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**Understanding the role of organizational culture
of healthcare facilities
in Public Private Partnerships:
A critical perspective study.**

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Dedicated to Hilda and Jude.
Thank you for your willingness to
undertake this adventure with me, and
above all, the joy you brought to it. With
all my love.

This is the true joy of life, being used for a purpose recognized by yourself as a mighty one; to be a force of nature instead of a feverish, selfish little clod of ailments and grievances, complaining that the world will not devote itself to making you happy.

I am of the opinion that my life belongs to the whole community, and as long as I live, it is my privilege to do for it whatever I can. I want to be thoroughly used up when I die, for the harder I work, the more I live. Life is no 'brief candle' to me. It is a sort of splendid torch which I have got hold of for a moment, and I want to make it burn as brightly as possible before handing it on to future generations.

George Bernard Shaw, Man and Superman, 1902.

ABSTRACT

In these times, as the world emerges from a pandemic that devastated economies and restructured the priority of health, discussions of healthcare reform constitute a significant part of the management arena and greater political discourse. The pre-pandemic emphasis on Universal Health Coverage has received newfound scholarly interest. Public Private Partnerships (PPP) are broadly viewed as one of the main vehicles to achieve these ideals within pragmatic timeframes, especially in emerging and developing countries. Aligning the goals of these two sectors – especially in healthcare and at the micro-level - proves challenging at the point of patient care, where sometimes opposing views on what constitutes “better care” find their expression.

This dissertation aims to provide a framework for understanding organizational culture within healthcare institutions, via an organizational science and management perspective, to further the understanding of compatibility across the PPP aisle. To reach these aims, the present dissertation consists of four main chapters reporting the four studies conducted. Each of these will be presented in the general introduction chapter, where we will explain the imperatives that led to the realization of the dissertation and the rationale of the management perspective within the context of organizational culture. Although the concept of organizational culture is examined largely in the healthcare sector, universally applicable business and organizational concepts are explored which could prove useful to other sectors.

Chapter 1 explores the team-level attributes to organizational culture, as the functional unit of the healthcare system. In this contribution, an experimental pre- and post-test empirical design aims to put forward an instrument to measure psychological safety and demonstrate the significant effect of interventions on this construct. This contribution further demonstrates the association between psychological safety, team learning, and team performance. Additional qualitative data was analyzed to unpack the subjective experience of team members during the intervention.

As multi-disciplinary teams are the means through which healthcare users experience the service, this contribution provides valuable insights into areas where management interventions can have a palpable impact on the quality of care provision to patients.

Chapter 2 presents a grounded theory approach to understanding individual-level perspectives in environments with high levels of uncertainty. Factors that constitute a resilient organizational culture are examined at a high-functioning manufacturing plant during the National lockdowns in South Africa. Resilience at this organization is investigated at the

dynamic capabilities and micro foundational level and reveals novel insights of possible strategic management interest.

Chapter 3 uses a teaching case study methodology to capture the proactive design of a hospital culture using systematic problem-solving and LEAN-based methodologies. Focused ethnography is used to analyze the change management process and follow the experience of the facility during their emergency response to a natural disaster. The teaching case is designed at various levels of learning and multiple levels of analysis. This contribution demonstrates the importance of curated organizational culture during events of this nature. The value of an intensive learning culture is framed within the absorptive capacity of the facility and its members, and used to explain how this facility was able to be innovative during the period of disruption.

Chapter 4 arrives at the strategic level of organizational culture. Here a systematic literature review methodology is used to investigate the influence of language and language policy on the organizational culture of health organizations during emergency responses. The makeshift hospitals of Huoshenshan and Leishenshan in Wuhan China is used to represent the highly volatile environment, and an extreme expression of language control compared to Western health facilities. The findings from this contribution demonstrate the effect of language policy on service design and quality of response.

The last part of the dissertation will present the narrative results. Given the interdisciplinary and pluralistic nature of the research, the dissertation will narratively propose an initial understanding of what constitutes an organizational culture through a management perspective.

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INTRODUCTION

Over the last decade healthcare systems have been put under economic strain the world over. This is largely related to overall annual increases in cost, and decrease in governmental budgets as a consequence of volatile political climates. The Covid-19 pandemic has had a further impact on global economies, closer to the micro level of healthcare organizations and most evidently on their supply chains, with often associated adverse effects on healthcare providers and healthcare users alike.

This research contributes to knowledge on public private partnerships (PPP), to address these concerns and endeavours to further the understanding of organizational culture. Organizational culture is defined as “the signs and symbols, shared practices and underlying assumptions of an organization” (Spicer, 2020, p.1) and “a system of beliefs, values, norms, and practices that determine an organization’s behavior as it adapts to its external environment and manages its internal affairs” (Reyes Ruiz, 2023, p.65).

The ‘who we are’ and ‘how we work’ aspects of an organization are the most difficult to marry during the operational collaboration in PPPs – most notably in the healthcare sector, as it presents the challenge of *fragmentation*, where a lack of clarity exists (Hodge & Greve, 2007). Commonly, *biases* towards the opposing sector - bypassing broader organizational and managerial dilemmas - traditionally plague PPP ventures (Hart, 2003), and these are most poorly researched as to the understanding of the value creation mechanisms by either party. This is due in part to different forms of economic organization and the boundary choices between the private and public sectors (Klein, 2015). In an attempt to circumvent the high level of endogenous matching of value rationale and organizational forms (Kivleniece & Quelin, 2012) that occur, and excluding the political and macro level health system factors, this research includes an analysis focused on the micro level of health organizations: the healthcare facilities and hospitals.

The Covid-19 pandemic, is fated to make an inevitable appearance in these contributions. However, it will be seen as merely one of many shocks the health systems we are investigating had to adapt to. The micro-level (i.e. health institutions) of health organizations is in close proximity to healthcare user and their communities, and the knowledge generated here has tremendous potential for impact on quality improvement and broader application. Lastly, in resource constrained environments, such as each of our studies, the application of frugal innovation concepts has its best expression.

Universal Health Coverage (UHC)

Inspecting the United Nations (UN) definition: access, quality and affordability are three important attributes of UHC. All people, as a basic human right must have access to a comprehensive range of healthcare services, which must be of acceptable standard. It is important that this healthcare service does not constitute financial distress to the recipients, or that accessing and utilizing the service causes financial ruin to the user. The UHC is aligned to the Sustainable Development Goal (SDG) 3, which aims to achieve healthy lives and promote well-being for all at all ages.

Healthcare systems, the world over, have seen challenges to their stability over the past decade due to increasing cost and decreased governmental budgets (Blanken & Dewulf, 2010). Questions however still remain, specifically how the quality of healthcare provision can be improved and what the best governance solutions are for these complex relationships.

A growing stream of research has underlined the importance of PPPs as a new public-governance paradigm for improving the efficiency and effectiveness of public service delivery (Teisman & Klijn, 2002). The use of PPPs to deliver healthcare services is part of the New Public Management (NPM) agenda, which has sought to create markets, improve public sector efficiency (Hood, 1991) and follow the global public policy trends of “more governance and less government” (Cleveland 1972).

PPP markets and limitations of contemporary approaches

The definition offered by the WHO (1999) describes PPPs as a mechanism “to bring together a set of actors for the common goal of improving the health of a population based on the mutually agreed roles and responsibilities”. Indeed, PPPs combine the best of both worlds: the private sector with its resources, management skills and technology; and the public sector with its regulatory actions and protection of the public interest (UNECE 2008). While England’s National Health Service is the largest single market for healthcare PPPs (Department of Health 2010), the Italian healthcare system, Servizio Sanitario Nazionale (SSN), has developed into the second-largest PPP market in Europe (Osservatorio Finlombarda, 2011).

There is much fragmentation among PPP research streams such as public administration, entrepreneurship, organizational economics, or project management, and

lacks conceptual clarity (Hodge & Greve, 2007). What scholars reach a consensus on is that there is a limited theoretical framework or systematic framework to evaluate the feasibility of planned PPP ventures (Rangan et al., 2006). There exists no clear understanding of the value-creation mechanisms concerning the differing forms of economic organization and boundary choices between the two sectors (Klein, 2015). What is required is a micro-level analysis.

Context

“It is always possible to spot a South African researcher. They always insist on the importance of context.”

*Professor Linda Ronnie, Inaugural lecture, GSB,
University of Cape Town, 2022.*

Most of the research and fieldwork for this dissertation was performed in South Africa, however not merely because of the researcher’s access and existing networks. The strategic motive was conceived given the healthcare changes underway in the country. South Africa is, at the time of compiling this dissertation, undergoing healthcare reform towards Universal Health Coverage. The mammoth scale of this endeavor comes short on the heels of the National changes to the political system, constitutional amendments and challenges of large-scale droughts and unstable power infrastructure to name only a few of the pre-pandemic challenges in this emerging economy. The population of South Africa is 59 392 255 (World Bank, 2021) and the current decentralized healthcare system is set on a path to become more centralized with the advent of National Health Insurance, a financial vehicle to achieve UHC in the country by 2025.

Scalability of the learning points factored into the decision to generate this work in Italy – with a population of 58 850 717 (World Bank, 2021) is of comparable size, and has an existing UHC system that is experiencing its own challenges with regards to overburden.

Healthcare in South Africa

South Africa has a highly fragmented healthcare system – an unfortunate legacy of the Apartheid era (Baker, 2010), with unequal access to quality care that mostly affects poor communities (Chassin & Loeb, 2013).

With unequal distribution of health professionals across private and public sectors, the care quality is further influenced by an unequal distribution of public healthcare professionals among the different provinces (Maphumulo & Bhengu, 2019).

According to Naidoo (2012) at the University of Witwatersrand, about 84% of South Africans depend on the public health sector for their healthcare needs, and the remaining 16% belong to private medical schemes and receive their healthcare in the private sector. Healthcare comprises 8.5% of GDP in South Africa (National Department of Health South Africa, 2022), but the cost of the insured private sector is estimated at 50% of the total health expenditure (Maphumulo & Bhengu, 2019). The result is an under-resourced and overburdened public sector (van Rensburg, 2014) with predictable consequences on workforce motivation. Mayosi et al. (2012), a fundamental contributor to the clinical understanding of South African healthcare, emphasize the multiple burden of disease – with the HIV and AIDS epidemic coinciding with a high burden of Tuberculosis, high maternal and child mortality, high level of violence and injuries, and growing numbers of non-communicable diseases – and the broad-ranging effects this has on the entire healthcare system.

Within these environments, however, healthcare providers and hospital personnel – especially in the public sector – demonstrate extreme resilience, and an ability to innovate. The case studies and selected examples are among the numerous pockets of excellence that are bred in resource-constrained environments, and has tremendous potential to contribute to the growing knowledge of frugal innovation (Wu & Ho, 2022), which is a key element of organizational culture during reform.

The reforms that are currently underway in South Africa see the implementation of National Core Standard (NCS) by the Office of Health Standards Compliance (OHSC), and this is the first phase in preparation of the planned National Health Insurance (Maphumulo & Bhengu, 2019). This makes the period and the environment a vibrant context for investigation. Testing the learning points from these studies has been important, and a developed country context with matching potential was found in Southern European Italy.

Healthcare in Italy

The Italian SSN was founded in 1978, is tax-based and provides care to the country's entire population. The SSN is decentralized, with regional governments responsible for the funding and delivery of health care services through Local Health Units (LHUs) including contracting with independent hospital and accredited private providers (Jommi et al., 2001). The regional governments generate resources through local taxation, set healthcare budgets and direct resources to local health units (Vecchi et al., 2010).

The rapid spread of PPPs in the Italian healthcare sector was for several reasons: First, the obsolescence of buildings owned by the national healthcare system. Most Italian hospitals were built many decades ago, with 38.0 % of hospitals built before 1940, 32.0 % between 1941 and 1970, 21.0 % between 1971 and 1990, and only 9.0 % in recent years. Secondly, changes in the provision of hospital services meant that many buildings needed to be restored (Barretta and Ruggiero 2008). Thirdly, increasing public expenditure on health services had resulted in serious financing problems (Borgonovi 2000).

Through this rich history with PPPs, Italy has both an opportunity and responsibility to assert knowledge through experience. As a country known for exceptional Universal Health Coverage (UHC), and quality of overall healthcare ranked second globally by WHO in 2011, Italy has an important position on the world health stage. In 2015, the Organization for Economic Cooperation and Development announced that Italy's average life expectancy has raised to 82.7 years, fourth highest globally and second highest in Europe after Spain (OECD, 2015). In light of the Covid-19 pandemic shocks that have upset health systems across the world, the health system in Italy and its knowledge of PPPs makes for an interesting case to measure the scalability of learning points.

Covid-19 and effects of the Covid-19 pandemic

Coronaviruses are a large family of viruses known to cause diseases ranging from the common cold to more serious diseases such as the Middle East Respiratory Syndrome (MERS) and the Severe Acute Respiratory Syndrome (SARS). A novel coronavirus (nCoV) is a new strain of coronavirus never previously identified among humankind. In particular, the virus has been named "Severe Acute Respiratory Syndrome Coronavirus

2” (SARS-CoV-2, formerly 2019-nCoV) and it was reported, for the first time, in Wuhan, China, at the end of December 2019 (Nurchis et al., 2020).

Since 31 December 2019, when China alerted the World Health Organization (WHO) to several cases of unusual pneumonia in Wuhan, SARS-CoV-2 rapidly spread to the whole world due to the high rate of contagiousness. On 11th March 2020, the WHO declared the pandemic status (WHO, 2020). As of 3 May 2020, more than 3.44 million cases have been reported across 187 countries and territories, resulting in more than 243,000 deaths. By the same time, more than 1.09 million people have recovered (CSSE, 2020). The infectious disease was first confirmed to have spread to Italy on 30 January 2020, when two Chinese tourists in Rome tested positive for the virus and were hospitalized in isolation from 29 January. The first confirmed case of secondary transmission occurred in Codogno, in the province of Lodi, Lombardy, on 21 February 2020 (ISS, 2020).

Globally, organizations saw many operational disruptions during the COVID-19 pandemic, and most visibly the vulnerability of supply chain structures. At meso and micro levels, many scholars debated the supply chain resilience orientation of global supply chains (Vecchi et al., 2020). Reflecting on the 2002 SARS epidemic in South East Asia, Overby et al. (2004) commented on the dependence of global supply chains largely on the Chinese economy. Highlighting the risks during that time of poor information and near structural collapse, emphasis was placed on local supply chains and stronger local inter-sectoral partnerships (Overby et al., 2004).

The Covid-19 pandemic has paid a reminder once again to put systems in place, and these systems and safeguards are the focus for this paper. The existence of a healthy PPP (and having a healthcare partner in your immediate management facility) can be a valuable resource to health managers, in order to alleviate challenges experienced during such disruptions, and enable organizations to strengthen (augment) resilience strategies for healthcare context.

Aim of this dissertation

PPPs usually aim at maximizing the gains deriving from private production, while preserving the collective goals. However, these hybrid solutions are often rather difficult to design and implement, due to the heterogeneous and potentially conflicting missions, goals, organizational cultures and the legal frameworks adopted by partners (Cappellaro & Longo, 2011).

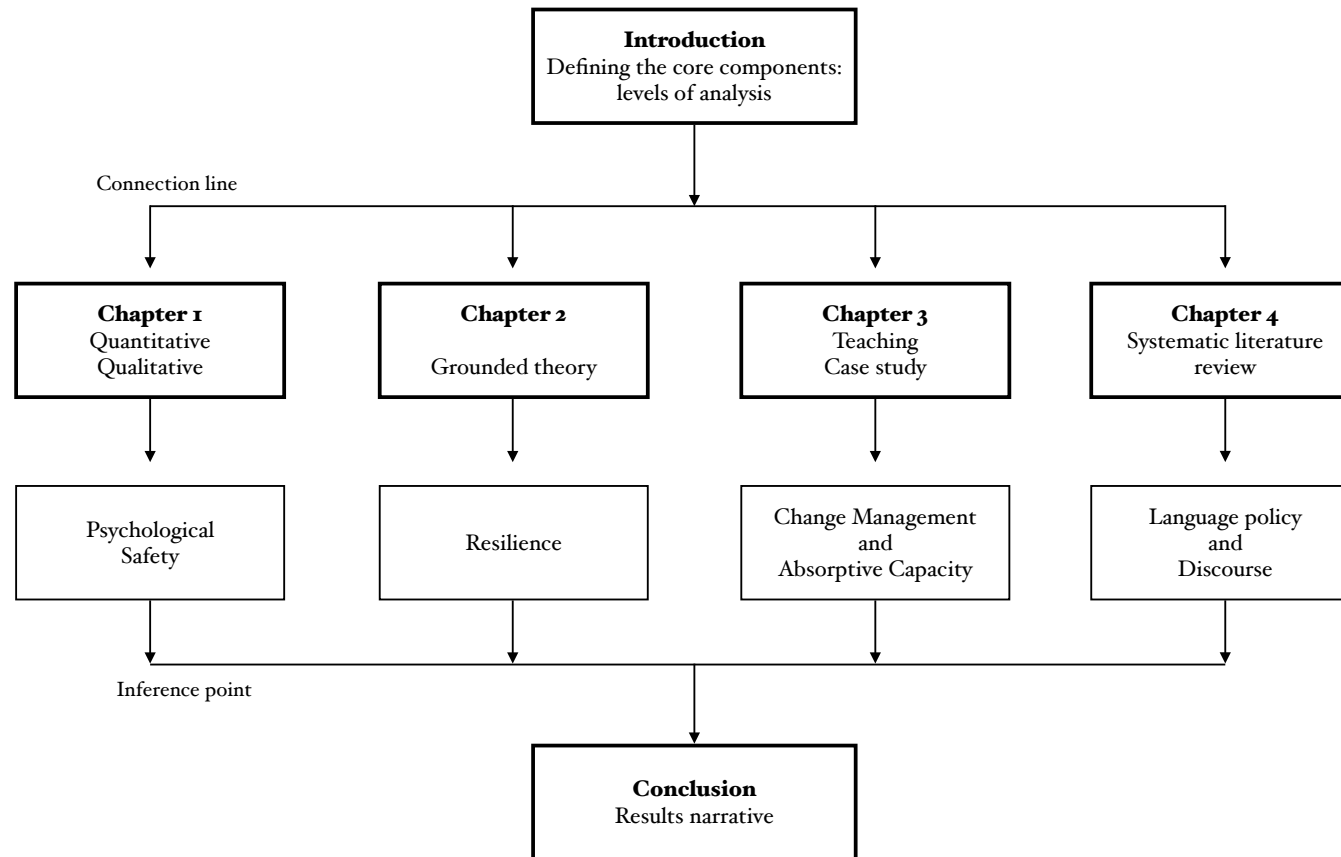
Scholars agree on a shared purpose to ultimately redefine PPPs as something more than a “source of funding” for projects (Allard & Trabant, 2007), but rather aim for a model resembling a sustainable partnership with shared objectives and common understanding of responsibilities towards the community. Once the decision is made to use the PPP channels, it must be complemented by an optimal mix of management acumen and efficiency, with the further goal to enhance these efficiencies for all stakeholders involved far beyond the basic brief of the short and medium-term goals of the project.

Extent literature provides ample evidence of the positive effects of Corporate Social Responsibility (CSR) on Corporate Financial Planning (CFP) when the conditions of strategic fit and sector-specific criteria are satisfied (Apaydin et al., 2020), especially in healthcare. These learning points will be explored and used to develop a critical perspective on organizational cultures.

The overall aim of this dissertation is to gain a deeper understanding of the nature and processes concerning organizational culture, and the role this plays for application in PPP healthcare. To achieve this goal, the studies presented by this contribution use a critical lens and a pluralistic approach to the methodologies applied.

Figure 1 shows how the chapters are aligned to achieving these insights, and demonstrates the main constructs that were used including the level of analysis. The chapters start in close proximity to the healthcare user experience and subsequently move toward the strategic level of the organization.

Figure 1: A graphical depiction of the overall research model of the thesis



Chapter 1 will cover the dynamics in a multi-disciplinary team and use the construct of psychological safety to demonstrate the effect on team performance and team learning. In Parker and Du Plooy (2021), we use a pre-test post-test experimental design to demonstrate the association of these constructs. This empirical part of the dissertation focusses on the multi-disciplinary team as the gold standard of healthcare delivery, as seen the world over. Du Plooy and Parker (2020) also capture the subjective experience of the participants through qualitative investigation. The value of simple interventions (e.g. games) are demonstrated in a teambuilding environment, and broader applications beyond healthcare is discussed.

Chapter 2 presents a grounded theory investigation over a 6-month period at a manufacturing plant during the first National lockdowns in South Africa. Du Plooy, Parker & Moodley (2021) gathered qualitative data over an extended period, until alignment with a resilience framework was eventually achieved. This investigation allows insights into the individual-level attributes to organizational resilience, and enabled novel findings and expansion on contextual resilience frameworks.

Chapter 3 is a teaching case contribution, and follows a district hospital through an intensive change management process and highlights the value of routines in support of transformational change. The LEAN methodologies are investigated and the KATA habits that the facility applies, and the influence this has on the organizational culture. During the period of ethnographic data collection, the facility was forced to respond to a natural disaster. The case study expands to include the capacity for innovation that the facility gained during the change management process. The construct of absorptive capacity is used to interpret the capabilities acquired.

In Chapter 4, Du Plooy and Pellin (2024) apply a systematic literature review to understand the effects of communication policies on organizational culture. This chapter will cover the strategic level of the organization, and uses the Huoshenshan and Leishenshan makeshift hospitals in China to understand the effect of policy on the organization.

The pluralistic approach and methodologies applied across four studies, allows for novel insights into the subject of study. A reflective narrative of the results will be presented in the conclusion chapter. The aim of this thesis is to make a meaningful contribution to the understanding of organizational culture, and possible application in PPP health institutions at various levels and provide management perspective options.

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CHAPTER 1

Healthcare teams

This chapter is based on:

Du Plooy, Parker (2020). Psychological safety and team learning during a problem-solving game for staff at a South African hospital. *Global Health Innovation*. <https://doi.org/10.15641/ghi.v3i1.867>

and

Parker, Du Plooy (2021). Team-based games: Catalysts for developing psychological safety, learning and performance. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2020.12.010>

I Connection line

Understanding the team-level attributes of organizational culture, as the functional unit of hospitals, becomes important - especially when projects are planned, and when the need for pro-active change management (e.g. joint ventures, mergers, upgrades) is evident. This chapter highlights the association of team-based learning, team performance, and psychological safety at the team level and introduces some actions that health managers can use to make the most noticeable impact at the hospital level.

- Authors have paid considerable attention to teamwork in healthcare, and agree that the multi-disciplinary team is the manner in which health services are delivered the world over. This scholarly attention has given rise to different theoretical frameworks on how teams learn and perform.
- As a result of these works, many scholars place the team as an important first contact with the healthcare user, as a point for collecting important information, and as a point to control quality of care provision.
- This paper conducted a mixed method approach to collect quantitative data in a pre-test post-test experimental design, as well as qualitative data on the participant's subjective experience. The goal was to capture factors influencing interpersonal experiences in the healthcare team setting.
- The constructs of psychological safety, team learning, and team performance are explored in detail as well as the relationship between them.
- The analysis also looks at the effect of interventions to enhance these factors within the team dynamics.
- This contribution provides insights into these factors within a high pressure, resource-constrained environment and makes generalizable extrapolations to universally applicable business concepts.

Keywords: Teamwork, healthcare, psychological safety, team learning, team performance, healthcare management.

Introduction

Teamwork is an essential part of operating in pressured environments, such as hospitals, and the multi-disciplinary team is the gold standard of how healthcare is provided to patients worldwide (Edmondson, 2018). Over the last decade, several empirical and conceptual papers (Barnabè et al., 2017; Sari et al., 2023; Steadman et al., 2021) have proposed that games and experiential exercises do much to improve team learning and team performance in the workplace. In recent studies focusing on healthcare organizations such as hospitals, the role of psychological safety in enhancing teamwork has been emphasized (Berzins et al., 2020). Hospitals in the public sector are characterized by resource constraints, high workloads, and numerous risks. These dynamics often hamper the development of psychological safety and negatively affect the overall quality of work of healthcare teams (Han & Roh, 2020).

The term psychological safety is a shared belief held by members of a team that the team is safe for interpersonal risk taking (Edmondson, 2018). Clark (2020) describes psychological safety as a condition in which one feels included, safe to learn, safe to contribute, and safe to challenge the status quo, without fear of being embarrassed, marginalized or punished in some way.

It is understood that cultivating psychological safety is a long-term endeavour for an organization. The team-based game intervention used in this study served as a stimulus to start the organization's initiative to develop psychological safety. This intervention can thus be viewed as a catalyst to starting a psychological safety initiative, or as a tool that can complement an organization's ongoing efforts to develop psychological safety. O'Donovan et al. (2020, p.16), during the early phases of the Covid-19 pandemic, emphasized that "creating and maintaining psychological safety will be paramount in dealing with the covid-19 crisis. Healthcare teams will be required to draw on knowledge and learning from all parts of the healthcare system in order to make quick decisions, learn from mistakes and implement changes that will facilitate the safe delivery of care". Numerous studies in the post pandemic era support the central role that psychological safety and psycho-social safety played amongst healthcare providers during the height of the pandemic (Hunter et al., 2022; Marsden et al., 2022).

Recently, an increasing number of researchers have drawn attention to the use of games to develop certain skills. For example, Sousa and Rocha (2019) examine how a game can be used to develop leadership skills in firms; Lovelace et al. (2016) examine the use of a simulation to develop critical thinking skills; and Luthans et al. (2008) find that the use of a

web-based intervention results in an increase in the psychological capital of participants. Michael and Chen (2006) find that team-based games can work to develop and strengthen certain organizational values in a short stretch of time. However, few studies investigate the use of games in healthcare contexts, and there are no empirical studies that the authors are aware of that look at the use of games as interventions to cultivate psychological safety and team learning in resource-constrained healthcare settings, and this study addresses this gap in the current literature.

This study contributes to the literature on the use of games in the workplace by testing the utility of a team-based game. It also contributes to the research on psychological safety in a number of ways. First, the study responds to the call by Edmondson (1999) to examine psychological safety in different contexts. Second, the study explores the development of psychological safety through this intervention in the healthcare context, which has been noted as a particularly difficult context in which to develop psychological safety (Han & Roh, 2020). Third, by analyzing pre-test and post-test data, the study provides insights into how the experiential learning environment created by the team-based game can catalyze the development of psychological safety. Fourth, the study investigates the relationships between psychological safety, team learning and team performance. The findings to date regarding the relationships between psychological safety, team learning, and performance have been mixed. Some researchers have found strong direct relationships between psychological safety and performance (Han & Roh, 2020), while others have found that team learning mediates the relationship between psychological safety and performance (Edmondson, 1999). The present contribution aims to elevate the understanding in this research stream by testing both direct and indirect, mediated models.

In the following section, this paper describes the conceptual framework used in this study and develops the hypotheses. Then, the paper details the methods employed, and presents the results. Finally, this contribution discusses the findings, limitations of the study, avenues for future research and the implications of this study for management practice.

Developing the conceptual framework and hypotheses

The early work of Osborn (1953), in the book *Applied Imagination*, proposed that games can be a powerful way of allowing participants to become innovative and work well as a team. Creativity and innovativeness in healthcare is critical, especially in resource-constrained environments (Edmondson et al., 2016). Games and the use of simulations in training have received increased interest over the last decade, both as a means to motivate participants (Frazier et al., 2017), while also using the ability of the game and simulation environment to replicate the dynamic and interdependent environment found in the workplace (Lovelace et al., 2016).

Luthans et al. (2008) discuss how an online web-based intervention can be used to develop positive psychological capital. Lovelace et al. (2016) find that a web-based simulation program can be used to increase participants critical thinking skills. They contend that team-based games can provide a fertile environment for participants to develop skills essential for teamwork. Michael and Chen (2006) draw attention to how team-based games can foster and reinforce social, cultural and organizational values in a short period of time. They found that the game simulation used in their study allowed project managers to improve their relationship with engineers. Sousa and Rocha (2019) build on this work and show how they effectively utilize a game to develop leadership skills.

Drawing on experiential learning theory, we define learning as “the process whereby knowledge is created through the transformation of experience”, and “knowledge results from the combination of grasping and transforming experience” (Kolb, 1984, p.41). The context of experiential learning allows participants to develop skills through practice and experimentation, receiving feedback on performance, while affording the opportunity for reflection (Kolb, 1984). We propose that the team-based game intervention used in this study provides a “transformative experience” that catalyzes the development of psychological safety, and we thus hypothesize the following:

Hypothesis 1: Participation in the game is positively associated with psychological safety.

