as the peak period of the pandemic, Al-Thaqeb and Algharabali (2019, p. 2) stress that the impact thereof on households, businesses and governments' investment and spending is significant. This statement is supported by the study of Bernanke (1983), who reiterates that there tends to be a decline in

investment as well as a loss in employment during times of economic uncertainty.

Ultimately, the true extent of the pandemic and the impact it had on investment globally will only be fully understood in the years to come. Still, it is possible to examine current trends and explore past research on the role of investment in economies to understand better and guide the way forward. Research regarding the role of investment within economies has been vast (Apergisa & Payneb 2010; Attanasio, Picci & Scorcu 2000; Bahal, Raissi & Tulin 2018; Bleaney & Greenaway 2001). Several authors have explored the factors that influence investment and economic growth and found that these are financial development, trade volumes, technological innovation and fluctuations in the cost of non-ferrous metals (Baek & Yang 2010; Mardonesa & Riob 2019; Mau 2017; Sevena & Yetkinerb 2016). A study by Apergisa and Payneb (2010) established a long-term relationship between investment, labour and real gross domestic product (GDP). Similar findings were found in the studies of Podrecca and Carmeci (2001) and Bekhet and Othman (2011). These authors found a bi-directional causality between economic growth and investment. A study by Shabbir et al. (2021), focusing on the economy of Pakistan, found that investment has a significant and positive effect on the country's economy. Looking at industries, research by Khan et al. (2022) states that investment in infrastructure aids in promoting economic development. Investigating the impact of investment within the construction industry, Stupnikova and Sukhadolets (2019) found that over the long run, there is a non-linear causation between the growth in investment and construction. Regarding research and development, a study by Hardy and Sever (2020) established that because of the high-risk nature of the industry, investment usually declines in times of uncertainty, slowing down the rate of knowledge production.

In contrast to the abovementioned, McKinnon (2010) found that causality does not run from investment to economic growth. Research by Cheung, Dooley and Sushko (2012) found that, especially in the case of developing countries, there is a heterogenic association between investment and economic growth. Relating to research within the South African scenario, Kumo (2012) and Ncanywa and Makhenyane (2016) found evidence of a positive relationship between investment and economic growth. Similarly, a study by Meyer and Sanusi (2019) established that, over the long run, investment is a driver of employment in South Africa. The authors warn against the risk of jobless growth, where machinery replaces the role of employees in certain fields of work, as this increases productivity but leads to a loss in employment. The aforementioned is also supported by researchers such as Davis (1991) and Frey and Osborne (2015).

Looking at all of these aforementioned studies, it becomes clear that the relationship between investment and economic growth and development differs from region to region, highlighting how important it is to have regulatory bodies working together to ensure that the correct policies and frameworks are in place. Furthermore, the aforesaid studies focusing on the South African economy show just how vital attracting investment is in promoting economic growth and development. However, when comparing the growth of investment between South Africa and the member countries of the OECD, it is clear that uncertainty is one of the main stumbling blocks in generating investment within the country. Figure 10.1, shows that the global financial crises had a devastating impact on investment in both South Africa and the OECD. The OECD (2019) writes that present-day investment levels are still lower than before the 2008 GFC, as countries have been unable to recover to a pre-crisis level. Interestingly, even though the financial crises significantly negatively impacted investment within South Africa, the country still proved more resilient compared to the OECD, as illustrated in Figure 10.1. Moving toward the onset of the COVID-19 pandemic in 2019, Figure 10.1 shows the initial shock the pandemic had on investment growth. Research by Badmus et al. (2022) established that the pandemic did have an adverse effect on investment within the OECD, yet investment outflow was positively affected. Hence, the authors stress the importance of having correct policies in place to ensure effective investment opportunities.

Even though South Africa was slower to recover following the 2008 crisis, the country managed to achieve investment growth rates higher

Source: OECD (2023).
Key: OECD, Organization for Economic Co-operation and Development.

FIGURE 10.1: Total annual growth rate (%) of investment in South Africa and the OECD, 2000–2021.

than that of the OECD, showing the enormous investment potential of the country. With this being said, it is evident from Figure 10.1 that following 2013, the country has been plagued with a decline in the growth of investment, which was made worse by the COVID-19 pandemic in 2019. This downward trend from 2013 onwards could possibly be attributed to public and policy uncertainty, as the country has been under pressure because of failing infrastructure, rising unemployment, crime, load shedding, corruption and ineffective policies.

Wei et al. (2020, p. 2) state that within this era of global trade, not having an inducive investment environment significantly hampers the development and growth of local markets. The authors further emphasise that having ineffective investment policies and thereby being unable to convert investment potential into economic development hinders the sustainable development of regions. This is supported by Barrero, Bloom and Wright (2017), who found that policy uncertainty has a long-term negative impact on capital investment, which in turn negatively affects economic growth. Studying investment within African countries, Wei et al. (2020) attributed the slagging investment rates within African countries to ineffective government policies as well as a lack of skills, all of which delay advancements in economic development as well as growth within the business environment. According to Bloom (2014), in volatile regulatory environments, businesses are usually hesitant to invest and hire as they tend to avoid making costly decisions during such periods. This proves challenging as public and private investment is crucial for regions' sustainable economic growth and development. Al-Thaqeb and Algharabali (2019, p. 5) state that businesses are more likely to decrease their employment and investment in regions with high political risk. Furthermore, corruption has been found to negatively impact economic development as it adversely affects income equality, economic growth, productivity and market efficiency (Al-Thaqeb & Algharabali 2019, p. 5). Fournier (2016, p. 4) writes that regions with greater levels of public investment can generate higher levels of productivity than those regions with lower levels of investment. Research also suggests that the quality and effectiveness of governance and government institutions influence public investment capacity's ability to attract private investment as well as impact the expected returns on public investment (OECD 2019, p. 6). Several studies (Ejaz, Amır & Shabbır 2017; Muhammad et al. 2020; Shabbir & Wisdom 2020) have indeed found a positive and significant relationship between economic growth and public spending across all levels of government.

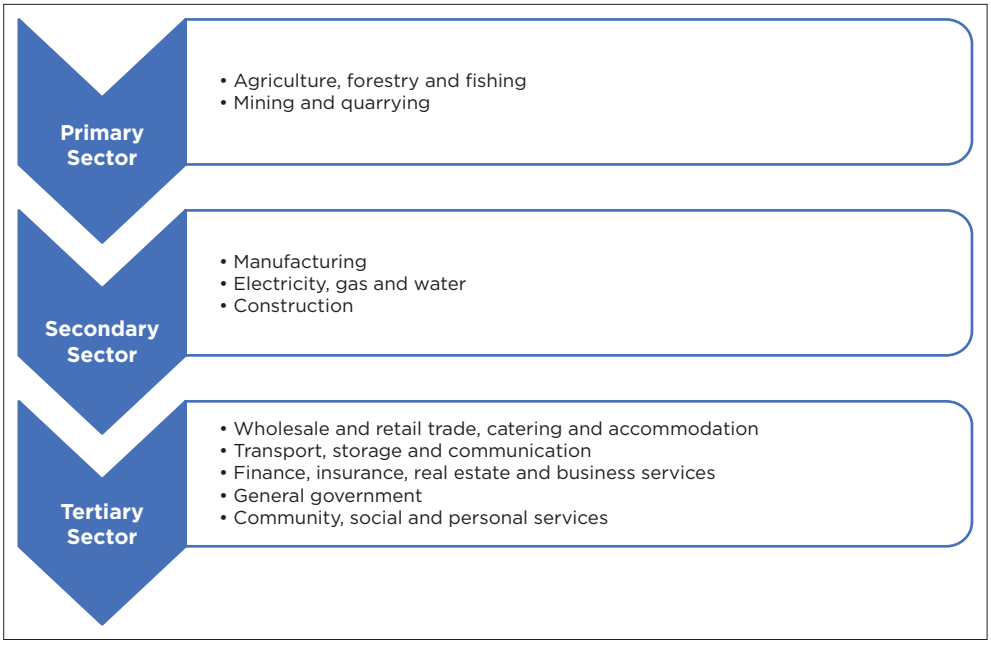
In accordance with the OECD (2022c, p. 8), a comprehensive investment policy framework is still absent amongst numerous policymakers, especially within developing countries, and is, therefore, unable to effectively divert investment into promoting the sustainable development of local regions.

Ultimately, investment within local regions is twofold. This is because even though it is crucial for development and growth, it might also further worsen regional disparities. This is because of the notion that regions with more advanced services, infrastructure and larger markets often attract more investors, taking away from regions with less development. For this reason, adequate policies and investment frameworks are implemented to ensure that regions' potential in investment is understood and harnessed to grow and develop the local region sustainably.

Methodology

Investment in this chapter will be measured by GFCF. Although the variable is subdivided into various categories, this chapter will only focus on total investment in the municipalities of Gauteng. The Gauteng province consists of three metropolitan municipalities (Johannesburg, Pretoria and Ekurhuleni) and two district municipalities (Sedibeng and West Rand) (Municipalities of South Africa 2022). Data on each municipality's GFCF were sourced from Quantec from 1993 to 2021. The municipal data for GFCF are subdivided into the primary, secondary and tertiary sectors with further sub-sections, as illustrated in Figure 10.2.

The next section will analyse the data according to the different municipalities and sectors as discussed.



Source: Quantec (2023).

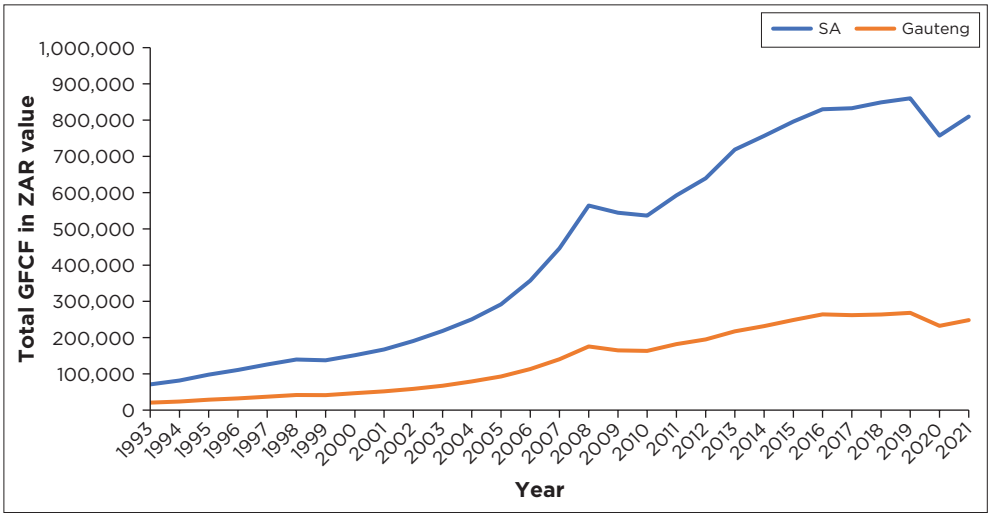
FIGURE 10.2: Gross fixed capital formation data available on the municipal level in Gauteng.