An esoteric format of the psychological safety construct in healthcare can be found in Morbidity & Mortality meetings, which is a review and knowledge sharing platform that clinicians attend from an early stage in their training. Generally referred to as a “no blame and no shame” approach, this construct unfortunately resides mainly within the confines of the

Morbidity & Mortality review platform where clinical mistakes are reviewed and examined for system improvement and learning purposes. This limited view fails to capture the richness of psychological safety as an organization-wide construct and its potential to improve healthcare worker teamwork, so that patient care and patient safety are improved.

Globally many patients are harmed each year by errors and process failures, and this amounts to 1 in every 10 patients harmed (i.e. morbidity) in healthcare resulting in 3 million deaths (i.e. mortality) annually (World Health Organization, 2023). In low-to-middle-income countries a staggering 4 in every 100 patients die due to “unsafe care” (Organisation for Economic Co-operation and Development, 2020). Psychological safety has been shown to be a crucial element in organizational efforts to detect and prevent these problems (Edmondson, 2018). In the study of emergency nurses by Han and Roh (2020) it was found that psychological safety was a significant predictor of patient safety competency. Psychological safety provides an environment in which questions can be asked, errors can be discussed openly, and learning from errors can occur without the fear of retribution (Clark, 2020). We thus propose that psychological safety will be positively related to a team’s performance.

Hypothesis 2: Psychological safety is positively associated with performance.

Psychological safety today is seen as especially important for enabling learning and change in contexts characterized by high pressure, complex, and essential human interactions, such as hospital operating rooms (Edmondson et al., 2001) and intensive care units (Valentine et al., 2015). Chaudhry et al. (2011) emphasize that during challenging financial and political periods, the responsibility of an organization is to be creative in solving operational problems. In environments that are rich in psychological safety, creative ideas can be generated more readily by a more empowered team. Working environments that can nurture a creative culture will stand a better chance of prevailing under trying circumstances. This creative culture can be kickstarted through the use of games (Lovelace et al., 2016).

The use of teams in the healthcare sector has become the mainstay of sustainable care delivery. In healthcare, effective teamwork is required to provide quality care, and prevent medical errors. According to Valentine and Edmondson (2016), teamwork is defined as behavioural processes used to complete interdependent work. These behavioural processes comprise actions such as interaction and synchronization of work, while the affective, cognitive and motivational emergent states supporting these processes include respect and psychological

safety. Edmondson (2018) examines why healthcare teams fail, and three main reasons are identified. Firstly, the hierarchy in hospitals impedes teamwork. Secondly, frequent changeovers between nurses and other caregivers, and staff constraints make teamwork complex. Finally, teamwork faces the difficulty of managing different personalities, at different ranks in a stressful environment.

A study by Edmondson (1999) tested the relationship between team learning and performance and found the following. First, for a team to consistently achieve high levels of performance, its members must actively ask questions, discuss errors, engage in experimentation and reflection, and seek external feedback – in summary, the team must learn. Second, the shared belief that the team will not embarrass, reject, or punish someone for speaking up is essential for learning to occur in teams, highlighting respect and sharing. Third, adequate resources along with supportive leadership foster a shared sense of trust, cooperation and confidence in the team's capacity to achieve positive results.

Team learning and growth happens in an environment which is safe for interpersonal risk taking, where individuals feel safe to test the boundaries of their personal knowledge and skillset and venture out to solve complex problems in creative and innovative ways (Edmondson, 1999). Berzins et al. (2020) examine mental health care workers and observe how an environment of safety and trust allows workers to provide improved care to patients. They find that team psychological safety permits workers to establish environments where it is safe to fail, and where workers can develop multiple solutions to problems together.

(Stroebe & Diehl, 1994), in their study of creativity in teams, describe participants being unwilling to speak from fear of being judged or evaluated negatively, that is they lack psychological safety. Team learning and team learning behaviour is the process by which members interact, acquire knowledge and skills needed for their work, and share information (Argote & Miron-Spektor, 2011), and this raises the team discourse level to generate performance-oriented ideas. According to Dyer and Nobeoka (2000), team members who learn together and improve their problem-solving skills can create a competitive organization. In exploring the relationship between psychological safety, team learning and performance, this study proposes the following two hypotheses:

Hypothesis 3: Psychological safety is positively associated with team learning.

Hypothesis 4: Team learning is positively associated with performance.

Gibson and Vermeulen (2003) build on the theory of team-learning behaviour, defined as a process of experimentation, reflective communication and codification. These three elements are inter-dependent and difficult to replace and serve to influence subsequent research streams. Later, Zellmer-Bruhn and Gibson (2006) identify the factors that influence team learning and its effect on task performance and inter-personal relationships. The findings demonstrated a positive effect on team effectiveness.

Team efficacy is members' assessment of the team's ability to perform job-related activities successfully (Walumbwa et al., 2004), and a shared belief that a team's ability or competency to perform a task will produce a successful outcome. Van den Bossche et al. (2006) studied collaborative team learning environments extensively and found that team learning improves the perceived performance of a team and is also known to be positively associated with team efficacy. Edmondson (1999) argued that team learning mediates the relationship between psychological safety and performance and found support for this in examining teams in the furniture manufacturing industry. Kim et al. (2020) in their study of sales and service companies find that team learning mediates the psychological safety – team effectiveness relationship.

In this current contribution, we draw on these views and although this relationship has not been examined in the context of a team-based game intervention, we propose that team learning is the mechanism through which psychological safety influences performance. We suggest that while psychological safety provides the basic building blocks for creating an environment conducive to teamwork, psychological safety may not have a direct effect on performance, rather team learning converts psychological safety into tangible benefits, such as increased levels of performance. We therefore hypothesize that team learning mediates the psychological safety–performance relationship. The conceptual framework is shown in Fig.1.

Hypothesis 5: Team learning mediates the relationship between psychological safety and performance.

Fig. 1

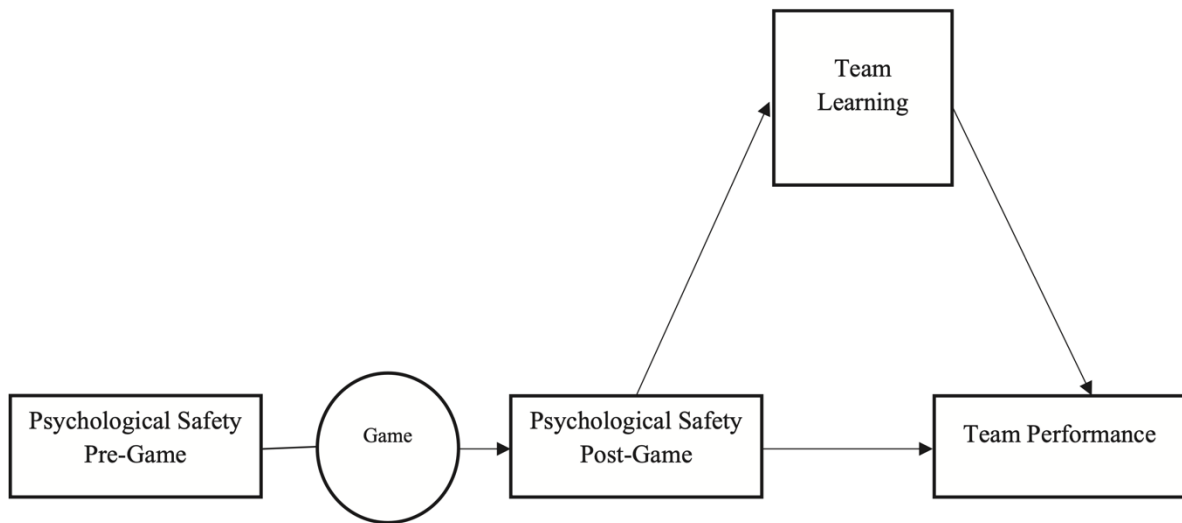


Figure 1: Conceptual framework

Methods

For this study, the participants were 100 employees at a South African hospital. The hospital is situated on the East Coast and serves a 120 000-person community. The game was run with the day shift staff. The game was run in different units and the teams were diverse, comprising doctors, nurses and a range of caregiving staff. Each team was made up of four people. The game, called the “Marshmallow challenge” was used, and was developed by Peter Skillman in 2002 (Rietveld, 2014). The Marshmallow challenge is a simple and fun game where a team of four individuals receive 20 pieces of dry (uncooked) spaghetti, a strip of masking tape measured to one meter, a ball of wool, scissors and a single marshmallow. The team competes against other teams with the same resources and limitations. The entire group has 18 minutes to build the tallest structure with only two rules: first, teams must let go of the structure after 18 minutes, after which the finished structure must stand on its own; second, the whole marshmallow must be stable at the very top. The time countdown is managed by the facilitator and at the end the facilitator measures the structures, and the tallest structure is announced and applauded. Teams were encouraged to discuss their experience together with a facilitator. This reflective conversation allowed participants to think and talk about lessons they could take to the workplace.

The participants anonymously completed a survey before the game, and then again immediately after the game. This pre-test–post-test design was used to assess whether participation in the game influenced the psychological safety of participants, and how psychological safety was associated with team learning and performance.

After the exercise, a post-event survey containing qualitative questions was also administered to participants to gauge their experiences of the activity. Finally, a discussion was also facilitated with groups after the game which allowed participants to reflect on the game. Purposive sampling was applied to select employees from the public hospital. At the time of implementing the study, the hospital had a personnel contingent of 180 staff that delivers a comprehensive district hospital package and a 24-hour service to a population of 120 000. For this study, the day shift staff contingent - consisting of 100 employees from different units - was selected to participate on a voluntary basis depending on their interest, their workload and capacity. The formation of multi-disciplinary teams of four members each, provided for the establishment of some ‘new teams’ - where staff had not worked together before.

An informed consent form was provided to participants, explaining the participation requirements, voluntary nature of the study, and that there were no penalties for opting out. Ethics approval for the study was obtained from the Human Research Ethics Committee of the authors’ institution (reference number: HREC 701/2017). Due to the large sample size, multiple runs of the experiment were required with the challenge administered to one group every week during office hours.

Measures

The survey instrument drew on measures used by Edmondson (1999) and Hackman (2002) and uses a seven-point Likert scale anchored by “1” – very strongly disagree – and “7” – very strongly agree. Next, a two-stage procedure was used to assess the measures.

First, we used exploratory factor analysis with oblique rotation, and three clear factors emerged with eigenvalues above 1.0. The screen test also confirmed that three factors should be used. Items exhibiting very low factor loadings were removed, and the retained items all had factor loadings above 0.6 (Hair et al., 1998). Psychological safety comprised seven items measuring how safe participants felt to speak up, take risks, and seek help. A sample item from

the scale is “Members on this team are able to bring up problems and tough issues.” Six of the seven items had factor loadings above 0.6. One of the items had a factor loading of 0.31 and was eliminated from the scale. Team Learning was measured using seven items, examining how inclined the team was to learn and improve. Sample items are: “This team frequently seeks new information that leads us to make important changes”, and “We regularly take time to figure out ways to improve our team’s work processes.” All items loaded as expected and were retained. Team Performance comprised five items exploring the quality of work performance of the team. Four of the items had factor loadings above 0.6. One of the items, “The quality of work provided by this team is improving over time”, had a factor loading of 0.29, and was removed from the scale. Table 1 presents all the items used for each measure and the exploratory factor analysis results.

In the second stage of assessing the measures, confirmatory factor analysis was done on the retained items, using the software package R 3.2.2 (R Core team, 2013) and the PLS predict procedure was used to conduct partial least squares (PLS) analysis. The confirmatory factor analysis results supported the initial exploratory factor analysis, and the overall model indices were as follows: the root mean square error of approximation (RMSEA) was 0.04, the standardized root mean square residual (SRMR) was 0.06, the normed chi-square (chi-square/degrees of freedom) was 1.63. The overall model indicated a good fit (Hair et al., 1998).

To evaluate the reliability and convergent validity of the factors, the Cronbach’s alpha and the composite reliability (CR) was calculated for each factor. The values were greater than 0.7 for each of the Cronbach’s alpha coefficients and for each of the composite reliability statistics computed, which indicates acceptable reliability and convergent validity (Bagozzi & Yi, 1988). To assess the discriminant validity of the measures, the variance inflation factors (VIFs) were computed. None of the VIFs were above 2.0, confirming that the measures have acceptable discriminant validity and that multicollinearity should not create problems in the analysis (Hair et al., 1998). The average variance extracted was calculated for each measure (these were 0.63, 0.69, 0.59) and as they were above 0.5, acceptable validity is indicated (Hair et al., 1998). A summary of the psychometric properties of the measures and the correlations between the measures are shown in Table 2.

Table 1
Exploratory factor analysis.

	1	2	3
Psychological safety			
1. If you make a mistake on this team, it is often held against you	0.71		
2. Members of this team are able to bring up problems and tough issues	0.75		
3. People on this team sometimes reject others for being different	0.77		
4. *It is safe to take a risk on this team	0.31 *		
5. It is difficult to ask other members of this team for help	0.81		
6. No one on this team would deliberately act in a way that undermines my efforts	0.85		
7. Working with members of this team, my unique skills and talents are valued and utilized	0.70		
Team Learning			
1. We regularly take time to figure out ways to improve our team's work processes		0.73	
2. This team tends to handle differences of opinion privately or off-line, rather than addressing them directly as a group		0.75	
3. Team members go out and get all the information they possibly can from others, such as patients or other parts of the organization		0.84	
4. This team frequently seeks new information that leads us to make important changes		0.78	
5. In this team, someone always makes sure that we stop to reflect on the team's work		0.83	
6. People in this team often speak up to test assumptions about issues under discussion		0.89	
7. We invite people from outside the team to present information or have discussions with us.		0.77	
Performance			
1. Recently, this team seems to be "slipping" a bit in its level of performance and accomplishments			0.79
2. Those who receive or use the work this team does, often have complaints about our work			0.76
3. *The quality of work provided by this team is improving over time			0.29 *
4. Critical quality errors occur often in this team			0.83
5. Others in the company who interact with this team often complain about how it functions			0.85

Note: A seven-point scale ranging from "very strongly disagree" to "very strongly agree" was used. The "*" indicates items that were removed because of weak loading (i.e. loadings below 0.35).

Table 2

Paired t-tests comparison of means before and after the game.

Construct	Mean	S. D	Significance of Group Difference	Cohen's d Effect size	r Effect size
Psychological Safety Pre-game	4.92	0.81	t (99) = -423***	-0.62	-0.29
Psychological Safety Post-game	5.46	0.71			
Team Learning Pre-game	4.72	1.01	t (99) = -1.95***	-0.28	-0.14
Team Learning Post-game	5.01	1.08			
Performance Pre-game	4.33	1.33	t (99) = -3.33***	-0.41	-0.20
Performance Post-game	4.81	1.22			

Note: n = 100 Pre-game, n = 100 Post-game.

p-values reflect results of two-tailed tests; * p < 0.05; ** p < 0.01; *** p < 0.001

With regards the qualitative items, a content analysis was performed on the data gathered. Due to the large amount of textual data, content analysis, systematic coding and categorization was used - in an unobtrusive manner - to determine trends and patterns of words and phrases used, including their frequency, their relationships as well as the structure of the communication (Vaismoradi et al., 2013).

As we examined the participants' written survey responses and the notes of their verbal reflection, we coded the data using words verbatim from the participants and collapsed these as a set of first order codes. This allowed for the identification of connections among categories. Next, the first order categories were collapsed and grouped into distinct clusters or second-order themes. Lastly, the second-order themes were clustered into key dimensions that enabled the development of a framework that linked various concepts that emerged from the data. Care was taken during the coding and indexing for application of necessary rigor and additionally an objective review of the transcripts and coding was done by a research assistant (Bell & Bryman, 2007a).

Results and findings

Table 3 shows a comparison of the variables before and after the game, and the results of the paired *t*-test analysis. The table presents both the significance and effect size of the changes occurring. To test Hypothesis 1, this study compares the mean of psychological safety before and after the game; the paired *t*-test result, $t(99) = -4.23$, $p < 0.001$ indicates that the mean had increased significantly after the game, thus supporting Hypothesis 1. The Cohen's *d* statistic is a measure of the effect size (magnitude) of the change. For psychological safety, the effect size change from before the game to after the game is Cohen's $d = -0.62$ ($r = -0.29$), and this signals a moderate, positive effect of the game (Salkind, 2010). Team learning and performance also increased through participation in the game. However, in assessing the effect size changes shown in Table 3, the positive change is much less than the change observed in psychological safety.

In order to test the remaining hypotheses, this study uses the post- test data and conducts Ordinary Least Squares (OLS) regression analysis as presented in Table 4. To test Hypothesis 2, this study regresses psychological safety on performance. As shown in Table 4, Column 1, the coefficient of psychological safety is significantly positive (Beta 0.37, $p < 0.001$), indicating support for Hypothesis 2.

As exhibited in Table 4, Column 2, psychological safety can be seen to have a significant positive relationship with team learning, supporting Hypothesis 3 (Beta 0.41, $p < 0.001$). Additionally, team learning has a significant relationship with performance, supporting Hypothesis 4 (Beta 0.21, $p < 0.01$). In testing hypotheses 2, 3, and 4, we have simultaneously completed the first few steps of the procedure recommended by Baron and Kenny (1986) to test for mediation (that is to check whether there are relationships between the independent variable, psychological safety, the proposed mediator, team learning, and the dependent variable, performance). The final step of the Baron and Kenny (1986) procedure requires both the independent variable and the proposed mediator to be regressed against the dependent variable. If the independent variable becomes non-significant, there is evidence for full mediation and hypothesis 5 would be supported. Table 4, Column 4 shows that when this is done, psychological safety does not become non- significant (Beta = 0.23, $p < 0.001$), indicating that mediation is not observed. Hence, hypothesis 5 (proposing that team learning mediates the relationship between psychological safety and performance) is not supported. The results are illustrated in Fig. 2.

Table 3

Correlation matrix.

Construct	Mean	S.D	Cronbach Alpha	Composite Reliability	AVE	Psychological Safety	Team Learning	Performance
Psychological Safety	5.46	0.71	0.77	0.73	0.63			
Team Learning	5.01	1.08	0.85	0.79	0.69	0.43***		
Performance	4.81	1.22	0.75	0.71	0.59	0.38***	0.23**	1.00

Note: p-values reflect results of two-tailed tests; * p < 0.05; ** p < 0.01; ***p < 0.001.

Table 4

Regression analysis and test of hypothesis 2, 3, 4, 5.

	H2	H3	H4	H5
	Performance	Team Learning	Performance	Performance
Psychological Safety	0.37***	0.41***		0.23***
Team Learning			0.21**	0.09*
R ²	0.15	0.19	0.05	0.13
Adjusted R ²	0.14	0.18	0.04	0.12
F	16.55***	22.86***	5.62**	11.61***

Note: p-values reflect results of two-tailed tests; * p < 0.05; ** p < 0.01; *** p < 0.001.

Fig. 2

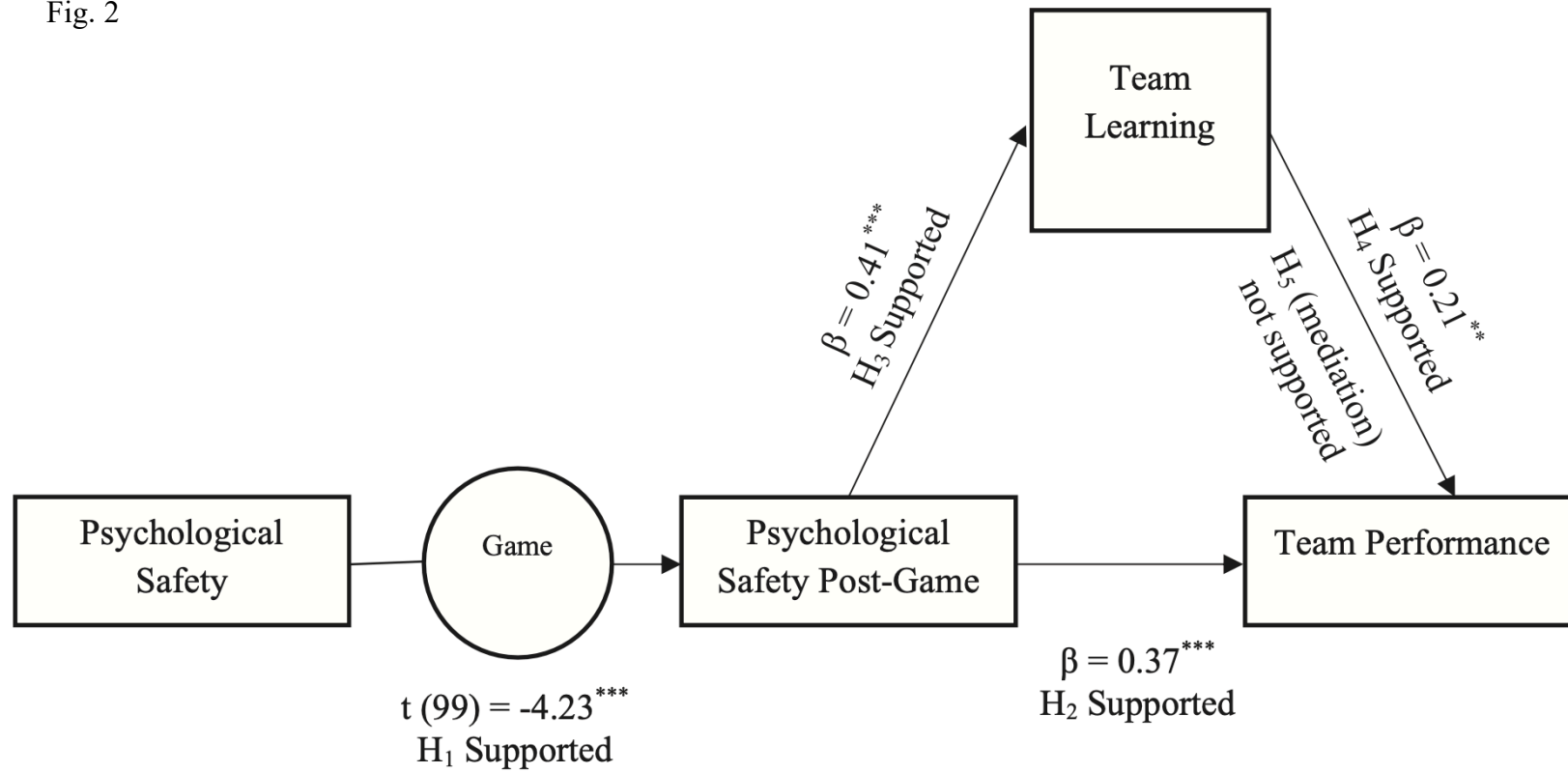


Figure 2: Results

From the analysis of the qualitative data, Fig. 3 emerged and shows the first order categories (phrases used by the participants), second order themes and the key dimensions derived from the participants' written survey responses and notes from their verbal reflexions. Six themes were highlighted through the data analysis and are discussed below: working together; resource use; fun, creativity and learning; lack of time; open communication; and structure and hierarchy.

Fig. 3

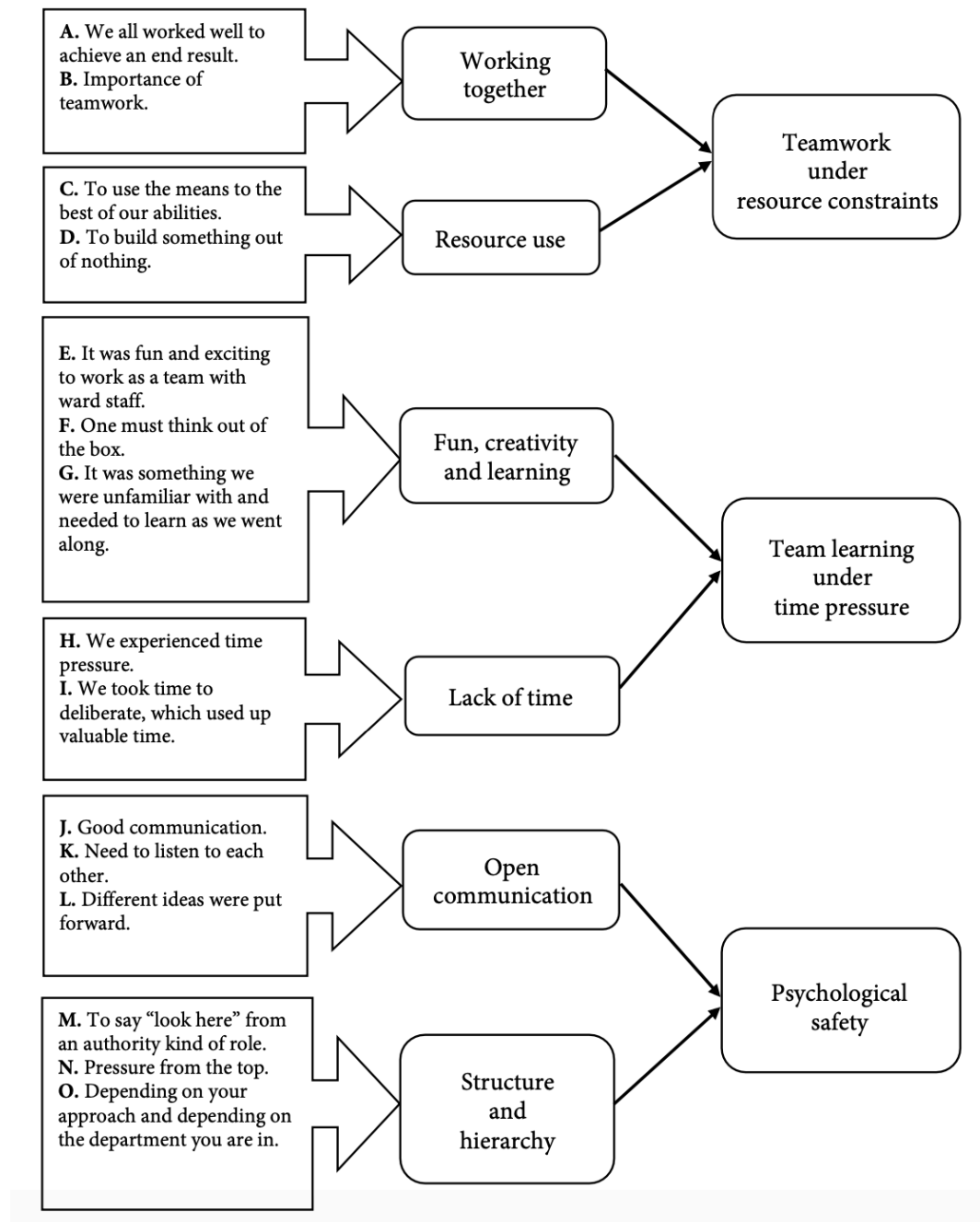


Figure 3: Findings from qualitative feedback

Working together

The importance of working together as a team was a theme that occurred the most in the data. It was found that participants generally spoke of their experiences as an extension of the team and used “we” and “us” language throughout. This concept, sometimes referred to as “teamness” (Jenkins et al., 2015), involves more than general team spirit. Healthcare studies on teams, especially in rural settings, often refer to the transformation that happens in an individual’s mind around understanding team members’ passion and celebrating events and achievements for mutual benefit (Jenkins et al., 2015).

Resources use

Some participants identified the limited building materials supplied during the game as the objective challenge of the activity. For them, their awareness of the “insufficient tools” was a cause of both frustration and great concern that they were perhaps being set up to fail. However, some also recognized that the point was to achieve a difficult task with limited resources – “utilising all the given items in such a way as not to waste/run out of anything.” These comments reflected an awareness among participants that the process was fair since every team was provided with the same tools and resources, and that the goal was achievable.

Fun, creativity and learning

“Fun”, “creativity” and “learning” were mentioned frequently, by more than half of all participants, especially when related to team learning. Participants noted that the game itself brought about a positive “new”, “nice” or “great” experience for individuals. It gave them an opportunity to be “creative” and the challenge itself brought about nervousness and excitement that was enjoyable - and the circumstances led to a great deal of laughter while playing. Some participants even found it “stress-relieving”, “relaxing”, “a break” from their normal work, and a time to “refresh the mind”.

Lack of time

A concept many participants often reported during both the written as well as the reflexion sessions, alluded to a “lack of time”. As the game was unfamiliar to participants, there is a high need for teams to learn, and because of the set time demarcation, they needed to learn quickly. Several participants reported their observations about how much time was required to think through the problem, and the pressure this placed on completing the task and “doing work properly.” For some participants the time pressure was negative. It was however acknowledged

as being a “reality” they face in healthcare work. These unprompted parallels which participants drew between the experiment and the working environment was most valuable.