Results and discussion

To provide some background on the investment trends in the country, Figure 10.3 illustrates GFCF from 1993 to 2021 in South Africa and Gauteng. Exponential growth in investments can clearly be seen in the country post-apartheid up to the GFC in 2008/9. The effect of the GFC in Gauteng was less pronounced. After the GFC, there was an increase again in GFCF until the pandemic started, whereafter it started increasing again.

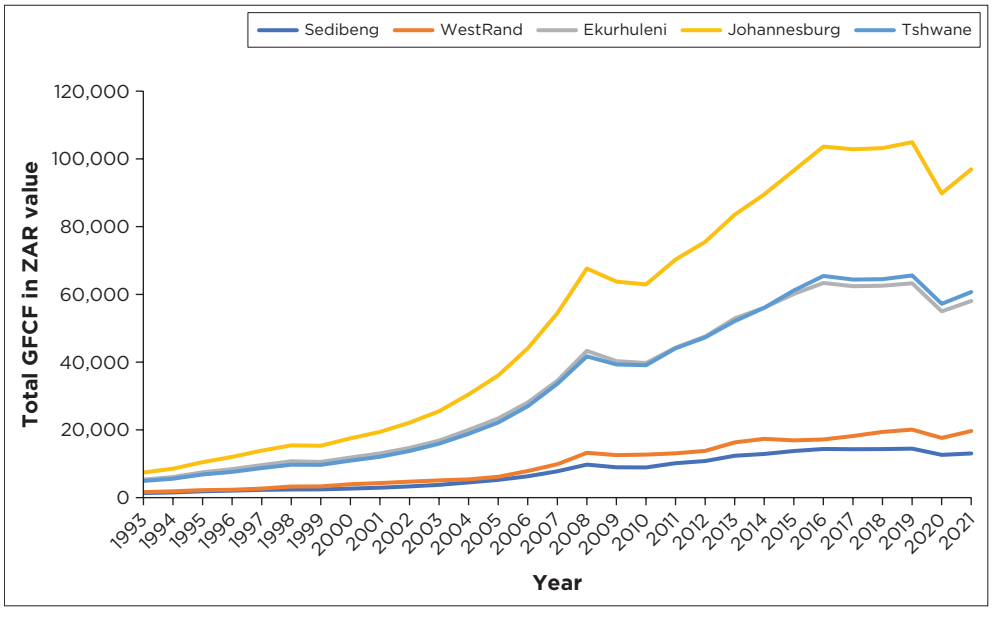
If the investment data are broken down into the different municipalities in Gauteng, a similar trend can be seen in Figure 10.4 as with the South African and provincial data. The effects of the GFC and the COVID-19 pandemic were more prominent in the three metropolitan municipalities (Johannesburg, Tshwane and Ekurhuleni).

If total investment in the province is broken down into the primary, secondary and tertiary sectors of the economy, it can be seen in Figure 10.5 that the maximum investment in the province occurs in the tertiary sector with minimal investment in the primary sector. Although Gauteng is the smallest province in the country, it is considered the country's economic hub and therefore, the significant investment in the tertiary industry makes economic sense. The effect of the pandemic on investments in the secondary and tertiary sectors can be clearly identified in Figure 10.5.



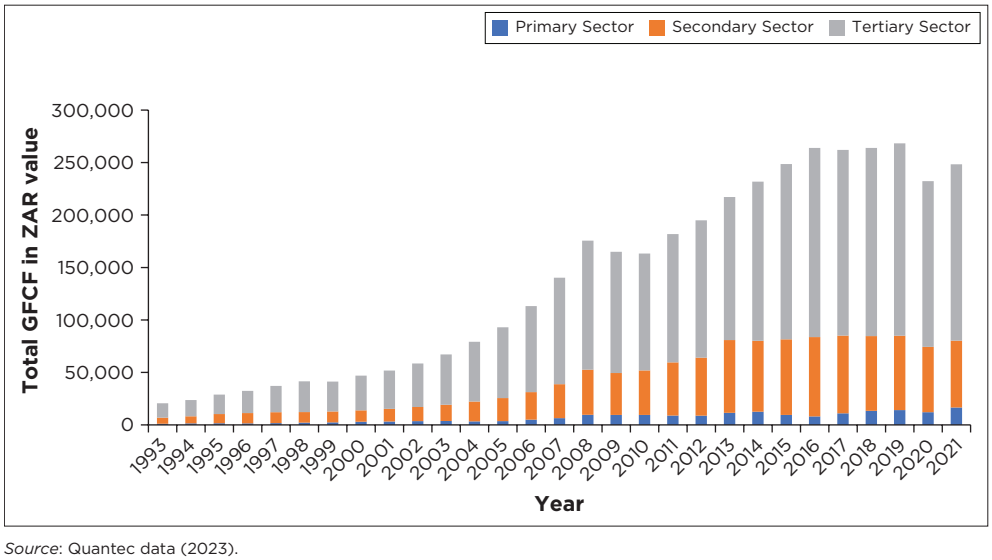
Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation.

FIGURE 10.3: Investment in South Africa and Gauteng from 1993 to 2001.



Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation.