Open communication

Participants drew clear connections between good communications practices, sharing ideas for achieving the task, and effective teamwork. Lack of communication was repeatedly used as a reason for problems and a cause of poor performance. Conversely, for teams that communicated well, the task felt easy. This concept was extended to the practice of being “honest” with each other, “listening to others” and showing respect. Participants also linked good communication, sharing ideas for achieving the task, and effective teamwork. Participants mentioned the need “to listen” and “to speak up” and how this was important to the functioning of the team.

Structure and hierarchy

All participants expressed an awareness of structure and hierarchy within their working environment and within the hospital. For a delineated timeframe, the game created a space where the participants could think differently. The post-game discussion and reflections allowed participants to think about the space created by the game, and to ponder how structure and hierarchy may have influenced participants to communicate. Comparisons between the game and work were elicited from the participants in the post-game discussions, and these provided interesting insights. Comparisons were made to: a “strong foundation” (comparing front-line staff to the line management and reporting structures), “pressure from top” (comparing the marshmallow to the manager or management), “poor resources” (comparing the quality of materials in the game to hospital infrastructure and staff shortages as provided by management), “underestimated weight of the marshmallow” (compared to how managers underestimate the demands of their goals) and “must keep the marshmallow up” (compared the questionable game rules to questionable demands of the job). Some comments were more direct and required less interpretation, like the comment from one of the participants that, “Without the right foundation, the department will not do well”.

Discussion

This study found that team psychological safety improved directly after the game, as teams were exposed to an environment that was optimized for idea sharing and creative problem solving. The regression analysis demonstrates that performance and team learning behaviour significantly improves with psychological safety. A significant and moderate increase in psychological safety is observed after the game, and while the increase in team learning and performance was significant, it was not as large. This result would support the assertion by (Kim et al., 2020) that team learning takes a long time to develop and may lag the development of psychological safety. Kim et al. (2020) describe a “learning zone” which is only achieved once the accountability for performance interacts with psychological safety.

The game design used in the exercise, established an environment that was conducive to optimal information sharing and feedback. The close-knit teams shared a common goal, and a strong sense of building towards that goal was created. A departmental manager made the following comment shortly after the game: “My experience with it has been that my staff all went into it with apprehension and anxiety and fear of the unknown, and all of them without fail came out of it with a different vibe. They just had energy.” The intervention seemed to have energized the participants as they worked as a team to meet the challenge of the game, and in the process the foundations of creating a psychological safe environment was being built. The team-based game gave teams a context completely different and unrelated to their usual hospital context. This novel context dismantled the entrenched hierarchy often present in hospitals (for example nurses feeling they cannot question doctors as doctors are the authority). The games stimulated teams to become creative and to collaborate with one another, and generated a fresh teamwork experience for participants. The low-stakes forum for experimentation and teamwork created by the game, and the facilitated discussion of team members’ experience after the game, somehow created an opportunity for reflective thinking.

The findings show that psychological safety and team learning behaviour display a significant improvement after the game, indicative of the effect created by the game. Using techniques like games and establishing a relatively informal environment adds an element of fun. In this environment, team learning happens more readily and with greater ease.

The result that mediation by team learning of the psychological safety–performance relationship is not supported could suggest that psychological safety needs to develop more, and to be present at a higher level, before team learning can operate as a mechanism through which psychological safety influences performance. When psychological safety has not yet

reached this level, this mechanism cannot operate. In the context of this study, the game was the first intervention specifically aimed at enabling the development of psychological safety in the hospital setting. The findings of the study provide evidence that the game indeed facilitated the development of psychological safety. However, it would be beneficial to follow up this initial positive intervention with further interventions and organizational initiatives to nurture and grow psychological safety and team learning. The expected positive relationships between psychological safety, team learning, and performance could then manifest themselves more readily in the workplace.

The modern healthcare team is confronted with the challenge of coping with the rapid increase in medical knowledge, increasing specialization of healthcare professionals and more individualized patient care. In addition to the challenge of change management, creative problem solving requires an environment that is safe for inter-personal risk (Kessel et al., 2012a). Psychological safety in healthcare serves to alleviate the risk of embarrassment or threat from members of the direct or extended team within an organization (Edmondson et al., 2016; Valentine & Edmondson, 2016). Investments must therefore be made into the development of healthcare teams and their ability to apply creative solutions to the manner in which they deliver services to communities. Healthcare organizations must establish environments conducive to team creativity and nurture a culture where the exchange of ideas can flourish (Kessel et al., 2012a).

Communication, idea sharing, and team creativity are useful and crucial to the sustainable provision of quality healthcare. These elements thrive in an environment rich in psychological safety. These conditions can be simulated on a smaller scale using teambuilding activities like games, small group meetings and innovation sessions. Exposing individuals new to these concepts to psychologically safe environments will allow teams to see the effects and as a result develop trust in these systems. The necessary skills and confidence to reproduce this environment in their workspace will develop over time. There is increasing evidence that organizational support, safety climate, and performance are related, implying that psychological safety might involve benefits that extend its influence on work engagement (Rich et al., 2010).

From the qualitative analysis, deeper insights into the subjective experience can be garnered. At a surface level, the emergent themes of the participant feedback suggest that the game design established an environment that was conducive to information sharing, collaboration, and enjoyment among participants. Even for teams that were unsuccessful in terms of achieving

the objective, or felt their process needed improvement, the game facilitated awareness of these elements as aspirational states (such as fun, good communication, working well together). In this way, the game was an effective device for the teams to learn about teamwork. This pattern is consistent with a form of game-based learning in which the design of the game fosters learning about a skillset or subject area (Kapp, 2012).

Overall, the four-person teams became close-knit during the exercise and had a strong sense of their common goal. The objective was challenging enough to be stimulating to participants, but not so serious as to inhibit fun. The constraints of time pressure and difficult materials introduced sufficient stress to encourage creative problem solving without being defeating or overwhelming. Indeed, there is great interest in using game-based learning as a more effective way to train employees in various skillsets, and across industries, compared with more traditional knowledge transfer pedagogies (Sousa & Rocha, 2019).

The key dimensions extracted from the data are:

Psychological safety

Common challenges of creative problem solving and continuous operational improvement, such as those found in healthcare in resource constraint economies, require an environment that is safe for inter-personal risk taking (Kessel et al., 2012). These risks include asking questions, voicing concerns, sharing ideas, and trying “new things” (i.e. to innovate). Psychological safety alleviates the risk of embarrassment or threat from members of the direct or extended team within an organization in order for members to take these risks (Edmondson et al., 2016); and it is this underpinning mechanism that enables teams to be adaptive (Edmondson, 2018).

Many factors can contribute to members’ perception of psychological safety within the team, including environmental factors. The challenges of time constraints and insufficient resources voiced by so many participants in this study demonstrate how the perception of negative environmental conditions can cause team members to feel unsafe – as if the goals are impossible to achieve – and, as a result externalize their problem. As one participant verbally expressed: “If you wanted a tall structure, you would have supplied better equipment”. However, since the resource constraint within the activity (and within the workplace) is part and parcel of the task, the goal of healthcare organizations should be to create an environment

conducive to team creativity and the exchange of ideas (Kessel et al., 2012), irrespective of the external conditions.

Many of the participants recognized this relationship in their reflection on the game. They saw how the external pressures – which were beyond their control – required them to practice effective communication, listen to one another, and use teamwork to accomplish their tasks. Those who were successful at the task in terms of both the objective outcome and the positive team experience, described the positive interpersonal dynamics on their team related to fun and communication: open idea sharing, enjoying the game, and respecting one another. These experiences are indicators of a psychologically safe environment.

By contrast, teams that reported negative experiences or failed at the task, attributed this to poor communication and did not enjoy the game. One such participant described a case where one team member took over the entire process and left no room for others to get involved. This was an example of a team lacking in psychological safety. This leadership dynamic has implications for team success in both the simulation and in the working environment. During the game, teams with positional leaders may have been subject to totally different baselines for psychological safety compared with teams of individuals of the same position, rank, or job type.

For teams that either were not subject to a dominant leader, or had a positive leadership experience in the game, psychological safety within the team was taken for granted. They described in a matter-of-fact manner the positive nature of teamwork implicit in the game. “It was about teamwork, so it feels good,” said one participant. From responses like this, it is clear that when psychological safety is present, it facilitates positive team outcomes, including learning behaviour.

Team learning under time pressure

The feedback system established by the NHI pilot study, and the iterative nature of change deployment anticipated for the rollout, requires teams to adopt learning behaviour. More generally, the process of team learning is fundamental for teams to consistently and sustainably achieve high levels of performance (Edmondson, 2018). Key parts of this process include members regularly and actively asking questions, discussing errors, and engaging in experimentation and reflection. The marshmallow challenge facilitated an opportunity for a

kind of team learning in the condensed team-building and problem-solving space. Participants on teams rich in psychological safety described the learning processes they adopted to achieve their goal: getting to know their team members, listening to one another's design ideas, and consolidating them into a single design. The experience of having fun playing the game, lubricated these learning processes.

However, the aim of game interventions such as this is not to create design competencies, but transferrable teamwork competencies. The survey and reflection may have played a role in fostering individual contemplation about the learnings derived from the game about teams, which participants might not have explored otherwise.

During inter-disciplinary teamwork in healthcare, and particularly in rural settings, members joining work groups quickly develop a sense of "we" and "us" and use the term "team" as an extension of the self (Jenkins et al., 2015). This sense of belonging is expanded to a broader support group or team, by focusing on a common goal. Participants described their sense of shared purpose during the game, and regularly compared it to the structures in their working environment. The communities of practice theory is very prevalent in the healthcare sector (Gehrke & Kezar, 2017) and demonstrates the positive intents of participants to engage in effective teamwork as an outcome, which many equates with team learning.

Healthcare workers face challenges where they are forced to problem-solve under intense time pressures on a daily basis. It is in these moments that creative problem solving at the team level is not just useful, but a necessity (Kessel et al., 2012). In this study, participants who experienced their team as successful acknowledged a collaborative creative approach: "Different opinions were put together to attain a goal, which was achieved," said one participant. Beyond the presence of psychological safety and learning behaviour, other factors may contribute to team creativity. Kessel et al. (2012) performed a survey analysis on 73 healthcare teams and found that team diversity is a significant contributor to the sharing of skills and know-how sharing, and directly contributes to team performance. Participants in this study observed similar value in team diversity. One participant described their team's process as, "taking different ideas, all with their own merit, and combining into single a solution". Participants who described similar processes seem to be describing a brainstorming approach to problem-solving. This is notable as, from Osborne's definition (1943), brainstorming links

the presence of psychological safety (that is, the requirement to generate a high volume of out-of-the box ideas) with team performance (the development of the best possible solution).

Teamwork under resource constraints

Objective measures of team performance are common in the overall goal to provide quality healthcare, including satisfying patients, adopting new techniques, cost saving, and increasing patient safety. Team performance is therefore typically operationalized as task performance, completion or proficiency (DeChurch & Mesmer-Magnus, 2010). In a high performance team, the success of the team is equal to the success of the individual and is shared as a mutual benefit (Jenkins et al., 2015). Participants in this study recognized this view of performance, with one respondent describing the game as “individual tasks for collective purpose”. And indeed, across the board, participants recognized the legitimacy of their task, except when resource and time constraints caused them to question the achievability of the outcome. Caused by the constraints of the game, the objective performance metric (a compliant structure) should be linked to the more subjective performance metric of creative team problem solving practices.

Conclusions

This study contributes to the understanding of how team-based games can be used as a beneficial intervention in the workplace. We find that this particular intervention is most effective in developing psychological safety as compared to the other measured constructs, namely team learning and performance. However, a strong positive relationship is found to exist between psychological safety, team learning and performance, and psychological safety can be seen to be an essential antecedent to the development of team learning and the realization of higher levels of team performance. The intervention acts as a catalyst to develop psychological safety and to initiate a subsequent increase in team learning and performance. The cost of the intervention is minimal and can therefore be used effectively in resource constrained environments. As healthcare and other organizations increasingly confront unexpected challenges, the need for teams to learn and innovate, is intensified and it becomes more critical for teams to develop psychological safety. Performance in healthcare contexts can have serious (life and death) consequences, and hence future research examining how psychological safety can be improved in demanding contexts, is important. Our findings

indicate that using team-based interventions even in tough contexts can create a learning experience for participants to develop psychological safety.

Limitations to the study and avenues for future research

The study is limited to day shift staff, and it is noted that these teams may have different access, motivation or support structures compared to night shift staff. Also, the study was performed in a large health facility which has undergone a series of changes in a relatively short period. A repeat of this study in a different context (with different support structures) could be insightful. Expanding the study to more health facilities would broaden the understanding of psychological safety within a larger geographical region.

For future research, expanding the study to other health facilities in different contexts and of different sizes, and including a control group would yield interesting results for comparison. A longitudinal study would be useful to examine whether psychological safety, team learning, and performance endures over time – such as during the Covid-19 pandemic and the period thereafter. Testing the effect of increases in psychological safety on efficiency and health indicators, such as The World Health Organization Sustainable Development Goals (SDG), would also be valuable. Doing similar studies in different organizational contexts would also yield useful insights.

It is predicted that as fears around job security in various contexts escalate, psychological safety will be negatively impacted. There will consequently be a heightened imperative for management researchers to direct more attention to the development of psychological safety in the workplace.

Lastly, the role of the participant researcher must be acknowledged, and the role that the facilitated reflection sessions – *post hoc* - played in the relational management interaction. Although outside the parameters of the current experiment, when taken into the practical environment the manager must take cognizance of power, authority, and legitimacy in leader-follower relations within systems and how this might influence individual and team performance.

Implications for management practice

Managers in healthcare contexts face severe challenges, and it is envisioned that these challenges were exacerbated during the recent pandemic. Healthcare teams are required to

work in tense, unpredictable environments where they may feel unable to voice concerns. However, it becomes even more important to develop psychological safety in team members when they need to operate in these types of extreme environments. Employees in other types of organizations are also increasingly facing concerns regarding job losses. This creates an environment of fear, where psychological safety will decrease. Managers need to be cognizant that fear and tension erode the psychological safety of employees, and if this erosion is not addressed, it will create a negative spiral of diminishing team learning and deteriorating performance. The negative effect of eroding psychological safety will create both short-term and long-term losses for firms. Where psychological safety in organizations have already started decreasing, managers face the urgent challenge to halt the decrease, and to find ways to create a climate of safety and to kickstart the development of psychological safety in their teams.

This study provides managers with an insight as to how a team-based game or similar activities can be used as interventions to catalyze the development of psychological safety. It further draws attention to the essential relationship between psychological safety, team learning and performance. It thus highlights how managers can use interventions to create a virtuous cycle of increasing psychological safety, higher levels of team learning, and improved performance. The intervention studied is not a panacea, rather it provides organizations with a tool to activate the process of developing psychological safety, and for those organizations already engaged in developing psychological safety it is an effective way to support and strengthen the organizations' efforts. Psychological safety supports learning. When people feel safe to voice their concerns or report errors, they are more likely to learn from their own and others' mistakes. Where there is no psychological safety, people will try to hide their mistakes and errors, and learning will be hampered.

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CHAPTER 2

Individual level

The frontline worker

This chapter is based on:

Du Plooy, Parker, & Moodley (2021). Manufacturing during lockdown in an emerging economy: A study of resilience. *Journal of Business Research* (submitted).

II Connection line

When abrupt changes in the environment and/or market force the organizational culture to be redefined, insights into the perceptions of individual health workers become crucial. This contribution examines the building blocks of resilient organizational cultures and the various constructs that gain importance relative to when volatility and uncertainty increase.

- Much research attention has been paid to resilience in organizations, and this interest has grown considerably during the Covid-19 pandemic.
- In the post-pandemic era, this interest has remained strong. Research on the subject has however remained largely within the supply chain and risk management arena.
- Resilience is mostly viewed as an organizational-level competence, and extant literature has not yet been able to recognize the individual-level attributes of resilience within an organization.
- In this paper we conducted a grounded theory qualitative examination of a manufacturing company during a period of unprecedented volatility and uncertainty. The perspective of the individuals working at a South African branch of a multi-national medical hygiene manufacturing plant was captured over a 6-month period of National lockdowns.
- The goal of the inductive reasoning was to develop a better understanding of the individual-level perspectives of resilience.
- A microfoundational framework was used to examine the qualities, experience and attributes of the essential services teams during this period.
- This contribution provides insights into key focus areas of how to enhance operational excellence by identifying individual-level focus points, and how this aligns with resilience strategies of the organization.

Keywords: Resilience, individual workers, microfoundations, grounded theory

Introduction

The national lockdowns during the recent pandemic have placed the development of resilience strategies as one of the top research priorities in management studies the world over (Badhotiya et al., 2022), both to learn from supply chain disruptions which caused massive global economic upheaval and also to design improved systems going forward. Despite this recent ‘call to arms’, resilience studies have remained largely focused on supply chain systems (Gatenholm & Halldórsson, 2023) that often neglect to identify services as well as product (Vilko & Ritala, 2014), and thereby affecting the quality of risk management as well as the levels of resilience to be achieved. During South Africa’s first national lockdown, selected companies received relatively short notice to dramatically alter their normal functioning. At a national level, essential services manufacturers were identified to provide uninterrupted production under high pressure conditions: extremely strict, and with unprecedented safety precautions. The perspective of the frontline workers at these essential services manufacturing suppliers, tasked with maintaining steady supply with massive demand increases, have to date not received adequate attention in contemporary research.

Within emerging economies many peculiar challenges exist (Mishra et al., 2021), and South Africa over the past two decades experienced a series of nationwide droughts, power supply disruptions, and numerous multi-sector riots in attempts to correct historic disparities and inequalities. At many provincial and municipal levels the governing authorities suffered the consequences of corruption, and these environments of increased uncertainty require a high level of resilience from companies to remain viable. Emerging economies comprise of supply chains with adapted levels of organization which are often more labor-intensive (A. Kumar et al., 2020) in nature. Disruptions, as severe as seen during the pandemic are much more impactful and potentially disastrous (Mangla et al., 2021) as compared to other parts of the world. Developing resilient systems in these parts of the world becomes a necessity. The vulnerability in supply chains and broader organizational systems leads to unexpected deviations from the routine and invariably incurs adverse consequences. It is exactly these vulnerabilities that brings about the factors that makes a firm more susceptible to disruptions (Ponomarov & Holcomb, 2009). Environmental uncertainty, which makes it difficult for firms to make predictions about the future due to the frequent changing conditions, can be considered as a contributing factor of vulnerability.

This research examines a multi-national manufacturing company, and their Cape Town subsidiary during the 2020 lockdown period in South Africa, within an environment of high levels of uncertainty. We explore what the elements are that make this facility resilient. The focus of this contribution is the impact of the changes and demands on the individual working at the institution, and the characteristics that align with extant literature on resilience. To achieve this goal, a grounded theory approach was applied to gather data. Our analysis reveals that employee perspectives are organized in three levels of the firm: individual, team and organizational. The participants in the study relate how they experience moving from one level of motivation to another during the course of the lockdown period. Furthermore, elements of categorization in the different levels were identified. The learning points contribute to the understanding of where organizations should contribute efforts in order to develop resilience and ultimately optimize their chances toward operational excellence.

Our study found that the reconfiguration of resources had a tremendous effect on the resilience of the organization. This influenced the individual perspective and the interpretation of performance and quality. A categorization and levels of resilience appeared from the data and aligned with the extant literature. This research proves valuable to organizations as to understanding resilience within their own context, and where to make investments towards growing a resilient culture. When an unexpected shock occurs, whether at the scale of the global pandemic or natural disasters as seen in subsequent years, organizations should know where to guide reactive reconfiguration efforts. When decentralized decision making occurs these are the structures that will serve to safeguard the creation of resilience and ultimately lead to operational excellence.

The following sections include a literature review on dynamic capabilities and highlight the need for these capabilities in environments plagued by uncertainty. A structure for resilience will be proposed to respond to these environments and the elements of the structure will be unpacked in the following section. The next section describes the methodology used, and the case study as well as the context will be explained. The findings and discussion will follow, before the conclusion where limitations to the study and suggestions for future studies are offered.

Developing a conceptual framework

Resilience

In recent times, scholarly interest in resilience has increased (Badhotiya et al., 2022), yet this interest had seen division on a clear definition and measurement level of this concept (Hillmann & Guenther, 2021). In its most basic form, and largely found in the supply chain realm, resilience can be defined as the ability of a “system” to adjust, change and recover from an undesired state to a desired state (Hosseini et al., 2016). Another held view of resilience is the ability to successfully cope with disturbances and disruptions, where the main focus and drive of the approach is placed on preventing the shift of the system towards an undesirable state (Alexopoulos et al., 2022). A more rigid definition of resilience is sometimes used: “an organization’s inability or unwillingness to change owing to deeply entrenched organizational cultures” (Linnenluecke, 2017, p.4), however the term resilience is more commonly used to refer to organizational or employee strength or perseverance when faced with adversity, and in particular the tact and skill applied during recovery. The debate on resilience is further tethered on whether this is an organizational-level or an employee-level competence (Linnenluecke, 2017). Organizational-level competencies have dominated the discussion in prior years with precious little work investigating the individual-level abilities.

Martin-Breen and Anderies (2011) insist that before resilience can be studied, we must first ask “resilience to what”? This inquiry assumes that resilience differs according to the nature of change, within an environment, and it can only be accurately assessed or described for a specific phenomenon (Hillmann & Guenther, 2021). Within environments where disruptions and threats of operational failure occur more frequently, e.g. emerging economies and other resource-constrained environments, a “gain advantage from the disruption” culture (Badhotiya et al., 2022, p.1162) develops organically, and aims for a state at least the same or at an improved functional level than before the disruption (Hohenstein et al., 2015). A concept called “*anti-fragility*” has also been popularized to frame the benefit gained from “disorder” (Nikookar et al., 2021, p.2), and is a stream of research that is growing parallel to resilience studies.

With repeated exposure to disruptions the culture of an organization absorbs this approach and responses to dire situations elicit a broad-ranging (i.e. company-wide) effort that includes frontline and higher-echelon strategic managers alike. Resilience, long thought to be merely a firm-level or system-level competence is fast being appreciated as including a services

view (Gatenholm & Halldórsson, 2023). Including the individual-level competencies as fundamental to realizing the resilience strategies, requires re-orientation of management understanding of resilience.

Dynamic capabilities

A firm's dynamic capability refers to its ability to integrate, improve and reconfigure competencies – both the internal and external competencies - to deal with the uncertainty in rapidly changing environments (Teece, 2007, 2012). Teece et al. (2016) distinguish between “ordinary capabilities” and “dynamic capabilities” and opined that the ordinary capabilities enable firms to finish defined activities, but they will not ultimately contribute to the firms' growth. The dynamic capabilities emphasize improving performance parameters and achieving competitiveness in a dynamic market that leads to operational excellence (Eisenhardt & Martin, 2000) of the firm. Although there are several ways to attain operational excellence, the means of using dynamic capabilities as an operational excellence approach boosts operational performance while mitigating challenges associated with a changing environment. Moreover, dynamic capability can be considered as an approach to achieving operational excellence in an uncertain environment (Sandberg, 2020). We will focus on the dynamic capability of the firm given the environmental uncertainty created by the 2020 global pandemic (i.e. SARS-Cov2, Covid-19) and tighten our focus around the individual working at the frontline and most exposed to the environmental changes.

Microfoundations

In their seminal article on microfoundations, Barney and Felin (2013) called for recognition of the primacy of the individual as the central agent of organizational success. In a failed attempt however to reconcile the macro and micro levels of organizational studies, their paper instead dispelled many of the ill-conceived myths around the microfoundations concept. The intuition that an aggregation of the individual's experiences at a firm, and the social interaction and influences that ensue will directly influence a firm's reaction to changes and challenges, seems self-explanatory today. However, contemporary firm-level interpretations dominated the field of strategic management in previous eras and prevented scholars from considering boundaries from where expansions and inter-disciplinary work could be pursued. It goes without reason that the “agents” of a firm is where investment in capabilities should be made (Teece, 2012).

With globalization and technological development, the contemporary individual working at a firm no longer is the agent of previous generations. Our study identifies the employees of the manufacturing firm as knowledgeable individuals, who know how to do their work and are “able to explain their thoughts, intentions and actions” (Gioia et al., 2013, p.17), and who are the primary agents constantly reconfiguring their capabilities during this process. Wilden et al. (2016) made an extensive study on the reasons why some companies thrive while others perish in changing environments. Their findings highlight the importance of applying varying levels of analysis and drilling down to the microfoundations of dynamic capabilities to contribute to expanding configuration theory.

Resilience as a strategic motive

Parker and Ameen (2018) examined the impact of the protracted South African power supply disruptions on the manufacturing industry. Their study found significant evidence that firm resilience, within a dynamic capabilities frame is in large part a product of resource re-configuration and pro-active risk management. The latter, in turn being scaffolded by a culture of disruption orientation and adequate investment in risk-averting infrastructure. What their 2018 study further explored is whether the disruption impact indeed mediated the influence of resource re-configuration on the firm resilience. Although no significant findings could be demonstrated to support their hypothesis of disruption impact influence, the nature of the subsequent disruption during the Covid pandemic requires further investigation. Further to this point, the strain that social distancing and limited interaction between colleagues placed on team collaboration during this period is quite distinct, and of particular interest in the current contribution.

Bode et al. (2011) integrated information processing and resource dependency perspectives to posit that firms should be viewed as “open systems” that face environmental uncertainty but strive for an orderly and reliable pattern of resource flows. Both of these perspectives suggest that reducing environmental uncertainty, known as the *stability motive* (Oliver, 1991), is a core objective of the firm. Early work from Anderson (1968) noted that an approach with similar characteristics would have an influence on when organizations would deem the environmental uncertainty as sufficiently problematic (Thompson et al., 2017), and would ultimately dictate when appropriate responses would be warranted. Considering these aspects, the importance of disruption impact during the Covid-19 pandemic is restated.

Supply chain resilience is considered as a tool to achieve operational excellence (Mishra et al., 2021), which helps firms maintain productivity and flexibility through cyclical and structural alterations in both supply and demand within a dynamic environment (Lelièvre et al., 2019). For these reasons the motive and drive for organizations to become resilient would best serve a goal of operational excellence. The conceptual framework of Parker and Ameen (2018) is then adapted to include disruption impact on strategic and operational levels and enhanced to include operational excellence as the “strategic motive”, as seen in diagram 1.

Diagram 1.

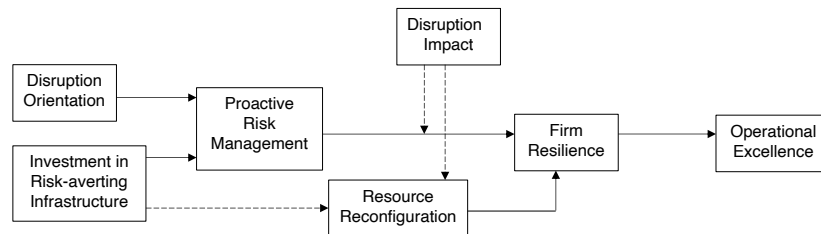


Diagram 1: Conceptual framework, adapted from Parker & Ameen (2018).

Importance of context and environment: dynamic environments

The term “*VUCA*” (i.e. volatility, uncertainty, complexity and ambiguity) has been used with increasing regularity by scholars over the past decade to describe many of the reshaping and change in the economic as well as geopolitical landscapes that endure globally in the wake of these forces (Millar et al., 2018). Within these environments future projections become less reliable, and rigid strategic planning techniques become progressively obsolete. The recent coronavirus pandemic has severely impacted world economy and, in South Africa made supply chains particularly vulnerable to disruptions. The level of vulnerability in South Africa during the first waves of Covid-19 infections, was associated with a range of shocks that preceded the pandemic: nationwide droughts, power supply disruptions, multi-sector riots, etc., which dominated the nation’s focus for more than two decades. Vulnerability in the supply chain

refers to unexpected deviations from the routine and their adverse consequences. Ponomarov (2012) suggests that vulnerability implies the factors that make systems (and firms) susceptible to disruptions. Environmental uncertainty, which makes it difficult for firms to predict the future due to frequent changing conditions, can be considered as a contributing factor of vulnerability (Mishra et al., 2021). Resilience is forged in firms that thrive in these vulnerable environments. Many scholars view VUCA environments as a potential driver of innovation (Millar et al., 2018; Steiber, 2022) and posit that careful attention must be paid to the solutions generated during these periods and more importantly where innovation is created. This is the innovation rich environment where we base our study.

Constructs of the conceptual framework

1. Disruption orientation

The supply chain-specific definition of disruption orientation is “a firm’s general awareness and recognition of pending disruptions” (Ambulkar et al., 2015, p.112), and the “concerns about, and seriousness towards supply chain disruptions” (Bode et al., 2011, p.837). Furthermore, it is the firm’s ability to “recognize the opportunity to learn from the supply chain disruption” (Parker & Ameen, 2018, p.536) that truly defines the organization’s disruption orientation. This concept is generalized at the firm level and, here in our case study, it is adapted from the supply chain context to a broader purpose of framing the lockdown period. Firms with a strong disruption orientation should be more likely to be resilient to disruptions, and more likely to attain a competitive advantage during periods of disruption. This orientation generally informs the training and risk management strategies and the primacy that these concepts occupy in the discourse during organizational meetings and collaboration platforms – where ideas are generated and shared.

2. Pro-active risk management

In the exploration of both the pathways and objectives of supply chain risk management (Tang, 2006), the following comprehensive definition is offered by Fan and Stevenson (2018): “The identification, assessment, treatment, and monitoring of supply chain risks, with the aid of the internal implementation of tools, techniques and strategies and of external coordination and collaboration with supply chain members so as to reduce vulnerability and ensure continuity

coupled with profitability, leading to competitive advantage”. These concepts are generalized to disruption management and described as proactive or passive, and this relates directly to a firm’s need to detect and plan for disruptions. Proactive risk management enables a firm to ardently obtain information regarding disruptions, and apply this knowledge to plan an appropriate response. Moreover, Daft and Weick (1984) examine the sense of urgency, alertness, and approach of firms in volatile environments and define two types of firms namely: active and passive (Parker & Ameen, 2018). Active firms maintain constant vigilance and awareness about their environment and apply effort to remain informed. These firms respond proactively to potential threats and disruptions. Moreover, these firms take time to learn from their past experiences (Ambulkar et al., 2015), and generally use various stakeholder platforms at many levels of the organization to plan improvement strategies. This approach is commonly seen among continuous improvement cultures (Hsu et al., 2023). In contrast, passive firms mostly resign themselves to their environment, without proactively seeking to insulate themselves against disruptions – and conversely, a passive firm will be slow to respond to disruptions. Firms that have a culture of proactively managing their risks are more likely to be responsive, and more likely to be resilient (Ambulkar et al., 2015; Hussain et al., 2023; Parker & Ameen, 2018).

3. Investment in risk-averting infrastructure

Risk management infrastructure is defined as a “resource structure” (Ambulkar et al., 2015, p.113) set in place to manage disruptions. Risk-averting infrastructure, similar to the notion of redundancy, are particular investments made in order to incorporate resource structures to manage specific disruptions (Parker & Ameen, 2018) – especially given the environment, or a firm’s previous disruption experience (Bode et al., 2011a; Hussain et al., 2023). Examples of risk-averting infrastructure used in their power disruption study, Parker et al. (2018) refer to diesel generators and information processing systems to detect and plan against power disruptions.

Human resource structures can (and should) be developed, within organizations that benefit from a proactive management culture, to achieve in and of itself a salient level of resilience. Both horizontal and vertical structuring of business hierarchies and information processing systems would do well to recognize these areas as opportunities for investment. Auto re-organization of teams during disruptions, where the reconfiguration for problem-

solving occurs in a decentralized fashion (Galeazzo et al., 2017a; Mohaghegh & Furlan, 2020), is a key component of resilient systems.

4. Resources reconfiguration

Resource reconfiguration has been identified as an important dynamic capability (Fainshmidt et al., 2016) for the firm, and this “ability to manage and reconfigure resources in a changing environment” (Parker & Ameen, 2018, p.537) becomes crucial for firm survival. Furthermore, maintaining high performance (Ambulkar et al., 2015) and safeguarding competitive advantage during periods of high market volatility depends on the proactive investment into these skills. This notion is in line with Galunic and Rodan (1998), who note the importance of engaging in creating new resources by experimentally trying different resource combinations. These adaptive capabilities, also prevalent in innovation studies (Wu & Ho, 2022), translate into the culture of an organization that solve problems in resource-constrained situations and can mitigate the impact of external shocks or disruptions.

5. Disruption impact

Building on the stability motive, Bode et al. (2011) posit that resilient firms derive motivation from the potential impact of a disruption to respond to adverse events. Thus, the more severe impacts stir greater motivation to act and restore stability (Parker & Ameen, 2018). This view aligns with the resource dependency theory (Bai et al., 2023), which suggests that disruptions stimulate a firm’s motivation to act and respond (Parker & Ameen, 2018). The degree to which firms are dependent on other organizations will shape its behaviour in response to disruptions. The global pandemic, with the additional restrictions placed on social interactions in the workplace, combines in the South African context to provide an ideal stage to examine resilience of firms. The impact of the disruption (i.e. lockdown influence on internal functioning, Covid-19 restrictions and uncertainty in the external environment) had a multi-level influence on the ability of organizations to adapt. Mishra et al. (2021) shared lessons from a developing economy in the agriculture supply networks, and captured contextual factors that influence resilience – both internal and external to the organization – as contingent factors (e.g. industry type, rate of change of industry, government policy, firm size, competitive propensity etc.). We will apply disruption impact in this study as a broad ranging influence with similar multi-level effects.

6. Resilience to operational excellence

The tremendous significance of supply chain resilience during disruptive events, to a large extent necessitates firms to develop capabilities to proactively improve the required level of readiness, response and recovery-ability during both the pre and post disruption phase (Birkie & Trucco, 2020, Ivanov et al., 2019). Resilience can therefore be seen as a strategic approach towards operational excellence to achieve and maintain competitive advantage – especially in dynamic environments. Du Pont (2014) posit that supply chain resilience depends on the processes that firms use to derive operational excellence.

Resilience relies on a set of operational excellence methodologies; e.g. lean, agile, leagile, six sigma, lean six sigma, etc. (Jüttner & Maklan, 2011), and a set of supply chain capabilities; e.g. collaboration, visibility, flexibility and velocity, that helped firms to maintain performance during the pandemic outbreak (Sabahi & Parast, 2020). Organisations using such capabilities are more adaptable and can make informed decisions in an uncertain environment due to the increased level of information sharing, transparency and actionable insights that they produce (Sundarakani et al., 2020).

Methods

Grounded theory is widely used in health and social sciences to generate theoretical accounts of a social phenomenon, and was first described by sociologists Glaser and Strauss (Num et al., 2023). This methodology examines the processes of human actions and behaviours from the collected without predetermined concepts, and extracts the central concerns of participants to develop an understanding of the phenomenon (Glaser & Strauss, 1967). The method is rooted in symbolic interactionism (Benzies & Allen, 2001) where individuals act on the meaning they assign to an object, entity or situation they interact with (e.g. job demand, colleague, workplace, behaviour, etc.) and have been applied with great success when examining high pressure environments such as healthcare (Num et al., 2023)

This study explores the experience of individuals working at a large manufacturing plant (Mill) during the period of national lockdown in South Africa. The goal of exploratory research is to gain a deeper understanding of a particular phenomenon (Edmondson & Mcmanus, 2007), and in this study the perspective of the individual and how structures are framed was of singular importance. To this end, qualitative data was collected through individual interviews with onsite essential workers, which was completed using zoom conference calls due to the prevailing safety restrictions during this period.

Context

The nature of the Covid pandemic influenced human social contact, and this had specific impact ‘best practice’ philosophies where one-on-one human interactions - including the tactile appreciation of products - are promoted.

South Africa (SA) identified their first Covid-19 case at the end of February 2020 after seeing first the impact felt by Italy (the first country outside of China) and then the rest of Europe and United States. Being a multi-national company and interacting (even standardizing) across continents, was particularly challenging and placed additional stresses on the final design of the company’s response. The national (SA) response was to prioritize medical, food and essential services. This meant for the Mill that a maximum of 30% of staff compliment was to continue working, while the rest should work from home. Essential services had to apply through CIPC (Companies for Intellectual Property Commission) for official certification, by submitting a plan for employees expected to work. This action plan placed yet another level of restriction in addition to the 30% staff limitation, and this point (the submitted plan) was a strategy implementation inflection point. Additional external complications were the public transport and rail services that were severely limited. Combined with curfews that were implemented the direct affect on employee access to their work environments became clear. When air travel was stopped, the impact on logistics and sourcing also influenced the functioning of the company.

The studied context

Our study is performed in Cape Town, South Africa, and examines a large multi-national manufacturing company, of a high-functioning nature that provides numerous products through multiple production lines. This fast-moving goods company delivers essential service to the baby and child care, adult care, family care, feminine care sectors as well as a professionals section. Many national and international brands are included in the product lines such as child diapers, disposable handkerchiefs, toilette paper, hand sanitizers and wipes, as well as sterile surgical equipment and gowns for surgical staff.

The complexity of this organization, beyond the challenges of numerous inter-linking departments, is further complicated by regular grade changes on various lines – often occurring in concert. Prior to the pandemic, this organization managed to incorporate many LEAN and agile techniques successfully. The organization established a culture among their employees that function across various inter-woven departments and across many tiers, all united around

performance as a shared goal. Our investigation spans the period of first national lockdown in the country, directly after the organization was identified as an essential service provider.

Participant selection

The employee list at the firm (Mill) was divided into non-essential and essential workers. Non-essential workers were defined as administrative staff; i.e. Human Resources, Finance, Planning and Procurement. Research and Development teams (R&D) were allocated shifts as their attendance at the site was critical only as the need arises.

All remaining staff members involved directly with the machines and products were defined as essential workers and needed to be present at work during their shift. These departments included: Quality control, Operation, Logistic & warehouse staff, Mill engineering staff and one senior member of management (Factory Manager). Due the focus of our study, we examine only the essential workers at the site.

Data collection

The interviews were conducted over an average of 30 minutes and transcribed verbatim using dictation devices and double checked by the researcher and an assistant. Repeated interviews, and revisits were conducted over a period of 6 months. A thematic content analysis was performed, and compiled into first order categories and second order themes using an established inductive research method (Gioia et al., 2013). The following questions were posed to the participants:

SET 1

- How do you feel about all the changes the company has implemented during lockdown?
- What change has impacted you the greatest?
- What has impacted your performance the most?
- What has impacted the team's performance the most?
- What personal change have you made to drive positive performance?

SET 2

- Describe your interaction with other departments, why you interact with them and why it was important?

- What tools were available to you and other departments, and how did you need to work around any critical or urgent tasks?
- What could the company have done better to manage change?
- What have some of your frustrations been in the past nine months, and how did you deal with it?
- Is there anything else you want to add?

After a pilot study (7 individuals over a 1-week period) was conducted to refine the question and interview structure, 25 interviews were conducted within the departments of Operations, Engineering, Logistics and Quality. The individuals were allowed to freely express their subjective experience during the period under question. The selected participants represented all the essential components, as well as varying levels of experience in seniority/authority within the organization.

Data analysis

A content analysis was performed on the data gathered. Content analysis is a process of systematic coding and categorization used to explore large amounts of textual information. The aim is to determine trends and patterns of words and phrases used in the interview process. This includes the frequency, relationships, as well as the structure of the communication and phrases (Norvell Gustavsson et al., 2021). The coding was used to group the statements concerning the origin and the theme being discussed.

Participants' responses were transcribed, examined and coded using the original words of the participants, to form a set of first order codes. These codes were collapsed into first order categories which represent the participants' own ideas, and when connections across the first order categories were identified the resulting structure allowed these to be collapsed and grouped into second-order themes (Gioia et al., 2013b). The second-order themes were clustered into key dimensions that enabled the development of a framework that linked various concepts that emerged from the data. An additional, objective review of the transcripts and coding was done by a second researcher to enhance the objectivity and reduce biases (Bell & Bryman, 2007b). Figure 1 represents the data structure that emerged from the analysis.

Figure 1

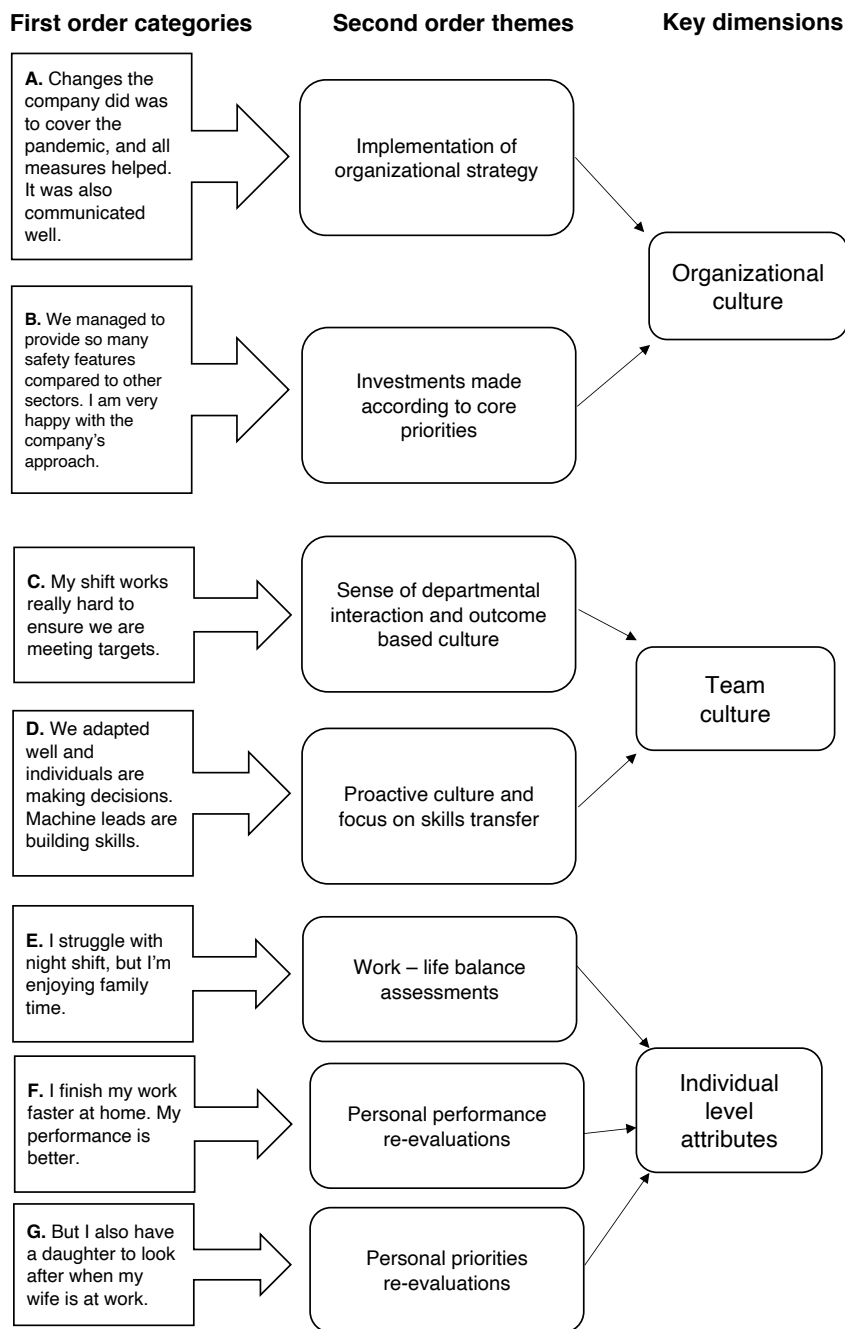


Figure 1: Data structure after thematic and content analysis.

Findings

Figure 1 represents the findings from the analysis and shows the first order categories (i.e. phrases used by the participants), the second order themes and the key dimensions developed from the verbal responses provided by the participants.

Seven secondary categories were highlighted through the analysis and are discussed below: Organizational strategy implementation, investments made according to core priorities, sense of the departmental interaction and outcomes-based culture, learning culture and focus on skills transfer, work-life balance assessment, personal performance assessments and personal priorities re-assessment.

i) Organizational strategy implementation

The view that the organization performed well and timely during uncertain times, was a commonly held view point under participants, and occurred frequently in the data. The proactive response and planning was held up as a good example of stalwart direction during uncertainty.

Response 16: *“The company did really well at the time, considering.”*

Here, the benefit of an multinational structure was evident; as lessons garnered from the UK headquarters and their COVID-19 experience that occurred almost 2 month prior to the arrival of the first cases in South Africa. In this particular instance, the newly developed capabilities and routines were transferable through a multi-tiered system (Riviere et al., 2021). Learning that occurs within an extended organizational structure is of great benefit, and far outweighs the challenges found in trying to consolidate different contexts (Helfat & Peteraf, 2009).

Walters et al. (2022) reflected on the challenges of leadership in South Africa during the lockdowns, and highlight the powerful impact of supporting employees with their personal and family life to achieve success at institutional levels. The participants in our study generally held the idea of the Mill as being a pleasant and supportive (but structured) environment even before the lockdowns. During and after the lockdown period the person-centered response, when worker’s acquaintances or spouses at other facilities had very different experiences,

provided participants with perspective and they were able to draw motivation from these insights.

Response 12: “My wife works for government, and they are struggling.”

ii) Investments made according to core priorities

A strategic directive allowed employees to take certain job-critical equipment and computer hardware to their private residence during the period of lockdown to allow them to perform their work optimally from home. The firm also provided cellphone prepaid packages, money recharging on contracts and mobile internet devices for laptops, which was especially beneficial to employees living in areas where internet connectivity was poor. These actions - seemingly small gestures - demonstrated a level of support and trust which was experienced by the employees and made clear during the interviews. The perception of trust by workers significantly influences their internal motivation (Cheng et al., 2022), and reinforced the “organizational citizenship” (Park et al., 2021a) which allows for alignment with organizational values and goals.

Response 8: “It makes people know that the company has the best in mind.”

iii) Sense of the departmental interaction and outcomes-based culture

The strong organizational culture of team interactions and interpersonal skills transfer was highly rated by participants. Frustration with the limited access to “my team” was the area most referenced during the interviews. Many scholars have explored the dynamic capabilities and interrelation with the social capital theories (Wilden et al., 2016) and the important role that the social interactions play in optimizing the firm-level development of routines in response to dynamic environments.

The tactile nature of handling the products and confirming quality is to some extent industry specific. However, these limitations along with the restrictions imposed on LEAN philosophies of seniors “visiting the floor” for their *gemba walks* came across very prominent in the data. The absence of these interactive elements during lockdown, and frustration felt by the team was clear. Many companies with similar systems found that during lockdowns a short period

of adjustment was necessary, but that ultimately the tools and skills provided by these systems allowed individuals and teams to make the necessary adjustments (Abdallah, 2020a)

Response 9: *“My job requires me to see materials and a particular item. I need to be onsite but being on shift has been made more difficult.”*

Response 3: *“But now we have to use what we have, and performance is better.”*

iv) Learning culture and a clear focus on skills transfer

Prior to Covid-19, ongoing training and onsite troubleshooting was a fixture, but the teams now invested time and energy to try and overcome the impediment of social distancing. Reverting to video calling and video conferencing applications on mobile devices and laptops was what the teams used to communicate and solve problems. Although less preferred, the slower e-mail route and compiling of extra reports across and between shifts was another string of ideas used when access to the Mill was problematic.

Response 5: *“The changes were necessary. It keeps the business running and it impacts us all.”*

Essential workers were placed on 12-hour shifts, and teams were divided and sub-divided to cover a sustainable presence at the Mill. The shifts in and of itself posed a barrier to how the teams intuitively felt like conducting their tasks. Wong (2021) explores the factors that influences liturgy during Covid-19 lockdowns, and describes the frustration of individuals prevented from accessing spaces where they receive communion and experience comfort during uncertain times. Many participants expressed similar frustrations of being withheld from their “work-family” for extended periods. The importance of interactions in the working environment is deeply ingrained in organizational culture, and where individual find their personal alignment (Park et al., 2021). Grelier et al. (2022) studied 416 nursing professionals in France during the lockdown period, and found them to be generally resilient but their personal-professional life balance started to deteriorate when the social support structures were compromised. The dependency to interact with others, especially in a dynamic working environment is important as a support structure, as well as a motivation for the tasks at hand.

Further, the need to transfer skills is as important as the social interaction that comes with the process, which directly contributes to the culture found in many organizations.

Response 1: *“My shift works really hard to ensure we are meeting targets.”*

Response 14: *“It is challenging not seeing the team regularly.”*

v) Work-life balance assessment

Participant reported that achieving a new balance of ‘private life and work life’ proved more challenging than what they initially expected. Their work-related responsibilities changed because of increased demand due to the pandemic and the imposed lockdowns, as their products were also subject to the panic buy impulses in especially the initial phases of lockdowns. Network connectivity challenges – which was a common problem in many urban areas in the country – as well as public transport access, placed extreme pressure on employees despite given the opportunity to work from home. Karani et al. (2022) examined 256 employees across different industries in India during their national Covid-19 lockdowns using structured questionnaires aimed at understanding the role of work stress on the wellbeing of the workers. Their findings illustrated the importance of maintaining a fine ‘balance’ and perspective of the workers in their interpretation of the psychological contract held with their employer.

Our participants, now on shift work and working mostly from home, found that their roles and responsibilities at homes greatly expanded. The knock-on experienced; from having a spouse or partner adapting to their own work requirements and having children at home when schools or daycare centres closed during the pandemic, placed an additional level of strain on individuals. Scholars of job demand theory, and colleagues in the fields of psychology and sociology would emphatically lobby with strategic managers to consider the balance between job resources and personal resources (Bakker & de Vries, 2021). Strategic managers globally would benefit from heeding such a call, to develop an awareness of these factors, and in appropriate scenarios to include this in their planning processes.

Work-life balances is a larger dichotomous relationship that bears unpacking during strategy formulation, especially when the environmental changes exceed certain thresholds (Leon, 2019). Leon (2019) goes further to posit that addressing these issues speak to a larger

organizational culture, and that these cultural aspects act as mediating factors when personal balance with work demand is assessed. Our participants were naturally drawn to these concepts in their feedback, and their interview feedback and responses centered around these adjustments and re-adjustments in their roles at both work and at home.

Response 12: *“We go to work when we are needed and we have had moments of loss during this time. My wife's colleagues have passed away and people at work have fallen ill. My wife works for government and they are struggling.”*

vi) Personal performance assessments

Many participants offered *unprompted* comments on their individual performance since working from home. The aspect of performance outside of the native teams was top of mind. Most individuals reported either frustration due to limited access to team members – knowing that performance is suffering, or a smaller group of individuals reporting that they perform better from home. The role of the managers and the organizational systems to give feedback on performance was initially used, but over time lost its primacy. More participants reported creating new measuring tools and/or adaptation of the balance score cards to fit the new work dynamic. This adaptation of reports were also true in the reports used (inputs) to prepare and plan activities. Teece (2007) promoted decentralization and decentralized decision making as one of the biggest drivers for firms to become more flexible and adaptable during environmental changes. Allowing the workers to adapt their assessment of personal performance requires an established organizational culture (Leon, 2019) as well as a considerable amount of trust (Currall & Inkpen, 2006; Rousseau et al., 1998) on behalf of the firm. Participants that reported better performance mostly shared their reassessment of personal priorities during this period.

vii) Personal priorities reassessment

Response 5: *“But I also have my daughter to look after when my wife is at work, so I have to get up and feed her or put her down to sleep. Otherwise, I am coping with my time. Its better because I know she is safe.”*

Participants shared in their interviews that for some a reassessment of priorities was overdue. Although some already felt the need to reassess these aspects before the lockdown periods, this period brought the matter, and need for decisions to the fore. For many, objectively more motivated, individuals this meant applying for roles within the organization with different working hours to better suit their newfound priorities. Many interviews produced feedback from individuals that adjusted their level of input and assertiveness during (online) meetings and expressed an awareness of this new posture.

Figure 1 also shows the three key dimensional levels extrapolated from the analysis: 1) Organizational culture, 2) Team culture and 3) Individual-level attributes, and provide insights into an intuitive structure of the employee perspective. This perspective starts from an area of interpretation often believed to be outside of the purview of organizational behavior, namely the individual and personal-level factors. Barney and Felin (2013, p.4) reject a warning of an “infinite regress”, where strategic management moves into the ambit of psychology and social sciences. The structure that emerged aligns with the findings of (Wilden, Devinney, & Dowling, 2016) in their “House of dynamic capabilities” model, where they attempt to understand different market architecture. Following on from this model, an objective view of the strategic planning framework given the environment, should include novel personal (i.e. homelife) insights and can be plotted on our framework. Subsequently, combining the microfoundational views of the employees into the framework will results in a more holistic view in response to environmental changes.

Ground theory zones

The three levels: Organizational culture, Team culture and Individual level attributes aligned with the objective view of the adapted resilience framework (Parker and Ameen, 2018) as captured in figure 2. This view provides insights to organizations into understanding the factors that influence resilience from the perspective of their employees. The framework also provides

a structure which guides where investments can be made to improve on organizational resilience, thereby enhancing chances of operational excellence.

The impact factor of participant feedback as to which of the levels carried more weight was also investigated. As demonstrated in Fig 2, a structure emerged that revealed areas of inference between the levels previously identified. The “zones” that appeared, refer to areas of overlap from both a responsibility or impact point of view as seen by the participants. Participants had strong reactionary opinions, as captured in the language used to describe their interpretation, towards these zones. In figure 2 these zones are included in ascending order, and analysed as to their prevalence in the interviews. The range where the disruption impact was specifically highlighted was in zone 2, and mostly concentrated around zone 3 and 4.

Figure 2

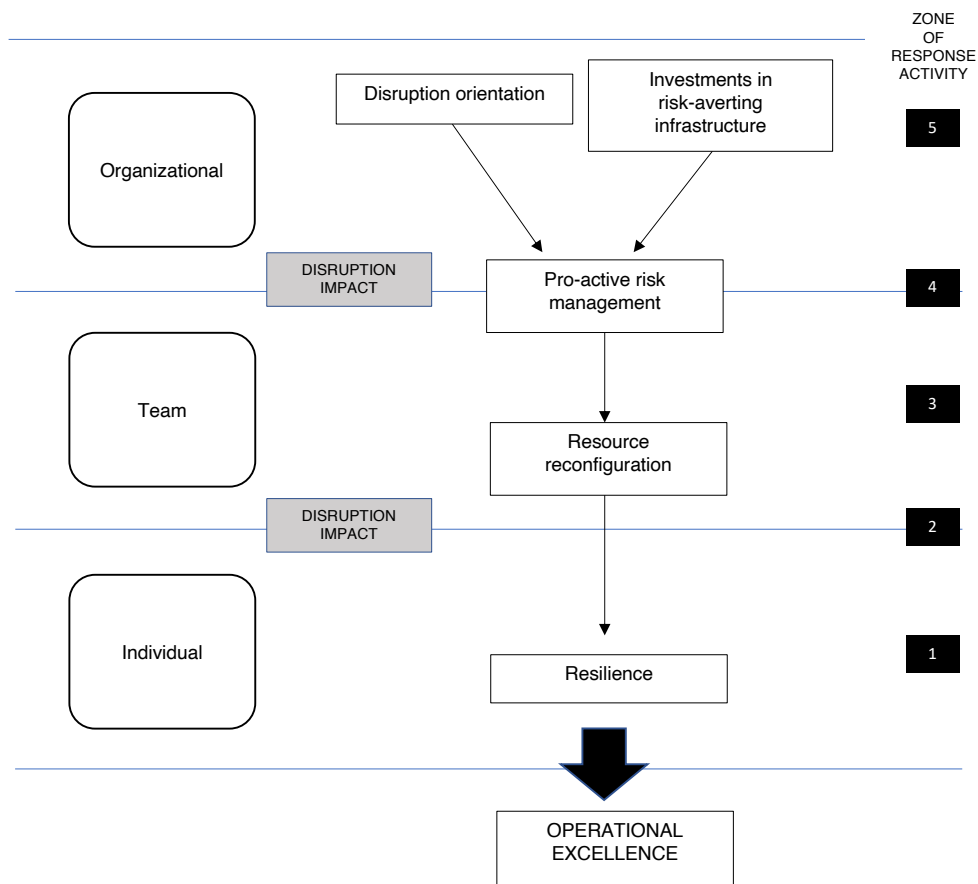


Figure 2: Ground theory alignment with conceptual framework, and the zone analysis structure.

Participants referred most of their comments to Zones 3, expressing frustration with team level interactions and identifying this as an area where improvements in the resilience structure can be made.

Generally, participants felt that Zone 5 and the manner in which it was handled during the lockdown added value to the experience, and this can guide the organization to investigate the best practices from this period.