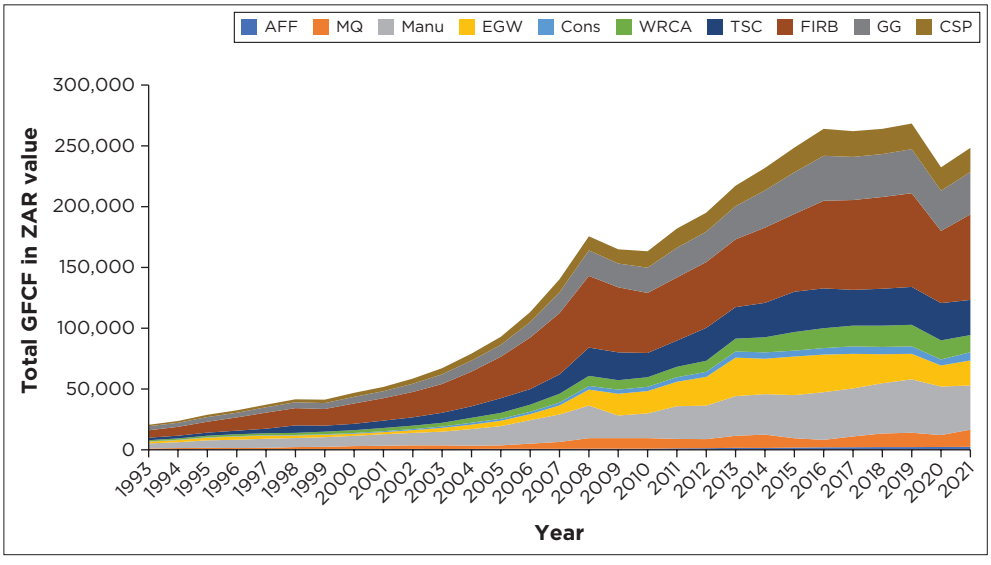
FIGURE 10.4: Investment in Gauteng municipalities from 1993 to 2021.



Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation.

FIGURE 10.5: Investment in Gauteng per sector.

In Figure 10.6, GFCF is further broken down into the different sub-sectors of the three main sectors of the economy. According to Municipalities of South Africa (2022), Gauteng's 'most important sectors contributing to GDP are finance, real estate and business services; manufacturing; and general government services'. This corresponds to the investment dynamics



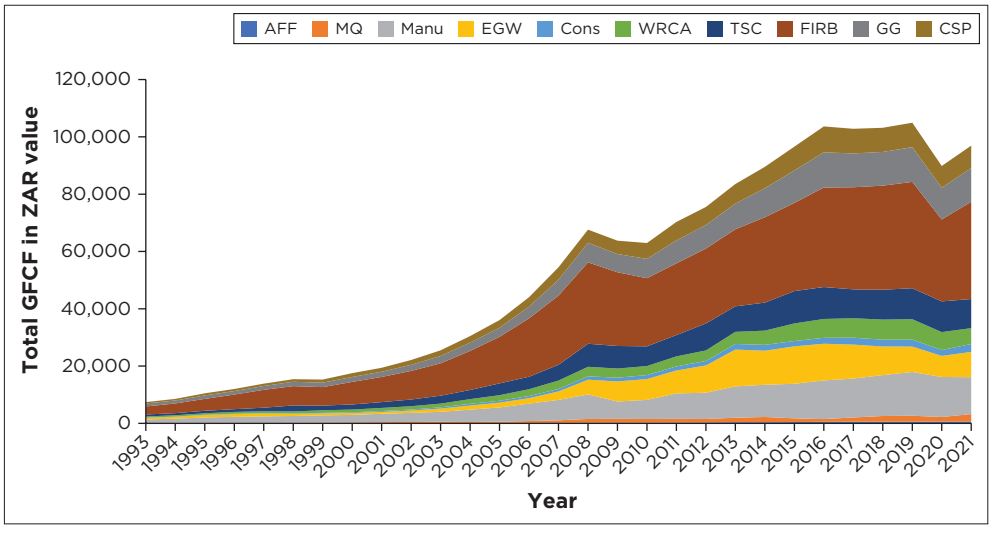
Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation; AFF, agriculture, forestry and fishing; MQ, mining and quarrying; Manu, manufacturing; EGW, electricity, gas and water; Cons, construction; WRCA, wholesale and retail trade, catering and accommodation; TSC, transport, storage and communication; FIRB, finance, insurance, real estate and business services; GG, general government; CSP community, social and personal services.

FIGURE 10.6: Investment in Gauteng per sub-sector.

exhibited in Figure 10.6. The province's manufacturing sector has been targeted as a critical driver for economic growth, infrastructure development and job creation in recent years (Young 2020). According to Young (2020), 45% of the country's manufacturing capacity is accounted for by Gauteng. Once again, the devastating effect of COVID-19 is highlighted in Figure 10.6, with the sharp decline in investment in most industries in 2020.

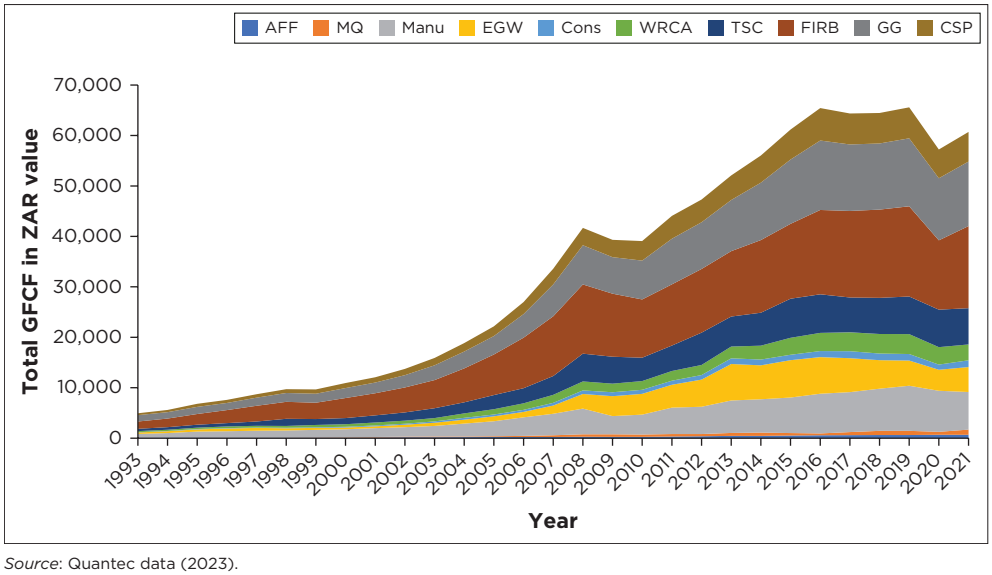
In the following five figures, the GFCF for each of the five municipalities in the Gauteng province will be analysed in terms of the specific sub-sectors of the industries. In Figure 10.7, the GFCF of Johannesburg is shown. Considering that Johannesburg is the most advanced commercial city in Africa (Municipalities of South Africa 2022), it makes sense that this municipality's investment trends correspond to the province's trends. The majority of investment in Johannesburg is allocated to the finance, insurance, real estate and business services and manufacturing sectors. There was also significant investment in the general government and the electricity, gas and water sectors. The effect of the pandemic on investment in Johannesburg was the most pronounced in most tertiary sector industries. A significant decrease in investments can be seen in the community, social and personal services, general government and finance, insurance, real estate and business services.

Figure 10.8 represents GFCF for Tshwane municipality. According to Municipalities of South Africa (2022), Tshwane is the largest municipality



Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation; AFF, Agriculture, forestry and fishing; MQ, Mining and quarrying; Manu, Manufacturing; EGW, Electricity, gas and water; Cons, Construction; WRCA, Wholesale and retail trade, catering and accommodation; TSC, Transport, storage and communication; FIRB, Finance, insurance, real estate and business services; GG, General government.

FIGURE 10.7: Investment in Johannesburg per sub-sector.



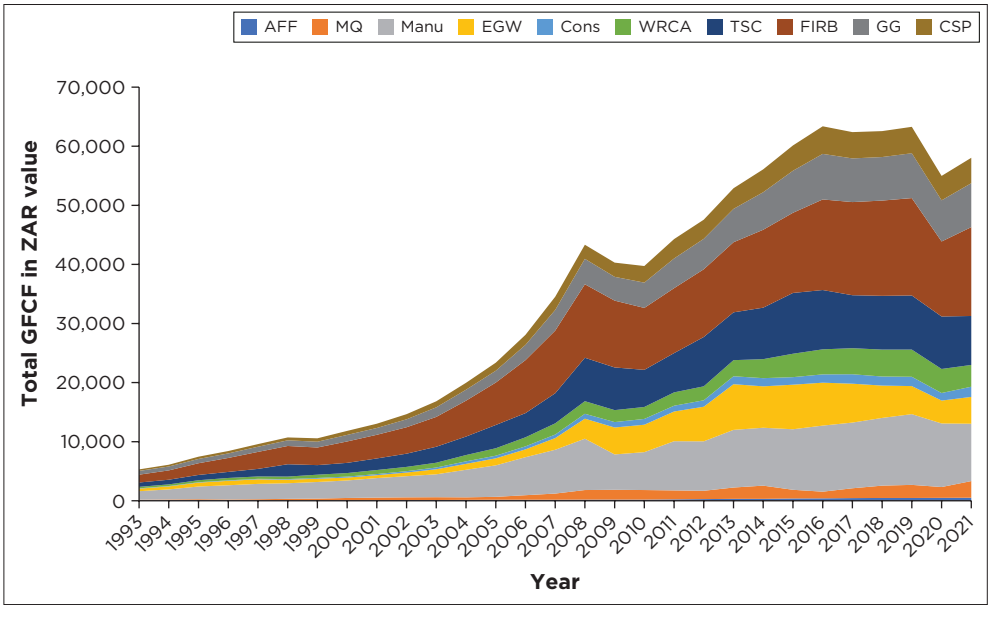
Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation; AFF, Agriculture, forestry and fishing; MQ, Mining and quarrying; Manu, Manufacturing; EGW, Electricity, gas and water; Cons, Construction; WRCA, Wholesale and retail trade, catering and accommodation; TSC, Transport, storage and communication; FIRB, Finance, insurance, real estate and business services; GG, General government.

FIGURE 10.8: Investment in Tshwane per sub-sector.

in South Africa. The investment undercurrents in this municipality, also being a metropolitan municipality, are very similar to Johannesburg's. Most investments are channelled to the tertiary sector, and the majority of the effects of COVID-19 were also felt in this sector.