Discussion

At a surface level, the emergent themes of the participant feedback suggest that the lockdown placed the team level interactions under the most pressure. The analysis of the zones identified the relation of the levels to each other. This helped to identify that the team culture level appeared closer to the individual level attributed than to the organizational culture level.

Overall, the participants felt that their personal life (Zone 1) was positively impacted, but a disparity between personal assessment and work-life towards teams (Zone 2) was noticed with subtractive comments highlighted in the comments.

Organizational culture

Burmann and Zeplin (2005) examined the value of internal brand management in the hospitality industry and found evidence of the tremendous impact on the internal motivation individuals experience as described by Ryan and Deci (2018) in their self-determination theory. Prompt reaction and clear communication from the organization set in motion a direction and momentum that drove the team and individual level activities. If the organizational values of person-centered focus is consistently adhered to, the rest of the structure (both team culture and individual level attributes) can easily align and harness the efforts towards strengthening resilience of the whole system.

Team culture

The culture of continuous improvement cycles and decentralized decision-making was a great asset to the firm. The benefit to sustained functioning during the lockdown – especially how removal of “wastes” as captured in LEAN management practices (Abdallah, 2020b) -

complimented the need for sanitation during the pandemic. The dependence on teams (e.g. allowing for and needing the input of others in the team) appeared in the data analysis most frequently and caused both frustration as well as finally resolving the tensions. Zone 3, where both teams and the link to higher management was located, was found to be the biggest point of tension to developing resilience. How teams are formed, and exercises that develop and test their dynamics towards resilience, should inform strategic thinking of the organization moving forward. As much as uncertainty around Covid-19 and the future structures within organizations with regards to safety of workers still loom, teams in manufacturing organizations with decentralized decision-making structures will do well to invest in this level of the resilience structure. The evidence from this paper demonstrates that the tools and empowerment eventually paid dividends towards the company in this case study.

Individual level attributes

The link between resilience and an individual's problem-solving style and decision-making, has found new interest from researchers since the onset of the pandemic (McIntyre et al., 2022). This personalized style towards approaching a challenge will greatly influence outcomes of the team and the organization at large, especially in firms with a decentralized decision-making infrastructure. Our study found that during the lockdowns; workers consistently reassessed their work-life balance. Although it cannot be excluded that the nature of the pandemic played a large role, the feedback from interviews demonstrated that the organizational signals and team interactions had a significant perceived influence.

Resilience structure

Companies with an awareness of the various elements that their employees consider during disruptions, can make proactive investments in appropriate areas (or levels) and learn from previous experience (Bode et al., 2011). This will assist with the programming of actions in a more targeted way based on the reigning organizational milieu and the nature of the shock that befalls the institution (Mishra et al., 2021). The impact of the existing structures and how they are optimized for performance cannot be understated, as well as the freedoms and authority given to individuals and teams to make decentralized decision based on day-to-day and moment-to-moment challenges. The paradox of empowerment and best practices, and how these potentially limit adaptability during disruptions, should be explore during future papers.

Status categorization and sensitivity to phases of disruptions begs questions of how to revitalize resilience in organizations.

Conclusion

The study set out to discover a structure for understanding the perspective of individual experiences during lockdown, to contribute to the knowledge of resilience in organizations. The multi-level approach that was revealed can be aligned from a strategic management point of view, in order to enhance the firm's chances to reach operational excellence beyond resilience. Implication of this study are the levels of interpretation that workers in a firm make during disruptions and how these align within a resilience framework. The framework can be used to plan resilience strategies, and ensure that all levels as perceived by members of an organization are addressed proportionally. The association of resilience as an antecedent to operational excellence broadens the relevance of the discussion, and moves the priorities from risk management and disaster management platforms to daily and regular management activities – where it can be integrated as activities for superior performance, and a potential competitive advantage.

Limitations of study

The number of qualitative interviews can be increased to include a more representative sample in future studies. Due to the focus of essential workers, the views and experience from non-essential workers on resilience was not captured. The nature of the firm requires that generalizations to larger demographics in emerging countries similar to South Africa, should be done with care.

Future research

A follow up study which tracks the employees through the recovery phases and later phases of pandemic could be very useful for the field of study. Expanding the surveys to include both more specific personal and team dynamics interactions, could generate a deeper understanding of resilience for organizations. The top management experience and their perspective of distance to the individual, can be included in follow up studies and would serve very useful in completing a strategic management understanding.

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CHAPTER 3

Organizational level

This chapter is based on:

Du Plooy (2023). LEAN and KATA against fire: the role of organizational culture during emergency healthcare response. A teaching case presented at the Graduate School of Business, University of Cape Town.

III Connection line

From a strategic management perspective, the structural building blocks of organizational culture are investigated. The skills, tools, and systems of LEAN management in a healthcare facility are captured in an educational case study.

- The strategic management field often turns to Eastern philosophies of optimization such as LEAN, six-sigma, Agile, etc. to frame the techniques available to organizations in their efforts to attain competitive advantage. These techniques, valuable in their own right to solve problems related to performance, are seldom investigated from an organizational cultural perspective.
- In this paper, the implementation of quality improvement strategies at a health facility (hospital) is followed through the normal change management stages until a natural disaster befalls the organization.
- A teaching case study methodology is used to capture the ethnographically sourced events. The goal of this contribution is to capture the strategic level attributes of the organizational culture.
- A teaching case methodology was chosen as it gives access to larger audiences, and the possibility is retained to gain constantly growing perspectives.
- LEAN methodologies and the effects of routinized habits are placed as actions against the resulting absorptive capacity of the organization.
- This contribution provides insights into the resulting organizational culture and demonstrates the value of systematic problem-solving during the response to a natural disaster.

Keywords: LEAN, KATA, Absorptive capacity, Change Management, Ethnography, Case study

ABSTRACT

This teaching case examines the implementation of a quality improvement strategy at a South African hospital in the public sector over an extended period. The narrative follows the story of KPH, a 90-bed district hospital, and starts shortly after this facility was selected as a pilot site* for national healthcare reform. Our case commences from the premise that organizational culture can be designed, improved, and systematically implemented. The findings demonstrate that LEAN-based methodologies – i.e. skills, tools, systems, and philosophies – can be inculcated to permeate the entire facility (hospital), to arrive at an organizational culture with enhanced resilience. Information and data were ethnographically collected and the teaching case focuses on the period when a natural disaster, an out-of-control wildfire, befalls the town and the facility was forced to respond and apply cultivated skills and tools within a highly volatile environment.

The first part of the case follows the purposeful application of skills and tools, and the kata habits that resulted in redefining the organizational culture. The strategic management decision to apply methods that would result in a competitive advantage for the organization, is demonstrated in the improvement of the dynamic capabilities of the facility. The construct of absorptive capacity is used to frame the learning that occurred at various levels of the hospital.

The second part of the case demonstrates the response of the facility during the wildfire that surrounded their town and the subsequent evacuation of the hospital, and how these skills produced utility systems: i.e., a systematic problem-solving (SPS) culture. Focused ethnography was applied to capture the events surrounding the wildfire, and the emergency response that ensued using the closed-loop communication systems.

The main findings of the case are that the cultivated organizational culture served as a protective factor during a natural disaster, using the absorptive capacity concept in order to develop organization-wide resilience. The usefulness of SPS and LEAN methodologies when applied during a natural disaster proved particularly fitting given the resource-constrained environment and it is scalable to various situations. The teaching case is compiled to demonstrate techniques and methods of knowledge transfer, as well as the transmutation of organizational culture at the micro level in healthcare.

* * Also known as an innovation incubator, 9 of these hospital sites were assigned across South Africa in 2010/11 and given resources as well as a mandate to generate innovative solutions and systems to improve on service performance, in preparation of the National Health Insurance (NHI) reforms.

INTRODUCTION

In June 2017, an out-of-control wildfire surrounded the coastal town of Knysna and placed this small South African town and its residents under siege. The local health facility (KPH) was forced to evacuate its premises and flee to safety. KPH continued to provide health services to the greater Knysna and Bitou area (their duty-bound health governance region with a population of 120,000) from the confines of an indoor squash court complex for the following 15 days. Hospital support staff, health providers, and multi-disciplinary teams from various units were forced to quickly adapt to new routines and rely on both their collective experience and acquired skills to face this challenge. The particular skills, which made their quick adaptation possible and provided much-needed agility, were developed over an extended change management period since the facility was selected as a National Health Insurance (NHI) pilot site 7 years prior.

This case study examines the operational effectiveness of hospital multi-disciplinary teams and the response that was launched to a natural disaster. It poses the following question: What factors of organizational culture serve to optimize the response in this context? Our study takes an ethnographic approach and captures the events around the health facility's response in a teaching case study format, with a careful focus on the period around the 2017 Knysna wildfires.

The first part of the case investigates the implementation and wide dispersion of LEAN methodologies during a change management activity. The learning systems and routines promoted by these methodologies strengthen the belief held by scholars in extent literature that organizational culture is firmly rooted in the routines (KATA) and habits of daily work. The rapid improvement techniques were found to facilitate the change and be a catalyst for learning capacity.

The second part of the case utilizes a focused ethnographic examination of the disaster management during a particular natural event that served as a shock. This event exposed the innovation capacity that was developed over the preceding years, and parallels are drawn between the structures of the systems and the methods of knowledge sharing and communication. The circular structure of closed-loop communication is compared to the continuous improvement cycles that ultimately became part of the facility culture.

Case purpose

This teaching case aims to examine the significance of sustained learning patterns during a change management period in a district-level hospital in South Africa, and the resulting organizational culture resilience when faced with a natural disaster that threatened interruption of their function. Although set in the healthcare sector, this case contains universally applicable business management tools.

The case takes a look at the conditions during the change management initiatives, the routinized work structures, and how the facility responded during the disruption. The facility was selected as a pilot site for national healthcare reform and underwent numerous relocations of wards during a lengthy upgrade process. During this period, the teams familiarized themselves with theories of designing, establishing, and maintaining clinical workspaces by codesigning their work routines.

The first part of the case follows the hospital CEO, Mark Price, on his weekly routine and walking route to work. Price walks on a route with “front-line rich” exposure, to both gather information and show support to his staff. The route and the gesture is a product of institution wide change management and application of a series of LEAN techniques. Mark also engages the labour shopsteward and the case demonstrates the manner of bi-directional information sharing and information exchange. The case will demonstrate how these routines and communication styles have been cultivated when a high burden of responsibility was placed on Mark and his team for innovation and organizational excellence.

The second part of the case sees Mark and his institution suddenly faced with a natural disaster, with the added responsibility of providing an uninterrupted service in this highly volatile environment. Mark and his team lead the evacuation of their hospital but rely on the skills and tools that his teams have painstakingly acquired and their ability to apply them. The case demonstrates the capacity for innovation that was developed in these situations.

LEARNING OBJECTIVES

The learning objectives of the case are to illustrate how an organizational culture can be optimized through continued learning initiatives, habits, and routines. Moreover, the contribution aims to demonstrate the potential these activities have to influence the level of

functioning and innovation within the organization. The case will show how the rituals and habits that make up a functioning organizational culture in our example, were placed within routinized cycles – known in LEAN as kata - which improved the absorptive capacity of these teams and the greater organization. By applying a management lens to this hospital and utilizing LEAN methodologies during their change management approach, this facility was able to improve their resilience during adversity and optimize their emergency response during a natural disaster.

PART 1 – Change management

KATA

The successes at Toyota were initially attributed to the LEAN management system (Masucci et al., 2021), but upon closer inspection, the success is derived from the underlying corporate mindset, and an emphasis on people and their routines (Graupp et al., 2019). The innovation derives from the continuous exploitation of available knowledge and habitual exploration through a scientific experimentation process, all within a safe and systemized environment. The simple principle of kata – borrowed from martial arts lore – is defined as: “ways of thinking and behavior which, through constant practice and application, develop into routines which are performed almost reflexively” (Brandl et al., 2020, p.840). Kata is, in essence, the small routines (i.e. habits and rituals) that help organizations continuously improve (Toivonen, 2015), and can be divided into *Improvement kata and Coaching kata* (Rother, 2009).

Improvement kata consist of a) understanding the direction (i.e. the challenge), b) understanding or grasping your current condition (i.e. where are we now?), and c) establishing the next target condition (i.e. where do we want to be?). These three seemingly simple steps form the foundation of planning, and how LEAN-trained individuals along with their broader teams approach challenges. The next step, known as execution, would be to iterate towards the target condition (Graupp et al., 2019; Toivonen, 2015) through a series of improvement cycles called Plan-Do-Check-Act (PDCA) cycles. Once the target condition is achieved, the improvement kata resets and starts over. The overriding concept is that; instead of doing intermittent or piecemeal improvement projects, ‘improving’ is a part of daily work and never stops or ends. Improvement kata is easy to initiate but can be difficult to master. Absorbing a lifelong learning task and establishing routines to practice until they become second nature can

seem irrational in overburdened working environments. At this juncture the coaching kata becomes crucial, to maintain the cycle and systems of constant improvement.

Coaching kata is a way of teaching and coaching (i.e. motivating) the improvement kata, while constantly assessing – at clearly defined intervals - the alignment of all activities with the strategic goals of the organization (Grabau & Toussaint, 2018; Toivonen, 2015). The role of the coach – one who is intimately familiar with the improvement kata and experienced in the techniques – is to help the person doing the improvement kata (called a ‘learner’) to stay within the kata routines. Preventing deviation from the routines is fundamentally important, as this could potentially harm the mental model of the system and lower the probability of achieving good results in the current and even future kata activities. Despite their responsibility towards outcomes, the coach cannot simply provide answers to the learner but instead must aid the learner to solve problems and discover the solutions themselves - through the use of techniques they are taught. Allowing the learning to discover the path and discipline themselves aligns well in healthcare with the familiar Socratic method of teaching. Kata provides a framework (or foundation) to allow LEAN tools and techniques to work better and keep working (Noël et al., 2023).

The findings in our case study demonstrate the potential of these routinized kata processes. Hospital employees at KPH, at all levels of the facility would be exposed to these systems daily when entering their shifts, in weekly debriefing meetings and during the larger monthly or quarterly platforms. Each of these interactions were opportunities to learn from standardized improvement kata that occurred in other units, or alternatively suggest their own initiatives and present their own unit’s innovations. After a 7 year period, and accounting for staff turnover and temporary worker absorption, the impact on organizational culture was noticeable.

Kata has the potential to add significant value to organizational culture through the daily habits (rote habits) and routines, which aids in defining the “how we do things here” aspect of work life. The learner, who applies the improvement kata within a team context improves her environment, her skills and proficiency of the techniques, but also contributes to the same improvement parameters of her team members. Through this concept of new knowledge generation, and exposure to knowledge generated elsewhere, we arrive at the construct of Absorptive Capacity.

Absorptive Capacity (AC)

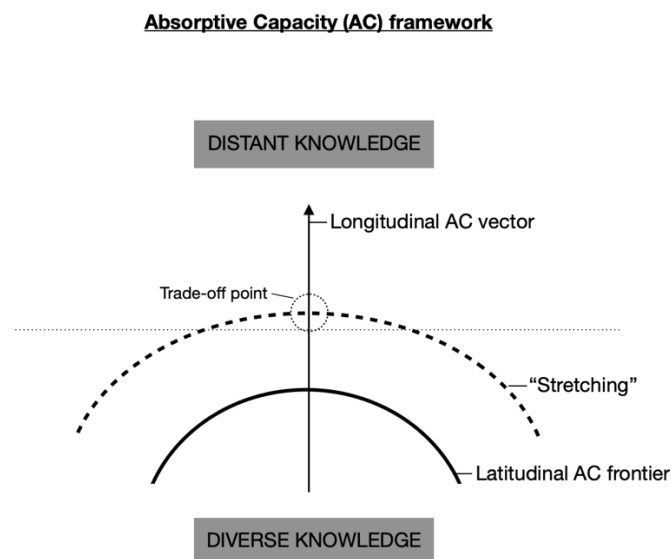
Cohen and Levinthal (1990) describe absorptive capacity (AC) as the result of “recognition in value of knowledge that surround an organization, and the assimilation and application of this knowledge towards given aims” (Stelmaszczyk, 2020, p.9). This ultimately produces an ability to vastly increase the innovation capabilities of the organization. First introduced by Kedia and Bhagat (1988), AC was used to describe international technology transfer to account for cultural and contextual differences. Although firm AC is well established in organizational learning literature, it is best understood as the sum of two processes: latitudinal vs longitudinal absorptive capacity (Vasudeva & Anand, 2011).

Latitudinal AC first processes and then uses diverse knowledge, and is often a product of existing capacity, resources, or access to complementary alliances. Longitudinal AC however uses distant knowledge and usually requires more time to align technology, capabilities, and resources. Often external input or resources are used to expedite this capacity, and the healthcare industry (e.g. medication labeling practices) in particular has benefitted greatly from studying purchasing behaviors in different sectors and different countries (Sarfraz et al., 2022).

The following diagram [diag. 1] displays a representation of the forces at play during knowledge development and application of skills. Although the latitudinal AC frontier is the optimized expression of native technology and ability, it is possible to stretch the AC frontier during limited periods and can be useful during periods of high market or sector volatility (Stelmaszczyk, 2020). This “stretching” could prove a useful dynamic capability in the short run, but if extended beyond “crisis periods” given context could accrue trade-offs and at possible strategic cost – with potential significant loss of innovative performance (Hausberg & Leeflang, 2019).

[insert diag. 1]

Diagram 1



Diag. 1: Longitudinal versus Latitudinal absorptive capacity (AC), demonstrating the trade-off when stretching is applied beyond the native technological frontier.

Vasudeva and Anand (2011) demonstrated in a series of studies within the fuel cell manufacturing industry how a moderate burden on a firm's latitudinal AC corresponds to medium-term diversity in portfolios. These findings were associated with optimal knowledge utilization. Their study further found that increased and prolonged pressure on the longitudinal AC decreases this ratio and reduces the quality of knowledge utilization. The effect would result in a greater reliance on intuitive problem-solving and workaround solutions. This view aligns with the supplier-recipient organization relationship examined by (Kedia & Bhagat, 1988) on international technology transfer. Here an objective interpretation of this knowledge utilization during periods of volatility was confirmed.

The relevance to this study lies in the findings during extended periods in the stretched technological and absorptive capacity frontiers. An understanding can be cultivated in observations that align with the careful balance between these aspects of AC. This insight is valuable to management teams and could assist in navigating periods of high volatility, such as mergers, joint ventures, and change management strategies, or facing risks of disruption such as the emergency response to a natural disaster in our case study.

PART 2 – Disaster management

Systematic problem solving

Systems are defined by design engineering as a group of interrelated elements, interacting according to a set of rules which make up a unified whole, and a set of principles and procedures according to which something is done (Backlund, 2000). The goal of the executive manager is to design these systems, organize them, and set up rules to define the structured boundaries to achieve a shared alignment with the organizational goals. The operational nature of frontline clinical staff ties the routines and skills to decision-making ability (Kalantari, 2010), and individual-level skills of problem-solving. Systematizing an approach to problem-solving, and equipping the employees (or workers) in an organization with this skill, contributes to enhancing the dynamic capabilities of the enterprise and greater organization.

The LEAN problem-solving approach can be likened to “telling a story” (Liker et al. 2006, p.313), and the chapters of the story are:

1. Developing a thorough understanding of the current problem, and defining the problem in an understandable, clear, and succinct manner.
2. Complete a root-cause analysis and surround yourself with team members who are like-minded in this interest.
3. Thoroughly consider alternative solutions while building consensus
4. Enter the Plan-Do-Check-Act (PDCA) cycle (Liker & Meier, 2006).

Furlan et al. (2019) describe two main groups of actions that individuals apply when faced with problems that occur in their work environment. Firstly, the systematic problem-solving (SPS) method identifies the problem, generates solution alternatives and selects the solution that is most appropriate, and then finally arrives at a careful evaluation of the outcome. This process aims to solve the problem while simultaneously preventing a reoccurrence. The second method is called intuitive problem solving and is found in basic forms of organization and organizational learning systems (Mohaghegh & Furlan, 2020), and relies on using workarounds and quick solution. The preferred method with more sustained superior outcomes is the SPS. Several structured methods and analysis tools such as 5S and PDCA in LEAN methodology, as well as DMAIC in Six Sigma and others support SPS behaviors in the workplace (De Mast & Lokkerbol, 2012). Table 1 demonstrates the key differences between the main action groups.

How organizational culture is developed, lies in the careful strategic management investment made in learning systems that enhances the odds of gaining these capabilities.

Table 1

	INTUITIVE PROBLEM SOLVING (Workaround)	SYSTEMATIC PROBLEM SOLVING (SPS)
1	Quick remedies	More time consuming
2	Minimal cognitive effort	Requires an effortful cognitive process
3	Relies more on experience and repeated exposure to problem	Serves to prevent re-occurrence of problem
4	Reactive in nature	Proactive in nature

Table 1: Demonstration of the key differences between the main problem-solving groups.

Zollo and Winter (2002) emphasize the importance of organizational learning and substantiate how firms can achieve massive gains in this regard by deliberate mechanisms. This view is aligned with the effortful cognitive process described by Furlan et al. (2019). The deliberate nature of the mechanisms and the effort required carry meaning on their own. The similarities of structure are conveyed to the improvement cycles (i.e. PDCA cycles) as well.

Much has been documented about the format teaching follows, for example Mohaghegh & Furlan (2020) fervently stated that knowledge codification (versus articulation) was of primary importance in the development of SPS, however, the physical structure that knowledge generation followed at KPH was found to be fundamental. Our study within this resource-constrained environment, explores the cyclical nature of the PDCA cycle.

Plan-Do-Check-Act cycles consist of the following steps:

- a. Plan: develop an action plan
- b. Do: Implement solutions rapidly (within a psychosocially safe environment)
- c. Check: Verify results
- d. Act: Make necessary adjustments to solutions and action plans and determine future steps.
- e. Continue and repeat in an iterative way, and within a continuous improvement culture (Liker & Meier, 2006).

Once the final step of the process is reached, the process returns to step 1 and restarts. The cyclical nature is found in many LEAN-based methodologies and is often described as an endless or infinite improvement cycle. The iterative fashion of process cycling is the hallmark of continuous improvement cultures (Hsu et al., 2023), and shares their structure at our case study site with the dominant communication style used at KPH during the emergency response: closed-loop communication.

Closed-loop communication

Closed loop communication, and the “say it back” culture, originated during military radio transmission, and is a standardized terminology used to describe a team’s ability to deliver and share clear, concise information (Salas & Prince, 1999). This stepwise approach to communication - and means of instruction - is divided into 1) delivery of the concise information (the call out), 2) the confirmation of reception of information (the checkback), and 3) acknowledgement of correct understanding of the information (closing the loop), before acting on said information (El-Shafy et al., 2018). In emergency situations and specialty medical fields such as surgery (Bates & Gawande, 2003) effective closed-loop communication has been emphasized to create a “shared situational awareness” (Gillespie et al., 2013, p.109) and enhance the safety of both patients as well as provider. This approach is supported by best practices as well as a strong contributor to the “how things are done here” concept in healthcare cultures. Through repeated use by individuals of a health institution, the technique permeates the organization, and produces a context-specific and unique organizational culture. Most healthcare cultures that make use of this system, also include a confirmation after completing or executing the task.

The circular nature of CLC is mirrored in the circular structures of continuous improvement systems found in many LEAN methodologies. ‘Closing the loop’ becomes an instinctive action that reminds the system user to return to the starting point, to either sustain or re-initiate the improvement cycle. The findings in the following case study strongly support the importance of this communication style and form, along with the infinite loops of 5S, PDCA (Antony et al., 2019; Furlan et al., 2019), and native shift handovers, as the driver of the success during the evacuation. This provided much-needed structure during the chaos within a highly volatile situation. During the emergency response, the establishment of a new field hospital relied predominantly on these salient techniques and systems of knowledge creation and knowledge sharing.

THEORETICAL OVERVIEW

1. History, principles and philosophy of LEAN

The Toyota production system, commonly known as LEAN, originated in Japanese manufacturing, shortly after WWII and was forged from scarcity - when waste of limited resources was deemed no longer feasible. Its application in healthcare has increased in global popularity over the last decades (Burgess & Radnor, 2013).

The primary focus of the LEAN philosophy has been to eliminate *muda* (process waste), *mura* (unevenness in operations) and *muri* (over-burden on resources) (Antony et al., 2019). Liker and Meier (2006) argue that reducing waste is the primary means of making rapid improvements in business processes, and the philosophy of increasing value by reducing waste within the entire system has been one of the most investigated principles of LEAN the world over (Kumar et al., 2021), especially in healthcare (Cunningham et al., 2023). Seven types of waste exist in this paradigm, and they are capture in table 2.

Table 2

Transportation waste	Unnecessary transport of parts under production.
Inventory waste	Stacks of parts waiting to be completed or finished products waiting to be shipped.
Waste of motion	Unnecessary movement of people working on products.
Waste of wasting time	Unnecessary waiting by people to begin the next step.
Processing waste	Over-processing the product with extra steps
Production waste	Over-Production of products not needed.
Waste from defects	Defects in the product.

Table 2: The seven types of waste in the LEAN approach

Many organizations find it difficult to implement LEAN, and the reasons are often multi-factorial. Tapping and Shuker (2018) warns that LEAN initiatives often fail because companies mistake the application of particular tools for deep 'LEAN thinking'. Achieving organization-wide LEAN thinking requires investment in people and promoting a culture of continuous improvement.

Beyond the appeal of increased efficiency, continuous improvement and waste reduction, many scholars warn that LEAN should not be seen as merely a toolbox and that piecemeal or limited applications will lose the richness and full potential of the system (Rüttimann & Stöckli, 2016), and could even be harmful. Womack & Jones (1996, p.246) criticize companies that use minimal tools, and state that the most difficult ‘first step to LEAN’ is to overcome inertia, and that such a step requires the presence of a change agent, lean knowledge and “some type of crisis” to function as a lever for change. This was the situation present in our case study, where the LEAN organizational culture was established during change management, but forged through fire.

Contemporary understanding of LEAN has grown far beyond the modest understanding of waste reduction, and encompasses a philosophy of empowerment of employees at all levels towards the production of value to the end-user. Our study will investigate the smaller foundational skills that individuals acquire that combine into system-level competencies.

2. LEAN in the public health sector

LEAN is gaining popularity in contemporary strategic management literature and is increasingly applied in non-manufacturing sectors (Corbett, 2007; Alkhoraif & McLaughlin, 2018), because it results in adjusting the focal plane of the organization towards the end-user (Alexander & Saleeshya, 2022). Similarly, health institutions are constantly mounting attempts at patient-centered care, and the alignment of these methods with reigning goals occurs quite naturally.

Reduction of waste, in its many forms, is a core principle of the LEAN philosophy and was highly contextual right after the financial crisis of 2008 when the KPH facility in our case study was selected as NHI pilot site and started their upgrades while re-orientating the facility to frugal innovation. Waste, or *muda* is defined as anything other than the minimum amount of equipment, materials, parts and workers (or working time) absolutely essential to production, according to Fujio Cho, Chairman of Toyota (Womack & Jones, 1997). Environments that are resource-constrained are particularly susceptible to the means of performance optimization within tight budget parameters. As the cost of healthcare is constantly raising year on end, LEAN is often a strategic choice (Burroni et al., 2021) to mitigate the stifling market forces at play.

The public health sector in South Africa sadly suffers from a lack of transparency (Odland et al., 2023) which erodes the trust relationship with the healthcare users and

communities they serve. When transparency is strained at leadership levels it has a broadening impact when modelled to the staff of an organization (Howard et al., 2020). One of the LEAN techniques found to be of help in this regard is GEMBA walks, where a member of the senior management team (SMT) visits the “shopfloor”/frontline on a regular basis. In manufacturing, this is the workshop or assembly line, and in healthcare, this is the point of care (e.g. emergency centre, outpatient department, wards, etc.). This action decreases the distance between providers and their SMT leadership in clear view of the healthcare users, and has been found to have a positive effect on the healthcare provider’s internal (individual) motivation (Ryan & Deci, 1985, 2018). More accurate information/data can be collected or confirmed, and increased transparency is supported on numerous levels when closed-loop communication is aligned with this action.

During healthcare reform these philosophies includes the operational management teams (OMT) and healthcare providers along with the healthcare users, and can cultivate an organizational culture where:

- i. Suggestions are formulated.
- ii. Counter-measures are included
- iii. Cost optimization and efficiency are enhanced.
- iv. Safety is secured in the cycles (i.e. rapid improvement cycles)
- v. Monitoring is supported by the group

3. Systematic problem-solving

Systems are defined as a group of interrelated elements, interacting according to a set of rules which make up a unified whole, and a set of principles and procedures according to which something is done (Backlund, 2000). The goal of the executive manager within a firm is to design these systems, organize them, and set up rules to achieve strategic consensus with the goals and aims of the organization. The operational nature of frontline clinical staff ties together both the routines and skills to decision-making ability (Kalantari, 2010), as well as the individual-level skills of problem-solving. Systematizing an approach to problem-solving, and equipping the employees (or workers) in an organization with these skills, contributes to the dynamic capabilities of the enterprise and greater organization.