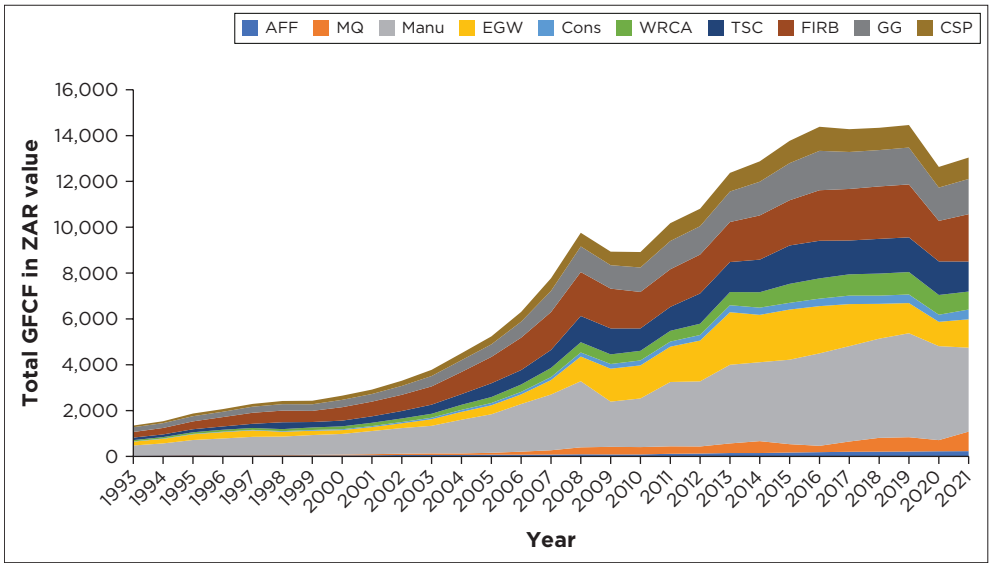
The last metropolitan municipality is Ekurhuleni. Gross fixed capital formation for this municipality is illustrated in Figure 10.9. The economic environment in Ekurhuleni is very diverse, ranging from production factories, road, railway and airport networks to electricity and telecommunication networks (Municipalities of South Africa 2022). This municipality is often called the transportation hub of South Africa (Municipalities of South Africa 2022). Figure 10.9 looks very similar to the other two metropolitan municipalities (Johannesburg and Tshwane). In accordance with being known as the country's transport hub, the municipality's transport, storage and communication sector received more investments than Johannesburg and Tshwane. The negative impact of the pandemic is also discernible in this sector.

Figure 10.10 represents GFCF in one of the district municipalities in the province of Sedibeng. The major contributor to the economy in this municipality is the manufacturing of metals and chemicals (Municipalities of South Africa 2022). Sedibeng also has extensive access to South Africa's road network, which assists the area in upholding its reputation as the industrial centre of Gauteng (Municipalities of South Africa 2022). Although the tertiary sectors also played a significant role in the investment in this municipality, it can be seen that a few of the secondary sectors in this municipality also had a noticeable share. Given Sedibeng's contribution to the manufacturing industry, significant investments were channelled to this sector.



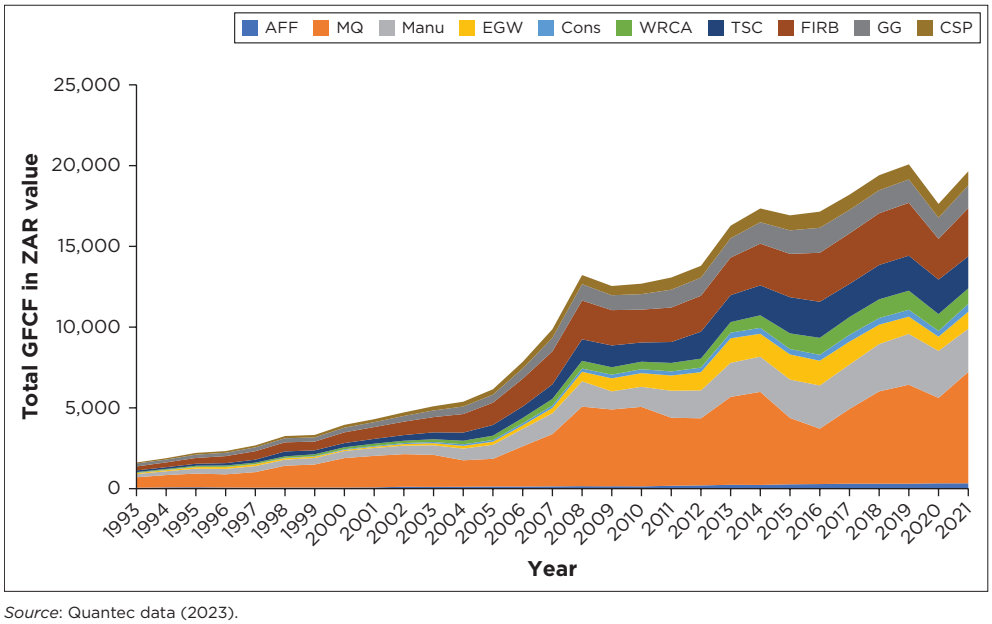
Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation; AFF, Agriculture, forestry and fishing; MQ, Mining and quarrying; Manu, Manufacturing; EGW, Electricity, gas and water; Cons, Construction; WRCA, Wholesale and retail trade, catering and accommodation; TSC, Transport, storage and communication; FIRB, Finance, insurance, real estate and business services; GG, General government.

FIGURE 10.9: Investment in Ekurhuleni per sub-sector.



Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation; AFF, Agriculture, forestry and fishing; MQ, Mining and quarrying; Manu, Manufacturing; EGW, Electricity, gas and water; Cons, Construction; WRCA, Wholesale and retail trade, catering and accommodation; TSC, Transport, storage and communication; FIRB, Finance, insurance, real estate and business services; GG, General government.

FIGURE 10.10: Investment in Sedibeng per sub-sector.



Source: Quantec data (2023).
Key: GFCF, gross fixed capital formation; AFF, Agriculture, forestry and fishing; MQ, Mining and quarrying; Manu, Manufacturing; EGW, Electricity, gas and water; Cons, Construction; WRCA, Wholesale and retail trade, catering and accommodation; TSC, Transport, storage and communication; FIRB, Finance, insurance, real estate and business services; GG, General government.

FIGURE 10.11: Investment in West Rand per sub-sector.

The last municipality that will be discussed is the district municipality of the West Rand. This is the poorest municipality that contributes to the GDP of Gauteng. According to Municipalities of South Africa (2022), it predominantly contributes to mining. This is the only municipality in Gauteng with the most investment in a primary sector industry – mining and quarrying. The effect of COVID-19 can be clearly seen in all but one of the sectors in the West Rand – agriculture, forestry and fishing. Investment in this sector is minimal.

Conclusion

This chapter conducted a comparative analysis of the levels of investment within the municipalities of Gauteng province. The municipalities in the province consist of three metropolitan municipalities (Johannesburg, Tshwane and Ekurhuleni) and two district municipalities (Sedibeng and West Rand). The COVID-19 pandemic had an immense effect on investment globally and even more so in South Africa. The importance of investment to ensure economic growth and development in a country should not be underestimated.

Data on GFCF for the five municipalities were analysed from 1993 to 2021. The negative impacts of the pandemic can be clearly seen in the overall data for South Africa and Gauteng. In terms of the data for the municipalities, the effect is more pronounced in the three metropolitan municipalities. Furthermore, COVID-19 significantly negatively impacted the primary, secondary and tertiary sectors of the province.

The chapter also analysed the investment trends and effects of the pandemic on the sub-sectors of each industry in the municipalities. The results show that the majority of investment was channelled to the finance, insurance, real estate and business services sectors and the manufacturing sector in all five municipalities. These sectors were also the most affected by the pandemic.

Gross fixed capital formation in each of the municipalities is primarily allocated to the dominant economic sector in the respective municipalities. These dominant economic sectors were also the hardest hit by the COVID-19 pandemic, causing a decrease in investment in these sectors with far-reaching consequences. Policies must be in place to protect the leading sectors of each municipality so that the effects of a crisis (like a pandemic) may be minimalised in the future. These findings again highlight the importance of resilience and diversification in local economies. Future studies can explore the changes in investment with the use of econometric models and by comparing the changes in investment between various regions. This could give policymakers more clarity with regard to understanding the way local economies and investment react in times of economic hardships.

Concluding remarks

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These days, the success of local economies greatly depends on their capability to adapt to ever-changing global and national conditions. The coronavirus disease 2019 (COVID-19) pandemic has shown how vulnerable economies are and just how important it is to ensure that development policies adopt a locally focused approach. This book set out to explore how the pandemic has impacted the various segments of local economies across the globe and identify possible avenues to aid the economic recovery of regions.

Chapter 1 provided a review of the difficulties facing local economies following the COVID-19 pandemic and presented various approaches that could aid in developing a more sustainable future. This chapter further expressed that it is not only pandemics presenting local economies with unprecedented challenges but that artificial intelligence (AI) is also requiring policy- and decision-makers to find new ways of pursuing a sustainable future. The author states that key stakeholders within local economies have to consider the various structural changes present and adapt to these changes in the pursuit of a just and sustainable local economy. Chapter 2 investigates the survival strategies employed by startup companies in Brazil amidst the COVID-19 pandemic. The study found that by implementing various causation, effectuation and crucible

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strategies, certain startup companies in Brazil were able to derive positive benefits from the pandemic. This highlights the fact that by being proactive and continuously adapting development strategies, one is able to withstand and prove more resilient in the events of economic downturns. Moving towards the arts and culture segment, Chapter 3 looked at the success of mentoring practitioners within the arts and cultural sector in an effort to promote sustainable local economic development (LED). Here, the author found that it is imperative that higher funding bodies provide support to practitioners within the field of arts and culture in order to develop the industry while further supporting the creatives. The author proceeds to highlight the fact that providing mentorship significantly strengthens business practice in the arts and culture segment of South Africa and that this process could contribute to the sustainable development of businesses within local economies.

Chapter 4 explored the COVID-19 pandemic's impact on the skills development and education sphere, which has necessitated change in the digitally-driven dynamic ways of learning, teaching, assessing and quality-assuring. The findings show that the design and practice of recognition of prior learning (RPL) have the potential to support the recovery of local economies in a sustainable manner. What is more, this chapter further stresses the importance of adapting to new technology and the importance of new technology in the skills and educational training of communities. Chapter 5 analyses key adjustment constructs at both the global and national levels within higher education institutions (HEIs). The outcomes show that in order to maintain sustainable educational service delivery, these entities should act in the best interests of all stakeholders and prioritise stewardship. The authors further state that these HEIs should focus on the creation of sustainable financial streams, strategic planning and cultivating a feeling of community within their domains. The authors conclude that the improvement of higher education service delivery following the pandemic will require improved and sustained stewardship, experiential learning and curriculum development. In a similar manner, Chapter 6 provides a review of the trajectory of skills development in South Africa, followed by a narration of initial responses from focus groups comprising mainly private providers to the government's economic reconstruction and recovery plans. This chapter showed that, unfortunately, ineffective approaches have hampered the effective and impactful implementation of recovery programmes, with insufficient monitoring and evaluation at the end of a programme in response to the pandemic. The author writes that the important role of education providers to supply skilled, knowledgeable and capable people to work in ever-changing, technology-driven contexts must be at the forefront of the government's plans and strategies.