Furlan et al. (2019) observed decision-making skills amongst frontline shopfloor employees, specifically selected for the operational nature of their problems and challenges – i.e. often caused by quality defects, machine breakdowns, delays, interferences, unavailability

of something that the workers need, and an unsafe or incorrect procedure in the production process. The premise of knowledge transfer formats (i.e. articulation or codification) as set forth by Zollo & Winter (2002) was reaffirmed during this study and confirms the primacy of having systems above no systems. Having no system (i.e. an intuitive or instinctive workaround culture) forces workers to rely on trial and error, which increases cost, adds lag time, and increases safety risks (Furlan et al., 2019). When applying a systematic problem-solving approach, however, this proactive approach results in new and improved solutions to problems that, if repeated over time, become embedded in organizational routines (Feldman & Pentland, 2003).

Reflecting on the Covid-19 pandemic responses across the world, academic interest in the systems and routines related to new knowledge transfer has seen an exponential increase (Hall et al., 2020). Developing learning systems and structured approaches to knowledge transfer becomes fundamental during transformational organizational change (Rass et al., 2023), especially during periods of high volatility, to achieve a sustainable constant learning culture.

Organizational learning, through the mechanisms of developing routines and systems, forms a fundamental part of the organizational culture – which, as demonstrated earlier, are the unnameable experiential aspects of an organization that the users/customer can consistently expect when accessing services or procuring products. Organizational learning is the process of “changing organizational knowledge through the acquisition and integration of new knowledge which is embedded in organizational routines” (Furlan et al., 2019, p:1), and this has been of increasing interest to scholars over the last two decades (Gavetti and Levinthal 2000, Gavetti2005).

From our observations, here are the techniques and skills deployed in a structured manner at the site (KPH) of our case study.

3.1 The concept of root cause analysis

The Toyota Production System (TPS) founder Taiichi Ono is famously quoted as stating that true problem solving requires identification of the “root cause rather than the source” of the problem (Liker & Meier, 2006, p), and the distinction is captured in the rules, which forms the basis of true problem-solving. This approach is governed by 8 basic principles:

1. Analysis must not be clouded by preconceived ideas or notions.

2. The point of cause must be observed firsthand (i.e. “go see”).
3. Analysis must continue until it is certain that the root cause has been discovered.
4. The analysis must be comprehensive because there are usually multiple causes for a problem (or problems).
5. Focus the analysis on the most significant causes.
6. Identify causes that can be corrected.
7. Thorough analysis yields causes that suggest clear corrective actions.
8. A thorough analysis will result in factual data and thus allow for precise prediction of the results of correction. (Liker & Morgan, 2006)

The concept of root cause analysis feeds both directly and indirectly into the organizational culture in healthcare institutions. In addition to many tools, the desire to explore the root causes is echoed by the multi-disciplinary teams and other members of the hospital, and by extension also the larger organization (firm). A shared sense of moving closer to factual and actionable data exists within such a team. The whole team learns to ask why (five times), armed with the appropriate tools and skills to direct this curiosity. Eventually, a large healthcare team, united in the goal to eliminate waste (*muda*) emerges.

3.2 The skills and tools used in the root cause analysis process

3.2.1 5 why's

This technique forms a crucial part of the problem-solving system. It is a simple yet highly effective method of uncovering the root cause problem – hence its broad appeal. The method entails the identification of a clear problem statement, and then asking the question “why” five times to all clear responses, in order to demonstrate a causal chain. This chain and “link” is a crucial process of connecting the needed actions to where it will best have an effect. It is most important however to ensure that the true problem is the starting point, to link the actions to “where the full impact of the issues is experienced” (Liker & Meier, 2004, p.327).

3.2.2 Fishbone or *Ishikawa*

The fishbone diagram is also known as cause-and-effect method, or Ishikawa in TPS and is used to demonstrate several causes of a specific event or phenomenon. It is especially helpful

in group settings and when there is very little quantitative data available (Tufail et al., 2021). This graphical technique (please refer to exhibit 7 & 8) starts from:

- a. Constructing and stating the problem as a succinct question and placing this at the head of the fishbone.
- b. Next, draw a line horizontal away from the problem.
- c. Vertical lines (or bones) are then added – radiating from the central line, labelled with different categories relevant to the problem.
- d. These categories (or fishbone systems) of Ms, Ps and Ss are used – depending on the product, service, industry or problem respectively. See table 3 for the list of systems.
- e. Possible causes for the problem (and problem question) is placed on the bones.
- f. A further level of the analysis is done by habitually asking “why” when causes are added to the bones.
- g. This method is combined (or in tandem) with the *5 why method* for more in-depth analysis.

Table 3

Ms	Ps	Ss
Methods	People	Surrounding
Machines	Product	Supplier
Material	Process	System
Manpower	Plant	Skill
Measurement	Price/Policy	Safety

3.3 5S method

The 5S method, is the first individual-level skill that was taught at the KPH site, and results in immediately implementable abilities for the user both in the working environment as well as in their private lives. The latter is promoted during training sessions, as regular application in various situation results in a mastery of the techniques and the development of the intuition behind the skill. The 5 S method is a stepwise approach consists of (Omogbai & Salonitis, 2017):

- 1S - Sort
- 2S - Set in Order
- 3S - Shine
- 4S - Standardize
- 5S - Sustain

This is the first exposure, certainly at KPH as our case will demonstrate, that the hospital staff had with cyclical systematized methods, and they were encouraged to apply the organization and systematic problem solving in every aspect of their working environment. The impact on the hospital environment was immediately evident, and exhibits 2 & 3 demonstrates the effect of the organizing influence of this technique. During the ‘Standardize’ and ‘Sustain’ steps of the process, knowledge sharing can occur to allow best practices to disseminate or iterative improvements to an initial idea to take place. **(Please see EXHIBIT 2)**

3.4 A3 method

The A3 process is a structured problem-solving tool that was developed by Toyota to facilitate collaboration and knowledge sharing and has been a staple for continuous learning in many organizations. Toyota developed the A3 from its core philosophy: that every problem faced by an organization should be describable on a single sheet of paper that enables those involved to “see through the same lens” (Shook, 2008).

The name “A3” is the international standardized paper size used for the report, and includes an approach to find root-cause of the identified problem, a means to identify wastes and above all to design a roadmap to eliminate these wastes towards the desired state (Lenort et al., 2017). The means for collaborative problem-solving is achieved by visually demonstrating how the idea was conceived, and mapping the route from the current to the desired situation.

This tool is a type of visualized management framework that is highly applicable to healthcare delivery systems (Shahroudi & Aarabi, 2021) and enhances continuous learning. The A3 is a tool that fosters inter-disciplinary dialogue and collaboration, and includes an integrated form of objective metrics and clear systemized steps: clarifying the problem, specifying the current situation, determining the target condition, analysing the root cause and taking countermeasures (Simons et al., 2014). The A3 supports teaching and learning systems,

and provide a means to optimize both the generation and transfer of new knowledge or innovations. This method stimulates innovation and provides structured prompts to problem solving and planning. The format structure of the A3 method is the PDCA cycle, and guides the author of the project to think in this way. **(Please see EXHIBIT 3a & 3b)**

3.5 PDCA cycle and KPH meeting structure (Please see EXHIBITS 12 & 13)

The information sharing and reporting structure of weekly, monthly, quarterly, and annual meetings at KPH was used as a system to design patient flow, service optimization, and to strengthen patient safety. Beyond the optimal transfer of knowledge (and innovative idea generation & transfer), it was a system purposely conceived for a continuous improvement culture. This systematic approach (and ‘route’ from idea to end-product) was intentionally routinized and standardized (Zhong et al., 2023) to create a culture that continuously finds and solves problems. The discourse was habitually practiced and became a roadmap for an iterative (and safety controlled) improvement process. The Plan–Do–Check–Act cycles (PDCA), also known as “quality loops” (Zhong et al., 2023), are used broadly in organizations – including healthcare – and provide systems of iterative idea generation and implementation (Anand et al., 2009). PDCA is a time-sensitive management model (Hsu et al., 2023) and is the foundation of most continuous improvement cultures. This method is a structured approach and planning model which formed the basis of how the Weekly, Monthly and Annual meetings were held and how targets were met at KPH. **(Please see EXHIBIT 13)**

Intuitively, from the medical and organizational culture of closed-loop communications, the PDCA design creates an opportunity for idea generation into cyclical systems wherein safety of review and improvement can occur. The use in emergency planning and disaster recovery management has been well documented (Rajić et al., 2023).

3.6 Environment: INNOVATION HUB (Exhibit 14)

The innovation hub was a simple space where visual management of information was developed and celebrated within the case study facility. This area was dedicated to teaching the LEAN skills and tools, and where idea generation and application would happen in a psychologically safe space (Du Plooy & Parker, 2020). Any team or group could request access to the INNOVATION HUB provided that an experienced practitioner (versed in the tools

needed for the planned session) is available to facilitate the session. Staff at any level or from any unit was welcome to use the “hub”, which was stocked with materials and resources that made it conducive for brainstorming and teamwork. The cleaners would request a session to solve storage challenges of new stock sizes, right after a nursing team would solve a rotation problem when there were bed pressures. Tasks were generated, identified, or assigned from other meeting platforms and the innovation hub was reserved to solve said problem.

Case methodology

Case study research originated in anthropology and sociology (Platt, 1992), and as a methodology it has seen the development of many different approaches and applications across numerous scientific fields. Yin (2018) emphasize the value of case study use when transforming scholarly inquiry by educating others as a research method, and continuing to develop insights of the case study by answering the “how” and “why” questions about contemporary events outside of the researcher’s view (Jones-Hooker & Tyndall, 2023; Newcomer, 2018). Some of the challenges associated with case study research as methodology, include defining the case, managing and sense-making of multiple sources of data, and navigating and reconciling the role of the researcher (Laufer & Gorup, 2019; Yin, 2018), but despite these challenges case studies are frequently used to understand issues in healthcare (Jones-Hooker & Tyndall, 2023).

Focused ethnography is a specific sub-type of the ethnographic approach that is commonly used in healthcare as a method of inquiry (Cruz & Higginbottom, 2013) because it provides a methodological framework for investigating specific issues within a cultural context (Higginbottom et al., 2015). The specificity that focused ethnographic methodology introduces allows for short and intermittent field visits of intense data collection from a multitude of sources (e.g. observations, field notes, documents, interviews, etc.), unlike the lengthy structured field visits of conventional ethnography (Knoblauch, 2005; Wall, 2015). This method was particularly important for the data collection during the period of the wildfire event, within a hospital environment that had recently gone through an intense change management process. Focused ethnography has proven particularly useful in nuanced investigations that require understanding of organizational cultures and contexts (Richburg et al., 2024).

The initial design of examining the change management experience was conceived as an action research design, with regular structured feedback and adjustments by the healthcare staff of the institution. Data was gathered in a semi-structured inductive manner, but the wildfire event interrupted the planned design and made the subsequent phases untenable. As the core of the data gathering was refocused towards a focused ethnography, the mixing, blending and merging of qualitative data was explored. (Morse & Cheek, 2015) introduce a qualitative-driven mixed method design where a core qualitative method can provide the major findings,¹¹⁶ and supplemental qualitative methods can add the depth and rich descriptions to the inquiry – the subtle and more nuances elements that the core methods often is unable to contribute (Morse, 2010). This QUAL-qual method (Morse, 2017) rendered many of the debriefing sessions, both during and after the event, useful as data to complement the formal objective reports produced during this period.

Researcher positionality (Laufer & Gorup, 2019) was the last phase of the methodology to be considered, as the investigator's position as actor during the event needed to be addressed. To strengthen the internal validity of the study and the data (Bloomberg & Volpe, 2018) objective reports and evaluations were requested, as well as presentations produces for feedback at various review boards. These objective inputs assisted in conflict of interest issues that might affect the study (Saldaña & Omasta, 2017).

Case study

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The case study should be stamped and handed out as a stand-alone piece for students to read in preparation of class presentation.

Case detail – LEAN and KATA against fire

PART 1 – Change management

Day before

It was early June 2019, mid-Winter. Mark Price arrived at the hospital early. It was a Tuesday and this is the day of the week when he chairs the *infrastructure meeting* – a platform where the maintenance workshop and extended management team review all ongoing maintenance projects and repairs for the whole hospital and all the clinics across the two sub-districts (all 13 of them). It took many years for this platform to take shape, and nestled on a Tuesday after Monday's more clinically oriented meetings were done, they now focus on projects, equipment, consumables, stock, suppliers, etc... This was Mark's favourite. Where he felt he was both preparing and executing the improvement for patients and staff alike. Monday's were ever-important patient centered platforms, but Tuesdays were also for the staff and making their working environment better.

Usually these meetings ran long, and he wanted to get an early start. There were two of these projects that needed some extra follow up before the meeting starts and it was always best to get the latest info ahead of time.

It was a grey day, and a little windy. The route Mark followed to his offices was always the “outpatient” route – especially on Tuesdays. The discussion of whether the grass was cut, or whether the cleaning services got that smudge out was the standard type of opening discussion to the meeting. As he walked up the stairs to the management level however, the labor union representative (Charles) was waiting in the corridor. He was standing, tapping his notebook against his hand and had a look on his face that communicated that ‘something new’ just came up. Added to the fact that it was not Thursday (the day before the Labor-Management caucus when he usually visits), an air of unease started to grow in Mark's mind. Charles said to Mark as he met him on the steps “The workers are restless - they are worried about the notice they received the night before: Schools will be closed for the next two days, due to expected strong winds and possible heavy rains and floods. They were all concerned with fulfilling work responsibilities and not having access to childcare.”

Childcare had been an issue for some time, and a major point of concern for the facility. Only one or two larger facilities in the Western Cape province were able to offer this benefit to hospital employees via an in-house solution, and others (through their Union activists) have been lobbying for funding to provide financial support for this purpose for quite some time. Now, the facility was faced with very short notice of potential disruption risk, and very limited wiggle room.

Mark was frustrated that the information did not follow official channels, and that he was unable to present a prepared response to Charles. However, the fact that Charles used the open-door policy, and that he (Mark) is about to enter a platform where the managers were all together with the Artisan foreman and his team, allowed Mark to respond with confidence that he will take the matter to this infrastructure platform and can furnish Charles and his team with a plan by the afternoon.

“We will close the loop this afternoon”, he said as they finished their discussion.

On a more personal note: Mark sometimes felt energized by such situations that allowed him to take new challenges to his larger team. He noticed a lot of growth in his team since they were selected as a pilot site many years before. How the team wrestled with problems, and came up with innovative solutions was part of the skills they practiced since the launch of the innovation hub. Charles left Mark with the confirmation that he will be furnished with a response by midday.

When the extended management team arrived for the meeting, they already knew of the weather warning and school closing – which admittedly took the wind out of Mark’s sails, just a little. Either their department teams, or neighbors, or their own child’s school shared with them the message (which was sent out by the schools via text message). Mark could not help but quickly send a text message to his wife, to check whether she also received the message - their daughter would have to stay at home as well.

As more of the managers arrived for the meeting, each one already had the news and could already start unpacking the “what about?” scenarios. Mark thought to himself: “The team knows very well that we always stay in the “problems” section for an extended period before we start suggesting solutions and designing countermeasures”. They still found themselves in this discussion before the formal meeting started, and it was always a very informal period and allowed for informal language with sometimes unusual/innovative suggestions before entering

a more serious zone of systematic analysis and countermeasure design. Mark found this period before meetings very valuable, especially for these types of problems, and sometimes would fuel more of these informal freethinking discussions before the meetings were initiated. When the workshop foreman (Wikus) finally joined, the extended management team for infrastructure was now whole and the meeting could start. They amended the structure and agenda of the meeting to address to the ‘new crises’, and then started.

By day’s end, they had come up with a way to absorb all the staffing needs, and care for the children: The training coordinator had to cancel her planned training due to the weather warning. The decision was to limit unnecessary movement of personnel between facilities, and this meant that the training space became available.

Lyn, the senior nursing training coordinator was called into the meeting to help plan, and she volunteered her services to care for the children of staff members that would require this service. Her task was to gather the material she would need and to arrange the space for the children. Suggestions of activities and games, and meals from the food service unit (using the Children’s ward menu for the day) were compiled around the management table with the relevant managers committing to inform and support his or her team to achieve this. By midday, Lyn would finalize any additional needs she may have and submit this to the management team.

Staff were formally informed and were invited to drop their children at the start of their shifts. The interpretation by the entire infrastructure platform was that this opportunity was a perfect “controlled pilot” to test the practicalities of what we need to take the childcare project further.

“Opportunity meets need, and a clearly defined start-stop pilot period. Well done.”, was all that Mark could add to his team’s enthusiastic and rapid design.

He knew that when availability aligned with need in this way, he could easily justify the unorthodox or irregular expense. The team finally agreed they would document everything and get together the next day just to follow up. Charles, after receiving feedback that the management response was developing, was happy to report back to his constituents. **(Please refer to EXHIBIT 1)**

This rapid response to a challenge, and the whole team's involvement came from years-long investment in skills, tools and systems ever since they were called to serve as a pilot site for the national healthcare reform, and represent the inputs from their province.

Background: Change management

KPH, the only public sector hospital for 65km, serves as the central hub for the Knysna and Bitou health sub-districts in the Eden district of the Western Cape. This 90-bed district-level facility receives the upwards referral of 13 primary health care clinics, and serves a population of 120 000. In early 2010, the same year as Mark was appointed, the National Department of Health selected 10 pilot sites across the country for their explorative first phase – essentially a data gathering exercise - towards a healthcare reform horizon by 2025. The KPH health facility was selected as one of these NHI-pilot sites within the Eden region, which meant that funding would be made available to upgrade the facility and equipment, and that substantial freedom would be given to develop innovative and contextual means of quality improvement. This included as a core focus – and central in Mark's mind at least - all the systems for routine maintenance of these investments made. Mark was appointed as the new institutional head (Medical Manager) after the previous manager retired from a 15-year tenure, and this meant 15 years of the same manager and the same management approach. Over the years that followed Mark's appointment, the facility would undergo massive changes through a deluge of upgrades, and changes to management structures and style. Mark initially underestimated what this long history meant to the institution. He wanted to make improvements fast, to see daily leaps towards “better”, and often even carried with him a book with this very title authored by Atul Guwande (2007) – a world renowned surgeon. Within his first two years at KPH, Mark did not notice that he was not including his facility with him on this journey, and what was to follow – when they joined the national debate on healthcare reform – would increase the pressure on these concepts even further.

Selection as National Health Insurance (NHI) pilot

The selection as a pilot site brought resources as well as new responsibilities, which included an elevated expectation from the local community. Quarterly reporting of progress to both the native district & provincial heads increased, as well as the new reporting lines to the National Department of Health, who were the primary funders of the projects. Initially the district – and

a group of five hospitals – were selected for upgrade projects. However, pushback from an already overwhelmed hospital group brought about the realization that a dilution of the impact and loss of return of investment was likely. So, eventually the funding was offered as an intensive change management for this first phases of the national projects, and both naïveté combined with the energy of a revitalized management structure made the KPH team leap at the opportunity. Mark was ready with business cases and plans for change management and impact.

The next 8 years would see the initial upgrade plan (i.e. only a new emergency centre and pharmacy) extent to the entire facility, inside and out. The primary health care projects, which saw the upgrade of physical structure and systems in the clinics, were also launched during this period. This allowed for a hub and spoke roll-out of what was created at the centre, which could then be easily adapted for the primary healthcare clinics.

Upgrades

All the spaces in the hospital were systematically upgraded, over a protracted period of 8 years, but more importantly and more impactfully, these spaces were *changed*. Mark always held firmly to the belief that: “if the environment changes, then people also consider changing habits”, which was a maxim he would repeat at meetings on a regular basis when he spoke about the rare opportunity they have within the challenges they face. At every step, and with each ensuing year bringing yet another leg of the project, the opportunity for “better” was always highlighted at each and every platform. “Better” was now not a destination, nor a comparative state, but a direction – a direction towards the patient, with patient-centered care becoming the main vision for this change. KPH adopted patient-centered-care as their TRUE NORTH.

Moving (or ‘decanting’) the patients from ward to ward during active upgrades, across a 4-level facility while delivering an uninterrupted 24-hour service, initially seemed insurmountable. This mammoth task required input from **everyone** involved - and at all levels of the organization. Frontline staff; both clinical, support and custodial were suddenly asked for their opinion and input, and were asked to navigate discussion with middle and senior hospital managers, often for the first time in their working lives. Considering the safety of personnel, patients and visitors during this period – essentially within a construction site, was

intensive given the timelines and multi-sector partners on site. But everyone within KPH was brought into the fold. They were given a voice to develop the final ideas that could be used to optimize the use of space - as a team. After a rocky start, the KPH team had to define the rules of engagement and work together to make the knowledge sharing platforms *psychologically safe*. If the system of harnessing useful input from all staff, on all shifts was to be sustainable certain ground rules were needed.

Mark realized that he would need to include his management committee in dedicated sessions to keep up with the business cases and proactive plans of how to manage the project – both the strategic management as well as the operational management aspects. While they had their hands full with lobbying for the technological developments to complement the physical infrastructure, the extensive system of skills development to absorb the new technology would have to happen in concert.

What was initially deemed ‘automation’ out of necessity, transmuted into an opportunity for empowerment. As more of the middle management teams were included in strategic management discussions, the risk of sustainability of the facilitated platforms for idea generation by frontline staff became critical. There was no resistance, no pushback or consideration of jurisdiction when Mark suggested that the frontline teams be equipped with LEAN skills to manage discussions - and for these groups to suggest use, storage, maintenance and restocking from a bottom-up perspective. The management team simply did not have the time, but daily GEMBA walks would assess the application of the techniques and progress made. A structured platform would evaluate best practices from various units, before standardization and maintenance cycles would do iterative improvements on the designs that were presented. And so began the change of the organizational culture...

As the concept of frontline input permeated to all the shifts and the primary skills of 5S were rolled out to all staff, the facility was combatting dilution due to staff turnaround. Dedicated teaching of these skills and meetings to assess the application required a dedicated space. Mark was reminded of his own maxim: “if the environment changes, then people also consider changing habits”, and realized that this space must be outside of the immediate working environment, and must be an environment significantly different to the working environment. The Innovation HUB was developed and used for this purpose – a space dedicated for idea generation and knowledge sharing. Here they would teach the skills and tools, and develop the systems. Upon the foundation of psychological safety – where egos and titles are left outside

the door, the ‘language’ (e.g. 5S, Ishikawa and A3) was taught in this space. As the ideas became larger in scope, the staff were taught how to capture and record their idea and share/explain this with the rest of the team. This took tremendous effort and time to set up, but was well worth the investment. The operational use, stocking, maintenance and even physical placements of equipment pieces through the facility was decentralized, but safety was ensured through the PDCA cycle and additional GEMBA walks.

PART 2 – Disaster management

Day-of, fire not water.

Mark arrived earlier than usual, all excited to see the daycare in action. There was a very strong wind, and it was overcast...but no rain. “Maybe an over-reaction”, he thought; “incorrect information,... or maybe it will start later, or maybe a ‘better safe than sorry’-type-of-tale”. The daycare space looked ready and fresh, with some board games on display, and a Twister mat on the floor - just ready and waiting for players. The DVD player was connected as he requested - Wikus came through again! Mark tested the feed with one of the DVDs he promised to bring from his home. Just then, the mental health nurse brought her two kids, so “at least it would not be empty!” Mark thought, admittedly quite relieved.

Mark headed for the ‘regroup meeting’ that the team suggested to during the previous day. It was a good suggestion, just to see if all the stations are functioning properly, and to check-in whether all the staff arrived for the day. Over the years they learned to take nothing for granted and getting confirmation of implementation of the “new plan” for the day has been tied to *closing the loop*, as well as this additional ‘sweeping from behind’ action which is where Mark always saw himself.

All the managers arrived and confirmed that their stations were all fully manned, no obvious problems and that only three children in total are using the day care so far. The rain had not started, but it was windy and there were some smoke visible from the hills surrounding the facility.

The workshop foreman (Wikus) came to confirm that his team’s cabling in the daycare was complete, and Mark was able to confirm that he already tested this with a DVD himself. It didn’t escape Mark how familiar this discussion was, how effective Wikus’ team was but that he would never fail to confirm in person that an adhoc task such as this was complete, and that he (Mark) could concur that he saw or tested the end product and could personally thank Wikus.

Even though their introduction to each other, and the first year or two was rocky, they have matured together into a formidable team that could meet each other on all grades of projects. Before leaving, on his way to confirm the numbers of our ‘little guests’ to the kitchen for their preparation, he asked Mark whether they saw the smoke coming from the hill behind the hospital. Wikus was always a very trusted advisor to Mark, especially during all the upgrades. Mark also enjoyed developing his technical knowledge through their talks. They could spend meeting tirelessly exploring the detail of upgrades until the exhausted available knowledge, or discover where they need to bring in someone more knowledgeable. So, when Wikus would comment on something mid-stride, it was always worth Mark’s time paying attention.

Wikus mentioned the wind direction and was concerned of smoke and debris entering the Northern side of the building at some later stage. Mark agreed that they should watch this and to be pro-active by closing the North-facing windows and keep the management team informed. At that moment, another assistant from Wikus’ team entered the room and reported that the fire North of the facility had suddenly picked up momentum, and that flames were now visible. The wind had suddenly picked up speed, and they could even sense it around them. Without being prompted, the team that was gathering within earshot of these discussions started with appropriate problem generations and populating the ‘what if’ side of the argument...

Mark placed the team on alert, and barely completed his sentences beyond: “Ok, let us...”, when an A3-sized sheet called the METHANE report was placed in front of each manager. This form has been used many times over the years, and whether the risk is small or big – or even when it is merely a potential risk – Mark and his team used it as standard to capture and gather information from different perspectives, or even just to develop experience in completion of the document itself (e.g. during drills). **(Please see EXHIBIT 5a & 5b)**

Once again, another staff member asked to quickly join the meeting. They offered a concern of the fire that is growing north of the hospital. Mark asked to disperse a team from Wikus’ unit to serve as lookout, and to report back with real-time information. Mark could hear the nursing service manager request the daily report for the current status of capacity, and he just added

“thanks, that will help”.

When he scanned the report this morning (1st bedstatus report of the day: morning stats), there were two units in the red, and he wondered how much could have changed. **(see EXHIBIT 10)**

Decision

First there were cellphone ‘problems’, and some of the managers that Mark met in the corridors asked each other whether they had any reception. His own phone certainly had a few bars! It would become clear later that the fire burned the cellphone towers from most of the major suppliers throughout the first day. At this stage, they could only sense that their network coverage was poor.

Wikus confirmed that his lookout team luckily took the two-way radios purchased just a few months before - after successful frontline lobbying by his team to improve maintenance efficiency. He went to fetch one of these radios for the meeting room, so that we could follow what was going on with the fire and receive direct feedback from him and his team. Mark started discussing the latest bedstatus report with the nursing service manager, Pam. Pressures from the morning report seemed to have improved, but the male ward had two patients dependent on O₂, and another which was immobile. **(Please see EXHIBIT 10)**

The radio entered the room, already switched on and blaring. The lookout team confirmed that the fire is on a trajectory towards the hospital and the wind was really strong towards the South...where the hospital was. The team expressed concern that the smoke might reach the hospital. Wikus confirmed that the windows had indeed been closed and sealed as previously instructed, and that he will confirm this and then will also go to assess the fire himself. The emergency centre (EC) was placed on alert – and asked to optimize the space for possible patients coming in. Placing the EC on alert, was the first step before declaring a Major Incident and was well-practices in the disaster management protocols. All the units throughout the facility were asked to optimize: the supply chain would move emergency stock for easy access and they would assist with fast ordering and delivery of stock to the ward (especially EC), and out-patient department (OPD) were asked to triage and augment EC staff. The management team disbanded to support their teams and they agreed to meet back in 20 minutes. This 20 minute interval was defined for sharing information and support, and for closing the loop on activities.

Just then Wikus radio-ed from the frontline, and confirmed he is concerned with the speed of the wind, size of the fire and the quick spread towards the hospital. This was the first moment that Mark got concerned about the facility, and started to look at the bedstatus reports and the optimization plans in a different way. It would be 5 minutes before the team re-entered and he

decided to inform his district office..., he asked Madelain (his assistant) to get the district manager on the line. Madelain came back quite quickly and said the lines were dead! When he looked down at his cellphone, the bars were gone. Only the two-way radio on the table was still cracking...