Without a doubt, COVID-19 has impacted all spheres of economies, including the behaviour of investors. In light of this, Chapter 7 examines the relationship between the art market sentiment and a selection of global financial market indices. Here, the author established that the digital age has linked financial markets and developing regions through a counter-cyclical mechanism which inadvertently drives LED during periods of uncertainty when investors normally shy away from the financial market to seek refuge in developing economies. The results showed that the pandemic has led investors to shift their financial investments into art markets in the hope of procuring financial security in times of economic uncertainty. Chapter 8 investigated the economic resilience of municipalities within the economic and financial hub of South Africa during the COVID-19 pandemic. The results showed that the higher the employment levels pre-COVID-19, the higher the economic resilience of the particular locality. The authors describe how this is especially true for formal sector employment. The authors further point towards the possible negative effect that the informal sector has on economic resilience, which could prove worrisome for a country such as South Africa, where the informal sector constitutes a significant part of the economy.

Building on the concept of resilience, Chapter 9 analysed the impact of the COVID-19 pandemic on structural change within a regional economy in South Africa. According to theory, structural change has the potential to promote sustainable economic growth and development, which is especially significant in the development of economic recovery policies. The authors found that the pandemic has had a negative effect on structural change within the region. Furthermore, the authors compiled a composite index to assess structural changes within economies. Using data collected over a 26-year period, the index yielded interesting results as it showed significant movement among some indicators; yet, despite the COVID-19 pandemic, the overall index remained relatively constant.

The last chapter, Chapter 10, assessed how the COVID-19 pandemic has influenced investment within local regions. By conducting a comparative analysis of the levels of investment within local economies pre- and post-COVID-19, the authors found that the majority of investments were channelled to the finance, insurance, real estate and business services sectors and the manufacturing sector within the region. The results also showed that investments within the dominant industries were impacted the worst, leading to major consequences for the local region.

In essence, although covering a range of concepts, these chapters all showcase that for LED to be successful, it is imperative that one understands how the local economy fluctuates and responds to various shocks, which allows for the creation of timeous strategies to adapt to changes in an

increasingly competitive market economy. As can be seen, LED allows for collaborative approaches between government, the private sector and communities, all in a bid to ensure inclusive and sustainable growth, development and enhanced competitiveness. Ultimately, each local economy has its own unique set of characteristics that could either hinder or promote the potential of LED. Hence, it is imperative that policymakers and stakeholders understand these characteristics, as it ensures the comparative advantage of regions, allowing for the ability to sustainably develop.

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Local economic development (LED) is at the core of forming a sustainable, inclusive, resilient local region. The goal of local economic development is to involve all stakeholders (local government, the private sector and the community) in the decision-making processes in order to create a participatory environment where social and environmental concerns can be balanced with economic opportunities. Achieving this balance is a challenge for local governments in the developed and developing regions, as the COVID-19 pandemic has brought about new challenges for local governments, businesses (formal and informal) and policy-makers. This book aims to highlight how local economies are impacted during times of a global pandemic from a global perspective.

The outbreak of the global COVID-19 pandemic has posed unprecedented challenges to developed and less developed local economies. *Local economies and pandemics: Regional perspectives,* the third volume in the Center for Local Economic Development: Topics in Local Development Book Series, uncovers the best practices in responding to a pandemic from regional and trans-disciplinary points of view. As a fundamental part of LED, the arts, culture, education, health care, environment, business and public sector domains were some of the hardest hit by the COVID-19 pandemic. The COVID-19 pandemic has undoubtedly exposed the weaknesses of current development policies and called for new, innovative measures in developing resilient local regions. Scholars from various spheres in the arts, culture, education, health care, environment, business and the public sector explore and present their perspectives on the impacts, responses and consequences of local economies and communities in light of the challenges that the COVID-19 pandemic brought about. This book forms an essential part of the development series of CENLED as it offers insight into how a global pandemic (COVID-19) impacted LED in various regions and the different responses from different spheres.

This book illustrates the impact of COVID-19 on the local economies of different sectors and strategies required for survival, tacked on at the micro, meso and macro levels of analysis. The research questions were answered using various research methods ranging from qualitative secondary data analysis to machine learning analysis.

The book sets a foundation by reviewing the turbulent future and some common strategies that could be adopted to survive a crisis. Entrepreneurs used contemporary methods, implementation and mentoring to deal with the COVID-19 health crisis by analysing the turbulent future of entrepreneurial businesses. The authors also focus on the implications of COVID-19 on higher education and learning, recognition of prior learning and skills development, which considers the shift towards utilising technology-influenced tools and resources that undoubtedly challenge the traditional methods of developing skills post-COVID-19. The latter section of this book focuses on the overall impact on local municipalities, the economic resilience of local economies, industry analysis using the arts as a case study and investments post-COVID-19. The scholars' findings demonstrate how the COVID-19 pandemic has significantly impacted local economies, especially employment.

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