The team returned to report back of how their units were getting on, and Mark shared the latest news on the fires. Mark always prided himself on his ability to quite quickly do a separation of 'what is within and without their control' - a skilled honed with the team through their years long upgrades together. With fires heading their way, and with no communication the options of what was 'within their control' seemed to simplify. Safety of their patients and staff is the top priority, and what was indeed in their control was to move to safety.

Mark declared a major incident, assigned a head operating committee (HOC) and the turnaround for meeting intervals were shortened:

*“Okay, we need to increase our **takt time**. No time to waste people!”*

What each of the managers achieved since the last meeting, was what they went around the table to quickly report. They wheeled in a whiteboard and Mark asked for options of a safety area. A few options were named. Wikus joined the discussion via the two way radio, and the tone in his voice was enough for Mark to focus the management team. Two of his (Wikus') team went out on the national road to assess the escape routes. The clinical manager (Andre) reported how his team is clearing OPD and how EC was optimized. One of his team, a junior doctor placed in EC offered a site, and pro-actively drew a map. Andre was also concerned that the national road was inaccessible, simply because he knows the area and the fact that flames and heavy smoke were now visible in all directions.

When Wikus confirmed the information of the national road (N2) being cut-off on both sides, it made the last chapter in the Hospital Major Incidence Medical Management System (HMIMMS) redundant. All their training and drills essentially resulted in safely gathering and escaping on the national road. Still, Mark had to trust the training and the logical approach of the actions, and these systems were followed. Andre's team confirmed the availability of a second site – size, space, capacity, electricity, water, etc. The extended team asked information

about this site, and Andre would get the answers until a clearer picture of this place would develop.

A decision was made: “*We will evacuate!*”

Evacuation and a second site.

Mark and his team simplified the layout of the premises by using a crude drawing – a basic outline drawing of the premises – that was once used during the initial upgrade discussions. They all knew this old drawing very well, and even just huddled around it again generated the natural flow of ideas and a palpable air of confidence was felt in the room with more managers providing suggestions.

They realized very early on, that given the timeline, they will need to rely on the unit managers to guide their teams. The workshop maintenance team would act as ‘sweepers’, to mop up any overlooked aspects around the care of the facility and they took this position even in the order of the discussion. Pam, as head of nursing would speak first, saying how her nurses, unit-by-unit, would escort the patients on her latest bedstatus report to the catchment team waiting in the foyer. Andre added the optimization of patients and the design of the catchment teams at the secondary site. After each manager added his or her team’s tasks to respectively move their clinical, support or admin role around [and with] this patient movement, Wikus would mention how his team will then secure the unit. Their technical advice came in handy to close windows and limit as much as they could the risk of fire and debris spreading inside the building (closing windows, drawing blinds, etc). While discussion continued with various teams inside the same room, Mark could hear Wikus within earshot using the *Ms* in the fishbone analysis to solve practical problems with his team representative.

The vehicle transport department partnered with the ambulance services and they were equipped with two-way radios to stay in contact. A whiteboard was used to draw routes and closed-loop communication cycled were designed to ensure up-to-date information. Getting a team of unit managers at the secondary location first was important to design the safe catchment, and they would be required to design the setup and patient flow of the services at “site B”.

Decentralized decision-making

Mark knew that they (both patients and staff) had to all evacuate safely, all needed to be accounted for and that the direction to safety - their “NEW TRUE NORTH” - needed to be clearly defined. He would then define, with his team, a line separating forward from backward – an immovable line that can only be crossed through a single security-controlled point. The single entry point layout to the premises helped with this concept, and was clearly visible on the line-drawing they were using for planning.

Repeated sweeping behind this line towards the true north direction would be his single priority, his singular role to ensure safety to those that fall under his watch. He defined a single point, in the corridor - in view of the main entrance of the hospital - and a security guard armed with a pen and flashcards was placed at this point. Mark took time to explain to this person his singularly important task: No one was to cross the line, without a clear task, a buddy, and a means of communication. The security guard would record the name of the person and his buddy, as well as their task and means to contact them, and this list would be controlled by Mark. This line (and the security point) would then move on a 10 minute basis towards the single front entrance, while Wikus and Mark would ensure that another ‘clean sweep’ controlled and confirmed the successful evacuation behind the line.

Triage systems of push and pull were controlled from one point, toward the large waiting room adjacent to the single front door entrance. By the time the security guard reached the front door, and it was almost his time to get on the transport, Mark controlled the list and confirmed that no one was documented as being behind the line. Mark then joined Wikus as his safety buddy to do a last sweep of the building.

Mark’s dilemma

Is **everyone safe** and accounted for - both patients, staff and teams? Do they have what they need: tools, equipment, and do these work? These were the questions that circled around in Mark’s head. He searched his memory of the latest bedstatus report, and the checks that were done, and could not recall any red alerts. Although years of upgrades has given him and his team a new skills/ability/jargon to visualize the box (with in-& outflow) for service delivery per unit, and even an approach to the ‘set it up’, there were numerous variables in a makeshift space that he knew was uncharted territory.

He was also stuck in the hospital environment with many of the senior/key role-players and managers, making sure that the evacuation was safe and complete. Would the team(s) at “site B” set up the environment in a functional manner? Will there be a confident captain that can propose a first iteration, that the team can then build on?

Setting up a system at “destination B”

Who will set it up (with adequate knowledge, skills, experience, sensitivity) and a structured means of communication. The clinical manager role was also now in flux, because Andre was helping with the evacuation efforts at the hospital and Mark had to rely on the delegation tree.

How would they do this, given the environment, and will they trust that a crude first design would allow them a basis to start from, before it can be refined through a PDCA cycle? Taking note of the fact that they must continue to provide a health service, and most likely an increased workload (i.e. a major incidence) due to the fire. Setting up a makeshift environment while having to optimize the performance with an altered management structure was what Mark and his team was tasked with.

Problem of Lilita (“the case of Lilita” – the third sector)

Lilita house is the onsite non-governmental organization (NGO)-run 6-bed palliative care unit, named by the team to symbolize light – ‘light house’. The Hospice organization of South Africa applied for the contract to provide this service and KPH provided the structure and rooms. The contract thereafter was renewed on an annual basis. This facility provided palliative care services to patients that require more assistance than that which can be offered at home, but who no longer require in-hospital care. Although the benefit of the proximity was clear to the facility, most other hospitals in the region have opted to have these facilities operate offsite, largely based on their different management structures and the service requirements (i.e. food services, linen service, etc.) that is produced. Mark and the KPH team have welcomed a more intimate relationship and found the benefit of the closeness to solve unusual patient-related challenges. When a small building with a private garden became available during the upgrades, this seemed like a natural placement of this service and for the last six years this arrangement worked well. Often spillovers on either side of the isle could be negotiated and resolved, albeit by semi-bureaucratic means.

However, the NGOs for Hospice (also called stepdown facilities) have different systems and different reporting structures to that used by the health department. Because of this, they do not appear on the standard list of units under the hospital care. Their staff orientation compared to our daily/constant checks are slower, sometimes weekly checking, were based on their much slower turnover. Even though we have a good working relationship (even exemplary) with their management team, we only met with them monthly. When the call came to evacuate, they fell outside of the normal catchment and feedback loops. Here the value of the sweeping behind the line was crucial, and this concept is very much related to review and GEMBA walks.

Questions:

- 1. What was happening before the organizational culture changes (prior to the fires), and what made the changes difficult? Why would the organizational members resist the change?*
- 2. What mistakes did Mark make in the different phases that undermined his efforts to achieve organizational change, before the disaster?*
- 3. What are these circular skills, tools and systems, and how does this benefit the organization during change (please refer to the pre-reading list)?*
- 4. What is the significance of the visual nature of these techniques, and how does that support intra-team and inter-team performance? Why did they require an INNOVATION HUB?*
- 5. How was it possible for a team to function without a plan? How does a person, team, or organization know how to organize during such an event?*
- 6. How does systematic problem-solving relate to innovation?*
- 7. How were these efforts (within the organization) made sustainable? How do you sustain change of this nature (within the organization, prior to the fires and in the period after the disaster)?*

Long essay questions

- 8. Develop a timeline of events in the case. Please distinguish between building capability phase and the executing capability phase.*
- 9. What is your understanding of the “Case of Lilita” and the ‘third sector problems’?*
- 10. Can you find examples from your own work experience of strategies and systems that fail to include a team or group?*

TEACHING NOTE

Case summary

This teaching case examines the implementation of a quality improvement strategy at a South African hospital, and the response this facility launched during a natural disaster. The first part of the case follows the change management period, and the efforts made to introduce new skills and tools into the daily routines of the work environment. Mark, the new manager who joined KPH after his predecessor's 15-year tenure, brought new ideas to this facility and his efforts were enhanced after the facility was selected as a pilot site for the National Health Insurance reform plan. The first part of the case looks at the change management techniques and the LEAN methodologies that cultivate a proactive organizational culture.

The second part of the case closely follows the response to the fire that surrounded their town and threatened the safety of the patients and staff. Mark's interaction with his team, and how the space is created for others to make decisions was facilitated during the second part of the case. The results of the years-long investments (which were unpacked in part 2) were put to the test. How a culture of communication and problem-solving puts this knowledge into practice and applies these techniques in response to the natural disaster, is demonstrated in the narrative that follows their experiences.

Case structure

Key learning objective

After reading and analysing the information contained in this teaching case and appendices, students should be able to:

- Identify the strong relationships of routine and daily work to the change in organizational culture.
- Consider how skills, tools, and systems can potentially grow from an individual level to a larger organization-wide concept.
- Familiarize themselves with techniques and skills from the case such as 5S, Ishikawa, and PDCA, and be able to apply these in their own work and personal environments.

- Identify the concepts such as psychological safety and the benefits of creating these spaces in their work environment.
- Identify that self-governing teams and autonomy have larger empowerment aspects that are of great benefit to the organization, but require the correct skills/tools/systems and language to be achieved.

Teaching objectives

The instructor should be well versed in the LEAN techniques, and knowledgeable in the coaching KATA role. The teacher should:

- Orientate students to the Dynamic Capability concepts (including Resource Based View and LEAN)
- Relate the story of the 2017 Knysna Fires and ‘paint the concept’ (give account) of the level of uncertainty in the environment
- Align the 5S skills to the components of the Hospital story (from the change management to evacuation and the post-fire period)
- Place special emphasis on skills, routine and empowerment of workers: i.e. Organizational culture
- Practice skills individually with students (throughout the sections of the case)
- Highlight the importance of KATA and how central habits and routines become
- Achieve a synthesis of the information into a holistic approach

Target audience

This case is appropriate for individuals interested in improving their understanding of LEAN methodologies, change management, and optimization techniques in team settings or other collaborative environments. The case:

- Helps students understand the background, history, and philosophy of LEAN
- Translates the larger organizational cultural impact
- Illustrates the subjective experience of disasters from a management perspective
- Examines some challenges with change management and entrenched thinking
- Demonstrates the value of routinized processes
- Explains circular feedback loop systems

- Puts forward new theories on absorptive capacity, and ways to enhance team learning

Teaching approach

This teaching case is intended for use in the following subjects:

- **Organizational behaviour and people management:** This case explores key topics of organizational behaviour, psychological safety and optimizing team learning through absorptive capacity. Ways in which individual-level factors improve motivation and performance at the organizational level is demonstrated through the case.
- **Change management:** this teaching case explores development of a self-governing, high-performance culture within an organization. The starting point – from a 15-year military style of management – is a demonstration of the tremendous impact of these techniques and the philosophy behind LEAN.
- **Operations Management:** the case uses LEAN and problem solving skills and tools that is very valuable to students of operations management. These techniques are useful to operational excellence students as well: e.g. six-sigma, rapid improvement cycles.
- **Management control systems:** this case demonstrates many management techniques that were used to monitor, manage and incentivise employees within an organization as well as the feedback designs that were implemented.
- **Strategic Management:** this case explores the importance of including employees and staff in the strategic decisions of an organization, in order to gain buy-in and direct the change process. Developing confidence in these techniques creates a culture of empowered employees who can apply systematic problem-solving in order for the organization to thrive within dynamic environments.

This teaching case focuses on a before (preparation) and during a shock comparison of the organization; and seeks to capture the test of the strategic efforts that were applied. When Mark took over the management of the hospital from a longstanding predecessor with a drastically different management style there was much resistance. The case touches on this resistance in

an indirect manner, by stating the individual- or group-level growing pains and highlights the meeting environment that was desired, i.e. psychological safety.

The first part of the case starts by demonstrating a simple management and labour representative interaction, and then proceeds to trace back to 8 years prior and how they got to this point. The challenges of change management at all levels and how the facility overcame them. The objective of the session is to highlight that the challenges (at all levels) can be seen as opportunities, and that discourse should be the main focus of this phase.

Class discussion of this part should be encouraged and students are expected to share their personal experiences of resistance to change, at whatever level it exists.

The second part of the case deals with a highly volatile environment, disruption risks and the staff having to apply their skills and problem-solving techniques in a self-governing, decentralized fashion. This second section is designed in contrast to the first and students should be able to apply their intuition and relate to the content by drawing from their own crisis management experiences and recall how their own team pulled together. This recollection will potentially trigger a better understanding of their own capabilities (and that of their teams) and then potentially be open to how these can be augmented from the case material.

Teaching plan

The anticipated duration of the teaching session is 90 minutes. This session should begin with a summary of the case and a high-level discussion of the challenges faced by Mark Price before and during his change management efforts. The introduction should give the students a feeling of the organizational challenges and the uncertainty and volatility in the environment, even before the natural disaster. The first half of the session should encourage students to identify the major issues faced by the organization and allow them to discuss some of these issues and some of their personal experiences.

Session**Timing****Topic of discussion**

5”	Introduce the case and discuss the challenges Mark faced as he grappled with introducing a new management approach after 15 years with a distinctly different style.
10”	What was happening before the changes, and what made change difficult, and why would the organizational members resist change?
10”	What mistakes did Mark make that undermined his efforts to achieve organizational change?
10”	What are these circular skills, tools and systems, and how does this benefit the organization during change?
5”	View the supplied image slide show
10”	What is the significance of the visual nature of these techniques, and how does that support intra-team and inter-team performance? Why did they require a HUB?
10”	How was it possible for a team to function without a plan? How does a person, team, or organization know how to organize during such an event?
10”	How does systematic problem solving relate to innovation?
10”	How were these efforts made sustainable? How do you sustain change of this nature?
5”-10”	Summary and case wrap up

In addition to the case, students are requested to read: Hamel, G. (2011). First, let's fire all the managers. *Harvard Business Review*, 89(12), 48-60. This article will assist students in understanding intra-team and inter-team dynamics, the impact that they have on other organizations, and how different management techniques are applied in other industries. The case in the article explores the concepts of an environment where the role of "bosses" is less important, but employees are empowered and free to make decisions and negotiate their responsibilities.

Students may also wish to read: Schaffer, R. (2010). Mistakes leaders keep making. *Harvard Business Review*, September, 86-91. This article will assist students to understand the necessity of accountability, leadership, and clearly defined expectations within the workplace. This article considers many of the challenges faced by managers when they attempt to institute organizational change.

Case analysis

For students to maximize their learning from this teaching case they should be encouraged to pre-read and prepare written answers to the questions included at the bottom of the case. The expected preparation time is approximately one and a half hours. This preparation will allow students the opportunity to engage with the case before the scheduled class and enable them to be fully prepared to participate in meaningful class discussions. The questions supplied below are suggested questions that can be used to stimulate discussion. The facilitator may wish to use a selection of the following questions depending on the lecturer's key learning objectives.

From Part 1: Change management

Suggested discussion questions

Question 1

What was happening before the changes, and what made the changes difficult? Why would the organizational members resist the change?

- 15 years of the previous management

- Both the person and the style of management differed greatly during the change transition. Getting used to someone's new approach is very challenging, especially a newcomer with greatly different ideas.
- Different style=innovation and new, trust issues
 - The style of communication and vision for the facility and how it works was different, and took a long time to get used to.
- More work = already overloaded
 - The improvements and improving meant more work and working harder. This was a difficult concept for staff that already saw themselves as overworked and thinly spread.
- Older employees = entrenched thinking, why work harder
 - Some of the older employees, suffered from entrenched thinking and being closer to their retirement questioned why they should submit themselves to working harder.
- Overworked and under-resourced
 - This healthcare facility, in the public sector suffered from resource shortages which is typical of many organizations of the period. This made more work and aggressive change methods challenging.
- Context=uncertainty in environment and country (loadshedding)
 - The South African context during the same period was quite challenging, wrt power supply challenges and loss of capacity with attrition measures.

Question 2

What mistakes did Mark make that undermined his efforts to achieve organizational change?

- Speed
 - Mark initially moved at a speed not yet aligned with the rest of the facility, not taking into account the degree of adjustment that many people – with vastly differing challenges and/or personality type and needs - would need to make.
- Did not initially include the team
 - The innovative thinker that Mark thought himself to be, did not take in to account that other perspectives could add value to the strategies that he was trying to develop. The improvements at the facility would need to address the

needs of the patients as well as the employees/staff, and the best people to guide this thinking is the “users” of the target condition.

- His slogans like “better” were not understood
 - Mark still needed to learn how to temper his language, and that individuals working at the facility might be sensitive to the opinions of their assigned leadership. Concepts such as steward leadership was yet to be explored, and would only come into his consideration later during his time at KPH.

Question 3

What are these circular skills, tools and systems, and how does this benefit the organization during change?

- The 5S, PDCA, CLC
 - The 5S, PDCA as well as the CLC has a circular and feedback design that prompts the user to return to the ‘beginning’, to start again. As in the healthcare (KPH) example, the handover from one shift to the next allows for fresh eyes to join the starting point and new possibilities are created for the current cycle.
- Logical approaches that are understood by the team to aid in the final design.
 - A systematized approach is presented and refined through practice (i.e. repetition of cycles), as well as the understanding of the skills deepened when sharing with peers. The skills and tools are supportive of collaborative design principles, as well as drawing from other perspectives to solve the problem at hand.
- Freedom to suggest initial design, and then absorb in an iterative improvement cycle.
 - When trust exists in a group/team (i.e. psychological safety) then members have a higher chance of experiencing confidence to express their ideas, and suggestion for the first/initial design. The circular nature of these systems entails that improvements (and organic development) to this idea will occur. In groups that practice these techniques, there is less threats to intellectual property and protection of the ‘original idea’, and less defensiveness to changes of the original design.

Question 4

What is the significance of the visual nature of these techniques, and how does that support intra-team and inter-team performance? Why did they require a HUB?

- Supports group interaction and codesign principles
 - Visual representation assisted in understanding and optimizing idea-sharing
 - Codesign between units in a multi-disciplinary nature
 - This could include the patients
- Structures the thinking and shares ideas as well as techniques applied
 - Not just what but how people think.
 - Insights into the application of techniques
- Visual nature serves to add motivation and draws on design simplicity that can be aligned with organizational norms of use.
 - Internal motivation draws from the visual keys
- Hub was an area different from the working environment with rules of engagement intended to optimize idea sharing.
 - An extreme version of psychological safety (placing emphasis on the central importance of this concept)
 - Larger groups could meet
 - Resources were available to optimize idea sharing and aid in visual prompts

From Part 2: Disaster management

Suggested discussion questions

Question 5

How was it possible for a team to function without a plan? How does a person, team, or organization know how to organize during such an event?

- SPS and True North principles
 - Teams were equipped with the skills and tools to solve problems, and just needed to know what the problem was they were trying to solve. Moving to a secondary location and setting up a service point (a system that they are

knowledgeable about) were the only instructions needed. This then became their “new” True North as captured in the case.

- The team is clear on its objectives and allows for innovation to achieve them
 - As the team becomes clear on their objective (also captured in their vision and mission statements), they can use the skills, tools, and systems to give expression to their innovative insights as to how to achieve them. The new ideas are safely expressed within the group that will improve on these ideas until they are ready to be shared and implemented.

Question 6

How does systematic problem-solving relate to innovation?

- KATA mechanism
 - Kata is related to routines and doing/learning something ‘rote’ in order to rely on that concept not requiring any time or effort during an emergency/urgency. The 5S and PDCA ensure that these mechanisms are not static, but effort and fitness are required in the routine only.
- Original ideas vs organizational goals
 - There is a school of thought that promotes kata as the technique that frees up the time and space for innovation. What some economists would describe as opportunity cost.
- Personal nature
 - How the Kata is applied, and what improvements can be made is dependent on the operator, and the platforms where a standardization is suggested.

Question 7

How were these efforts made sustainable? How do you sustain change of this nature?

- Circular nature
 - The circular nature allows for successive teams/members to repeatedly start at the beginning. In complex adaptive systems, there is always waste to be removed, and the skills and tools address these while the individuals continue learning more about their environment.

- Iterative nature
 - Constant improvement cultures seek out the wastes, and continuously improve on their routines.
- Support by greater staff contingent.
 - When larger groups, and more of the organization are included there is more buy-in and an authentic collaborative environment.

CASE APPENDICES

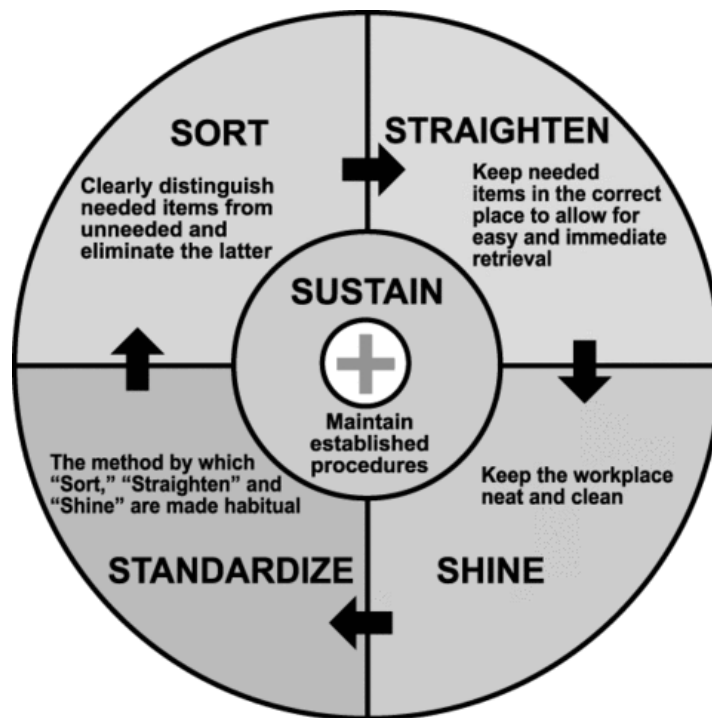
(Also provided to students in preparation of class discussions)

EXHIBIT 1



CAPTION: Training coordinator playing games with some of the children brought into the daycare.

EXHIBIT 2



CAPTION: The 5S is a stepwise and cyclical process tied together with a core of sustainability (SUSTAIN) step that promotes iterative improvement.

Exhibit 3a



Exhibit 3b



CAPTION: The drug drawer (first drawer) of the resuscitation trolley, seen 3a) after numerous use in a busy emergency centre **before** techniques were rolled out in KPH. The same drawer 3b) seen **after** the 5S technique was applied which resulted in an more efficient checking and restock approach. The biggest challenge is to “SUSTAIN” (S5).

EXHIBIT 3

Exhibit 4a



Exhibit 4b



CAPTION: Even the outside of the emergency trolley received the 5S treatment to simplify and support use, resulting in better efficiency and improved safety.

EXHIBIT 4

Exhibit 5a

A3 Problem Solving Template

1. Problem	5. Possible Counter measures and Plan <table border="1"><thead><tr><th>Counter measure</th><th>Impact on Target</th></tr></thead><tbody><tr><td>1.</td><td></td></tr><tr><td>2.</td><td></td></tr><tr><td>3.</td><td></td></tr><tr><td>4.</td><td></td></tr></tbody></table>	Counter measure	Impact on Target	1.		2.		3.		4.	
Counter measure	Impact on Target										
1.											
2.											
3.											
4.											
2. Current Condition	6. Check results										
3. Goals and Targets for desired condition	7. Follow up and Review										
4. Root Cause Analysis											

Exhibit 5b

Theme: Enter theme name here

Background
Current Condition
Goal
Root Cause Analysis

PLAN

To: (Approving Person)
From: (A3 Author)
Date:

Countermeasures				
Suspected Cause	Action Item	Responsible	Due	Finding
DO				

Effect Confirmation

CHECK				
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Follow-Up Actions

Action Item	Responsible	Due	Status
ACT			

CAPTION: The A3 tool is a single page and collaborative tool to generate and share information. It allows the user to structure their thinking into a PDCA-ordered map towards the desired state. The tool works well in a group setting, and has been found to enhance the user's ability to express his/her idea.

EXHIBIT 5

Exhibit 6a

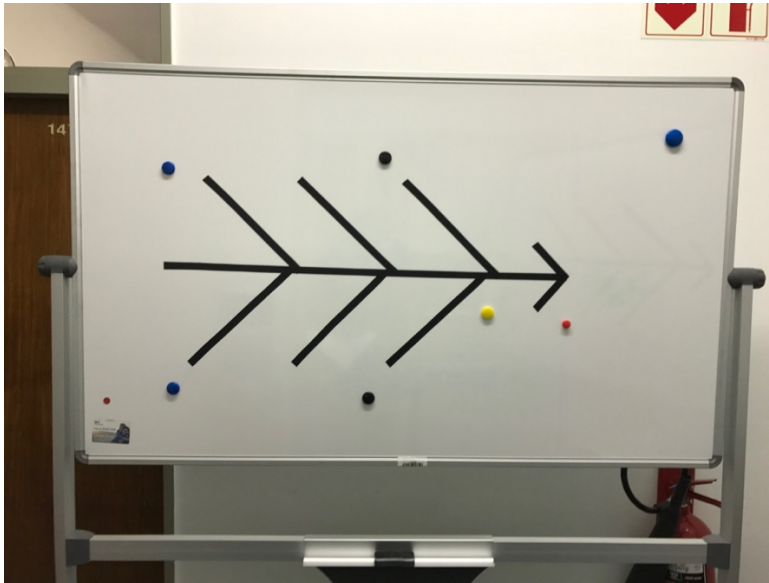


Exhibit 6b



CAPTION: The Ishikawa (fishbone) analysis is a tool to assist in analyzing the root cause of a problem, and is highly effective in a group/interactive setting. The direction of the bones, i.e. where the ‘head’ is placed, has implication as to what the tool is used for (problems/solutions).

EXHIBIT 6

Exhibit 7a

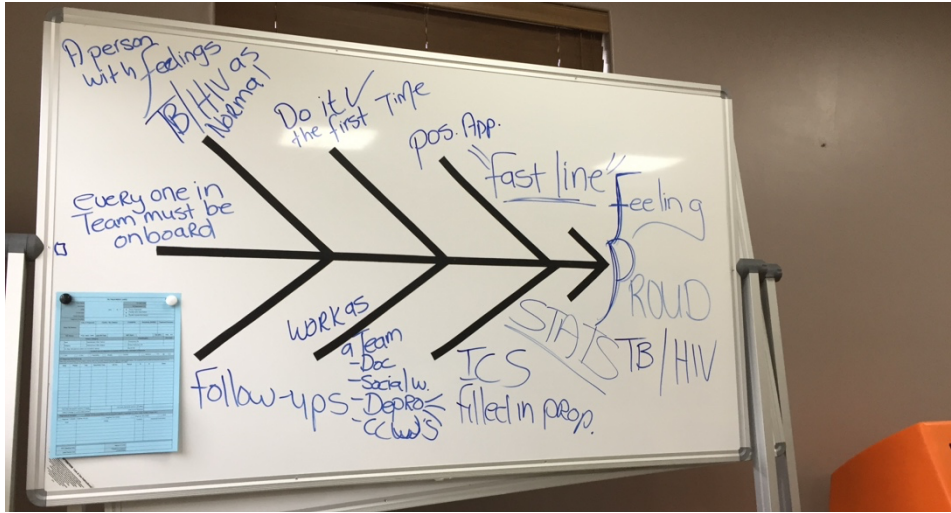


Exhibit 7b



CAPTION: Ishikawa was used as a visual aid in spaces where other activities also occur.

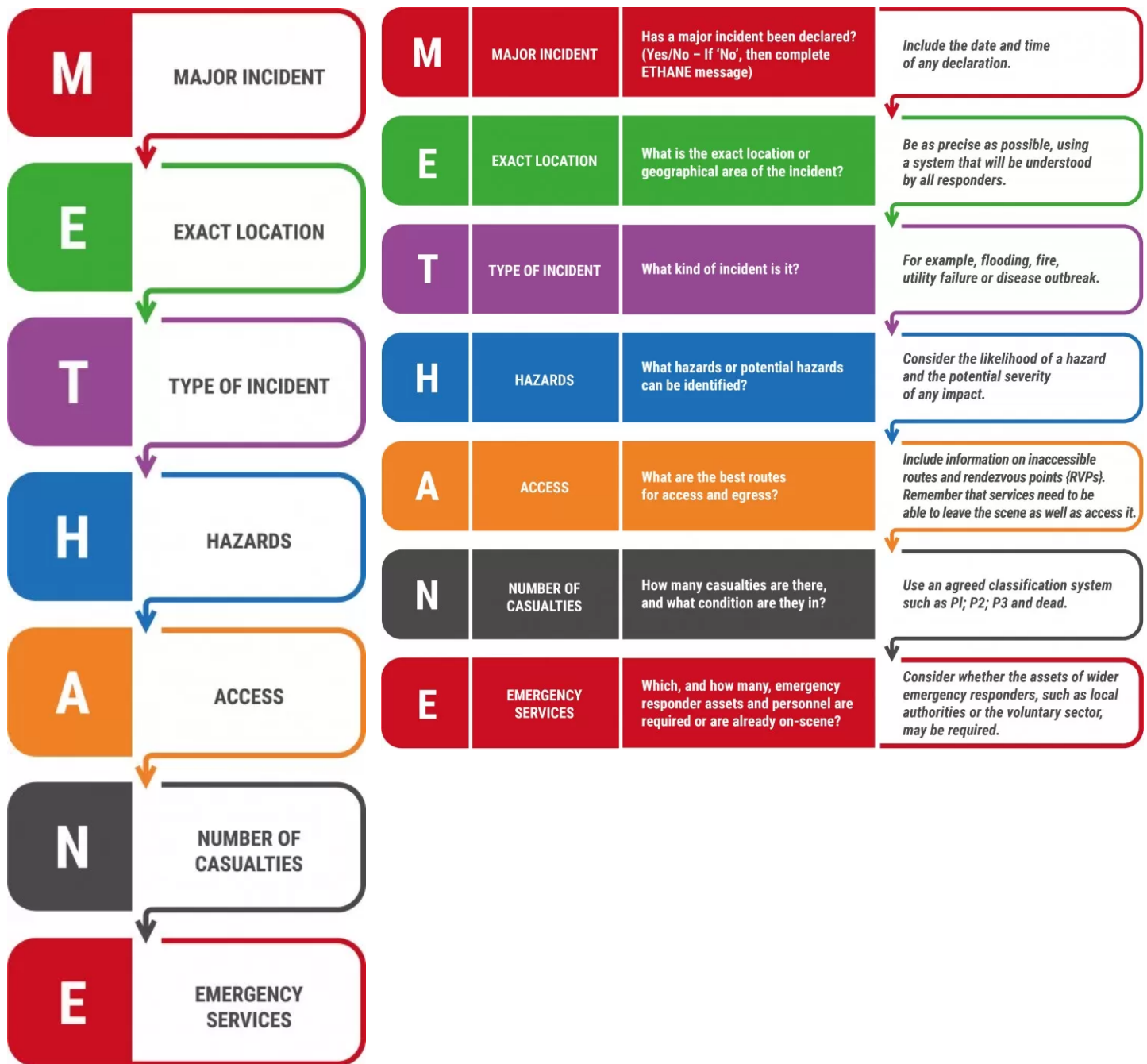
EXHIBIT 7

EXHIBIT 8



CAPTION: The makeshift examination and procedure space generated in a tent, using equipment pieces from the hospital. This workflow environment was designed and put together by the frontline staff.

EXHIBIT 9



CAPTION: The structure of the METHANE report, used for up-to-date data gathering from a source as close to the accident site as possible.

METHANE report

The purpose of this acronymized report is to compile *accurate information* from site of the disaster, or closest possible position – mostly from first responders (e.g. traceable first responders: named and contactable individual).

Definition of methane report and logical structure

M= major incidence declared yes/no,

E= exact location and/or geographic coordinates of the incident,

T= type of incident defined,

H= hazards real or potential,

A= access and the best routes for access and egress,

N= number of casualties and the condition of all casualties, and

E= emergency services and the number of assets/responders onsite or needed.

Concepts of accurate data input, which potentially changes over time and constantly requires revisiting, is further complicated by the means to ensure credibility and traceability of data. The need for real-time information for decision-making purposes grew with the rollout of training of these concepts. Teams became more dependent on information.

EXHIBIT 10

Date:		Ward Clerk Submitting report:															
Time:		OPM Submitting report:															
		DEPARTMENT		TOTAL													
Number of patients waiting to be seen		EMERGENCY CENTRE		1													
		MALE WARD		0													
		FEMALE WARD		0													
		MATERNITY WARD		0													
		CHILDREN'S WARD		0													
		OPD		24													
				25													
OPD EXAM ROOM	7	2	5	RPN X	2												
				RSN X	0												
				RNA X	2												
				St/n x	0												
Emergency Centre	TOTAL TRAUMA CAPACITY		NUMBER CURRENTLY FILLED	NUMBER AVAILABLE													
	Resus beds		2	0	2												
	Trolleys		5	2	3												
	Asthma Chairs		4	0	4												
	OVERNIGHT BEDS		4	2	2												
	Isolation room		1	1	0												
	Gynae Room		1	0	1												
	Baby Cots		3	0	3												
	Consultation Rooms		3	0	3												
	TOTAL		23	5	18												
				RPN X	3												
				RSN X	1												
				RNA X	3												
				St/n x	1												

CAPTION: The bedstatus report of KPH is the snapshot of the bedpressure within the hospital.

BEDSTATUS report

This bi-daily report (i.e. end of day shift, end of night shift) was a snapshot of the hospital [nursing] workload and capacity. It was later improved to a tri-daily (8 hourly) visual aid; and could also be requested ad-hoc and updated (called 'refreshed') in 10 minutes. The document was compiled by the most senior nursing professional in each unit, given the shift, and signed off (i.e. confirmed) by the unit managers. The ward administrative officers (also called ward clerks) were often empowered to drive the deadline of submission via e-mail.

What it is = an accurate snapshot to assess workload and/or bed pressure.

Who compiles it = the wards and units themselves

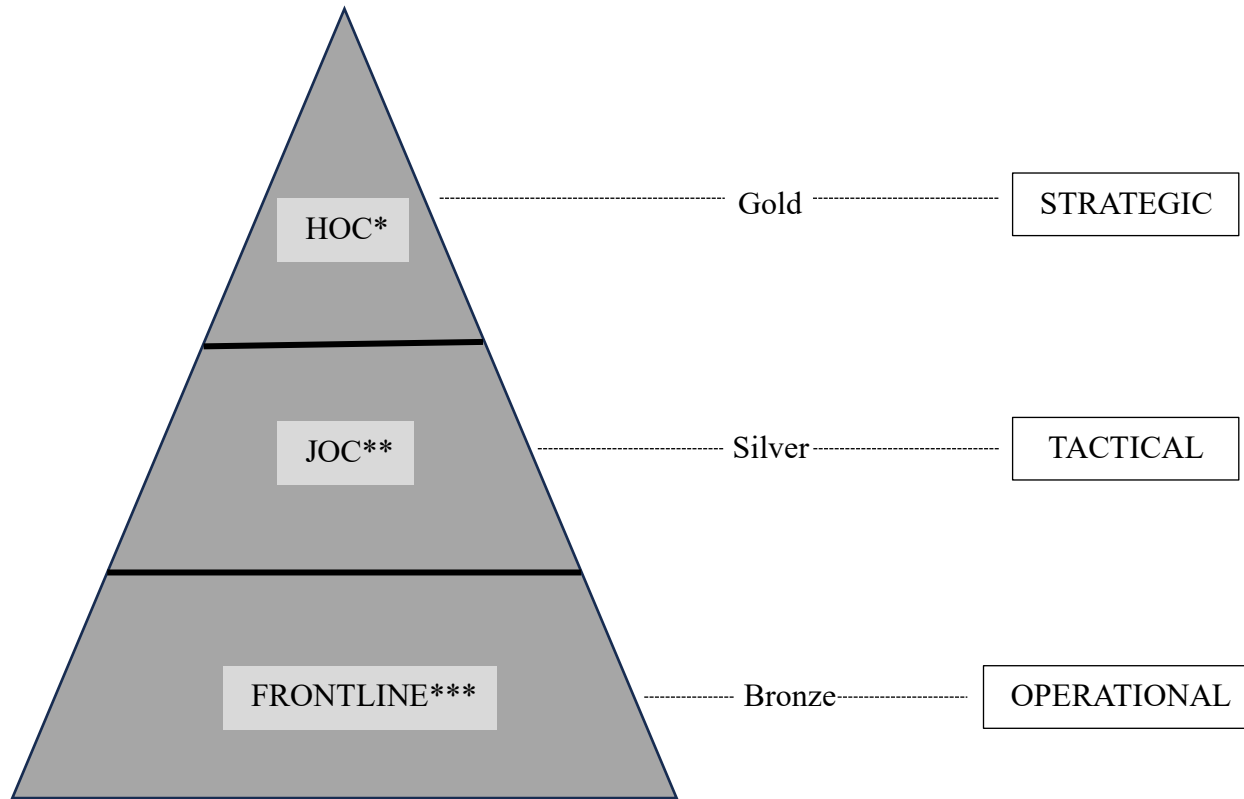
Where it goes = to the strategic management team

Interval = Twice a day, from each shift and to each shift

KPH achieved three times a day = by adding a mid-day (coming from and going to lunch)

The bed status report flows from the HMIMMS structure and urges the functional units within the local health system to gather real-time data in both structured and innovative ways to account for local infrastructure. The goal was to optimize local responses during major incidences. The local health system comprises of emergency medical services (EMS) which is the reporting body for the ambulance services, where a close links with health institutions is kept. The bed status report in exhibit no. 10 was the Knysna Hospital version, which were kept updated and controlled.

EXHIBIT 11



CAPTION: The HMIMMS three-tiered communication structure placed the *Head Operating committee at the strategic position (Gold), the **Join Operating Committee as a multi-disciplinary and multi-sectoral team at the tactical position (Silver), and the ***Frontline team at the operational level (Bronze).

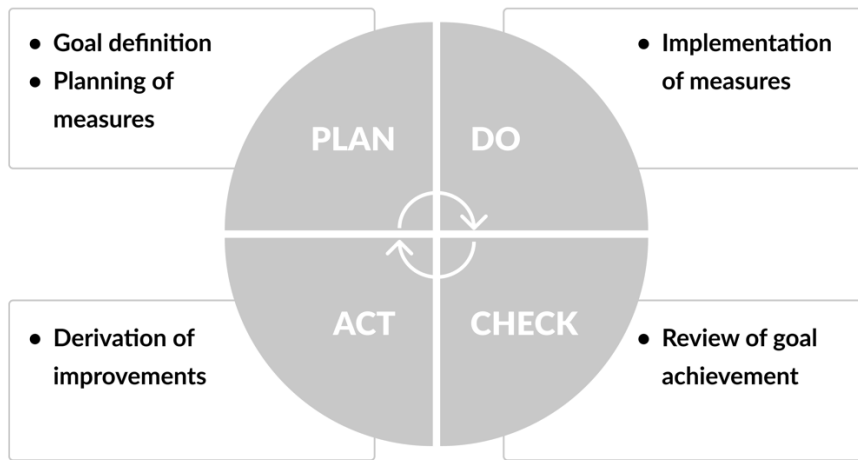
HMIMMS communication structure

The Hospital Major Incidence Medical Management System (HMIMMS) is a support structure used during disaster management by UK, Australia and South Africa (Vassallo et al., 2022) and consists of a two-stage triage system. Firstly, a primary triage is performed using the Triage Sieve which provides rapid initial assessment of the victim's physiology at the scene. The UK has adopted the National Ambulance Services Medical Directors (NASMed) Sieve since 2013 (Stephenson et al., 2015). Secondly, a more detailed assessment called the Triage Sort is performed in a more permissive environment – usually removed from the immediate incident scene – e.g. emergency center clearing room or casualty triage section. The rationale for this two-stage approach is to allow assessment of large number of patients in a rapid fashion using simplified tools (Bazyar et al., 2019). The Triage Sieve does not require any clinical expertise not medical equipment (e.g. patient vital measures such as blood pressure). Following this phase, triage decision can be refined using more detailed assessments using the Triage Sort which now includes pulse, blood pressure measure, Glasgow coma scale etc. These subsequent assessment phases also include senior clinical decision-making and support. For the assessment of children under 12 years old, and age-specific Triage Sieve kit (and Paediatric Triage Tape) is included in training protocols.

During the change management and upgrade of the KPH facilities, the institution was presented with this structure and these systems to follow that were based on international standards and proven to work. This was aggressively rolled out by the Department of Health as part of the National Core Standards (NCS) to improve hospital quality and safety for NHI. Adopted as a provincial department initiative, the training was standardized and aligned with provincial approaches to emergencies. These approached were practiced using drills and scored on # numbers of drills (as compliance). Towards organizational culture, the counting became a stepwise approach to understanding and unpacking “Accountability” (= achieving strategic consensus).

Part and parcel of HMIMMS is a system(s) approach to communication. Establishing a head operating committee (HOC) and linkages to joint operating committee (JOC) with designated codes: i) Bronze, ii) Silver and iii) Gold in a three-tiered system.

EXHIBIT 12



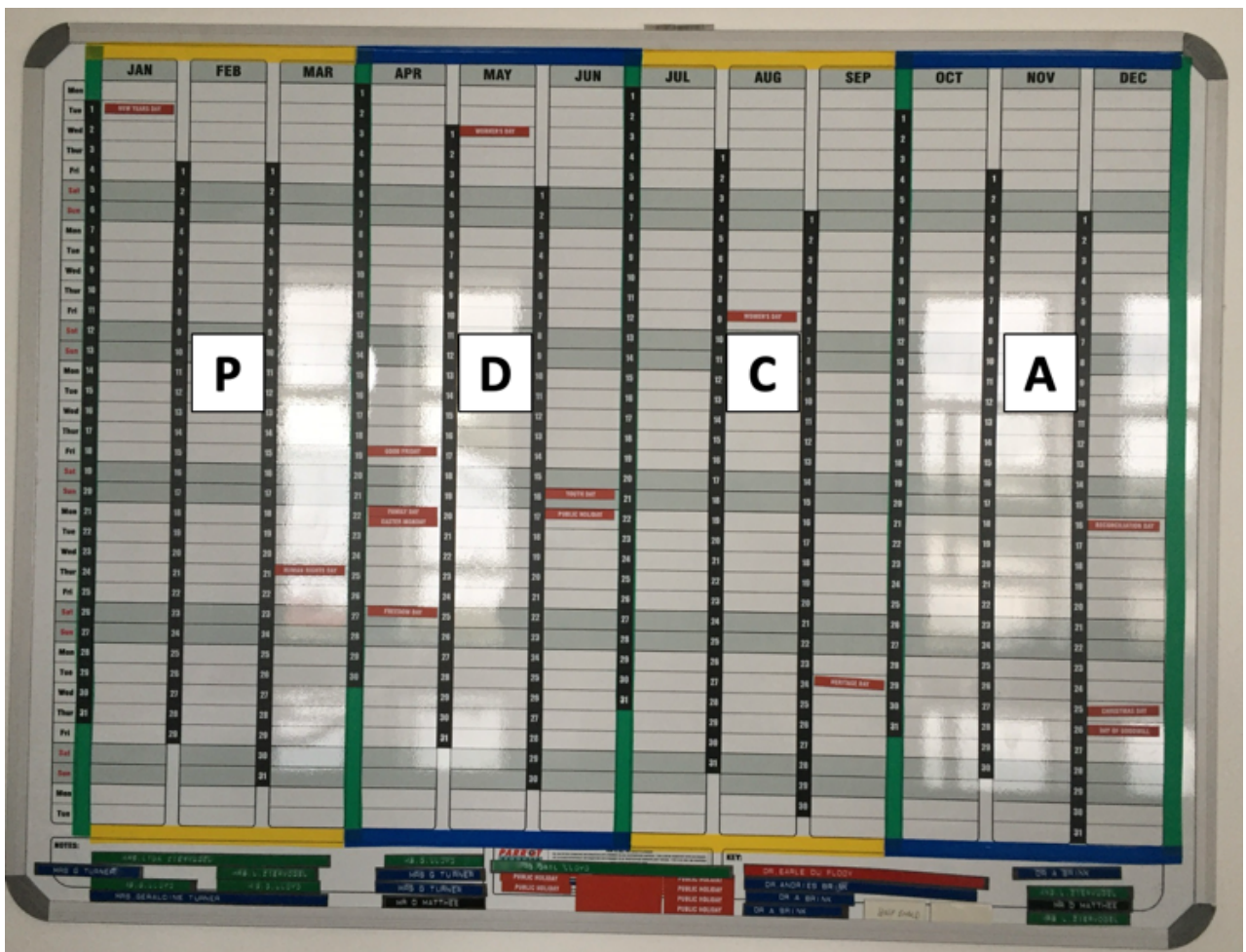
CAPTION: PDCA or plan–do–check–act is an iterative design and management method used in business for the control and continual improvement of processes and products. It is also known as the Shewhart cycle, or the control circle/cycle. Another version of this PDCA cycle is OPDCA. The added "O" stands for observation or as some versions say: "Observe the current condition."

Source: ICT institute (2023), <https://ictinstitute.nl/pdca-plan-do-check-act/>

EXHIBIT 13

Meeting structure

The meeting structure at KPH followed a PDCA cycle for weekly, monthly, quarterly or annual targets dividing either the day, week, month and year into 4 evenly spaced periods – each with their Plan-Do-Check-Act designation. This approach instilled a pro-active planning nature towards an expected period, while constantly learning about the period that just passed. Monday morning meetings would first assess what occurred during the weekend, before planning what events are expected for the upcoming week and weekend to follow.



CAPTION: The meeting planner designed by the KPH team to track of PDCA annual targets.

EXHIBIT 14

The INNOVATION HUB at KPH

This space was dedicated to group learning and idea-generation; and was designed on the principle of psychological safety. Resources were made available to facilitate knowledge generation and knowledge sharing in a group or team setting.



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CHAPTER 4

Strategic level

Policy

This chapter is based on:

Du Plooy, Pellin (2024). Organisational culture and language policies during emergency responses within China: A literature review about China's makeshift hospitals during Covid-19. *Journal of Società Italiana di Economia dello Sviluppo*. https://www.sitesideas.org/wp-content/uploads/2024/04/Sites_wp19.pdf

IV Connection line

When a new strategy for organizational culture is conceived (e.g. joint ventures, mergers), or when managers find themselves in reactive situations - and corrective steps to this strategy are needed - how to communicate this to those entrusted to execute (through all manner of communication: emails, memos, meeting announcements, etc.) and at all levels of the organization needs a steady hand, knowledge, and care. The communication character, and how it aligns with the native organizational culture, is investigated during a high-pressure period. This knowledge is especially important during the VUCA-type environment.

- During emergency responses the role of leadership within health institutions takes on a galvanizing role – at once unifying the operational teams and in the same instance optimizing the services, all within a highly volatile environment.
- In this paper, the role of language policy and communication techniques are investigated within health organizations, and measured against the prevailing culture of the organization.
- A systematic literature review is performed on the language policies and organizational culture during the COVID-19 pandemic, and the makeshift hospitals within Wuhan China is used to frame the case study.
- N=104 articles were analysed, and rare access to Chinese literature was acquired through CNKI.
- Huoshenshan and Leishenshan makeshift hospitals are used to interpret the role of language services and communication characteristics within an authoritative environment.
- The findings result in an expansion of organizational culture frameworks to include communication characteristics.
- Insights into how strategies are conceived and shared with the operational teams are explored, and how this influences expectations and execution.

Keywords: Organizational culture, Corporate culture, Language policy, Communication strategy, Disaster management.

Introduction

The frequency of natural disasters is increasing globally and has doubled since 1990 (Dembedza et al., 2023). Contemporary scholars share a belief that the first half of the previous decade will be known for the unprecedented natural disasters¹, which has increased almost three-fold, from over 1300 events in 1975-1984 to over 3900 in 2005-2014 (Thomas & Lopez, 2015). Furthermore, since 2000 and preceding the pandemic, more than 1 million people worldwide have died from natural disasters (EM-DAT, 2018), and accounted for an estimated damage cost of \$1,7 trillion. More than 95% of these natural disasters occur in developing countries (IPCC, 2012). Building on foundational work by Edgar Schein (1985), the current contribution aims to investigate how a well-established organizational culture and proper language policies can help in optimizing the emergency healthcare response during disasters.

The Covid-19 pandemic demonstrated the level of preparedness of global health systems, as well as the innovation and agility within these systems, in particular the ability to generate and share new knowledge when faced with a new disease. Burke et al. (2015) investigate global economic impact of climate-change-induced natural disasters and warn that the projected cost of sequelae is not merely caused by neglect of antecedents, but accrues as a dereliction of duty to prepare adequately.

The burden on healthcare systems is further past onto the health workers, but very few studies explore the impact on health staff. Our study investigates the environment of knowledge generation and knowledge transfer and how these can be optimized. To achieve this goal, language-related measures within organizational culture will be investigated. The case-studies selected for this purpose are China's makeshift hospitals Huoshenshan and Leishenshan. The pivotal role of communication among the elements of organizational culture, including some of its features such as tone and character of communication systems, is constantly affirmed in Chinese as well as in

¹ The great floods in Thailand in 2011, Hurricane Sandy in the United States (US) in 2012, and Typhoon Haiyan in the Philippines in 2013. The year 2014 was the Earth's warmest in 134 years of recorded history (NASA, GISS 2015).

international platforms and compared to the prevailing organizational culture. Surprisingly, hardly any resources illustrate in depth the linguistic measures implemented to realize the communicative aspect of organizational culture.

We perform a systematic literature review and map our findings on a framework developed from the Denison organizational culture schematic. Four levels of communication systems and language orientations were found, and aligns with the leadership orientations.

The findings demonstrate distinct differences within language policy application and how this aligns with contextual organizational and corporate culture within the greater national culture. The Western standard approach to inclusion and codesign was found to be less efficient during the disaster, due to the ambiguity that enters this approach. Inclusive bi-directional language policies were found to perform well in creating a safe psycho-social working environment, and is preferable during recovery phases after disasters, and training as well as preparation periods. The most successful companies and health facilities implemented a more authoritative tone with succinct and instructive messages.

Contrastingly, how such communicative practices are concretely embodied by linguistic expressions is not illustrated in the resources under study. Although language management in a crisis scenario is extensively dealt with in the literature, including therein the Chinese resources, such measures, whose configuration is defined as “language service”, have not yet been described within a broader organizational framework.

Background

The incidence of natural disasters in the world is increasing in all its forms. As a contextual example, the area of Campi Flegrei, just outside Naples, has been experiencing a worrisome and increasing seismic swarm, so severe that plans for a major disastrous event are being implemented in the time of writing the present contribution. Floods, such as the latest which happened in Libya or in India have a very distressful impact on local communities and invariably on their healthcare systems.

Such events have strong repercussions on developed countries as well, and their impact have strong economic influence, so that investigations have been broadly conducted (Burke et al., 2015).

Nonetheless, the impact on the healthcare workers or teams - often described as the “second victim” (Ganahl et al., 2022) - have not attracted the deserved attention from the academic world.

Global societies nowadays have grown more and more populated, and their material and immaterial structures are becoming more complex. For these reasons, it becomes imperative for communities to be prepared to face new disasters, and develop a high degree of resilience. Resilience entails huge investments in organizational culture and in the language (Linnenluecke, 2017), which constitutes an essential inner structure.

The recent COVID-19 pandemic demonstrated that responses varied greatly from one country to the next. Lots of research on Covid-19, and with good reason – e.g. access, sequelae, and impact - has focused outside of China for what some stated as “obvious reasons”. What lessons can we learn from this untapped resource and what secrets lie beyond the veil?

Case study

In December 2019, the earliest cases of the virus which was later labelled as the SARS-CoV2 (Covid-19), were first identified in Wuhan, the capital of central China’s province of Hubei. Two months later, other cases started appearing in Italy and then cases spread to the rest of the world in an unprecedented rate and fashion. In Wuhan, with a population of more than 6 million people, the number of newly Covid-infected individuals placed the healthcare system under tremendous pressure, and the government mobilized more than 30 000 healthcare workers to this area (Wang J. et al., 2021).

Rather than risk collapse of the native health system, the authorities conceived of makeshift hospitals with dedicated organisational and operational structure to treat Covid-19 cases. As the then-epidemic (circa January 2020) levels of infections were reached, Huoshenshan 火神山 and Leishenshan 雷神山 hospitals were constructed and rendered operational in 9 and 12 days respectively (Luo et al., 2020). These two facilities admitted 3059 and 2011 patients during their respective service period. This engineering and organizational feat was achieved by expanding on previously developed knowledge gained from the 2003 SARS outbreak (Luo H. et al., 2020; Wang J. et al., 2021). The knowledge transfer platforms – which included multi-sectoral as well as multi-disciplinary health teams – were unprecedented and captured the imagination of the world.

Wang J. et al. (2021) studied the physical and mental health effects of 115 medical staff that 174 worked at these facilities, and emphasized the underinvestigated effects of such a high-pressure environment on these individuals. Their findings of mental health problems such as stress, anxiety, depressive symptoms, insomnia, anger and fear among these individuals were confirmed in repeated studies (Wang J, et al., 2020). The physical symptoms of fatigue and exhaustion – often closely related to anxiety and depression - was of particular interest in this study as the psychological stress mounted by being placed on the world stage in such an abrupt manner (Lai et al., 2020). Despite numerous studies examining the physical infrastructure and engineering ingenuity of these makeshift hospitals (Luo H. et al., 2020), and more recent contributions investigating the environmental impact of the site on local communities (Cai Y. et al., 2020), very little research has focused on the organizational culture and knowledge sharing with staff and health workers. Among the few, Wang J. et al. (2020) highlighted the fact that hospital staff, in an unexpected situation of highly pressured crisis, cannot merely be trained on new and experimental protocols by means of video or manuals. They were required to have a broader knowledge of the nature of the management problem and its causes. On the other hand, the language service, which was promptly set up by China's Ministry of Education and provided by the Language services group for epidemic prevention and control, for the benefit of the communication between staff and patients has received much attention by linguistic literature (Shen Q. 2020, Li Y. et al. 2020). However, the relationship of such language service and organization in the healthcare units have not been investigated adequately.

Communicative acts, including the form and characteristics they take, as well as the linguistic code by means of which they are delivered and even the social context they dart across, become mission critical during these situations in order to maintain a high level of care and team performance. We consider Wuhan's Huoshenshan and Leishenshan hospitals as the foremost exemplars of healthcare units subjected to unparalleled mental and physical pressures - at various levels (Wang J. et al., 2020). Our paper has the goal of investigating organizational culture in healthcare units in disaster-stricken situations, and in particular the language employed therein, as the tool for facilitating the knowledge transfer and motivational aspects of the healthcare providers. The benefit of such an investigation is to distil an understanding of the building blocks of organizational culture, which ultimately intends to provide quality healthcare to a given community during highly volatile periods.

Literature review

a. Organizational culture

Defining organizational culture produces many challenges, including that of boundary issues from field or sector. Another hurdle is that complexity increases given context when attempts are made to disentangle the concept from general and national culture.

Organizational culture (OC) includes, but is not limited to an organization's expectations, experiences and philosophy and values – including both written and unwritten rules - and is evident in the organization's internal workings and interactions with the outside world (Handy, 1993). They are the patterns of shared values and beliefs that help individuals understand organisational functioning, and thus provide them with norms for behaviour within the organisation (Deshpande and Webster 1989). OC refers to the values, beliefs, traditions, and practices shared by an organisation's members (Tierney & Schein, 1986). Because it includes the signs and symbols, shared practices, and underlying assumptions of an organization (Spicer, 2020), it influences the system of beliefs, values, norms, and practices that determine an organization's behavior as it adapts to its external environment and manages its internal affairs (Wu, 2022).

Edgar Schein, whose seminal work *Organizational Culture and Leadership*, first published in 1985, is considered by many scholars as the foundational authority on OC, posit that OC can be analysed at several levels namely; (1) visible artefacts, (2) espoused beliefs, values, rules, and behavioural norms, and (3) tacit, taken-for-granted, basic underlying assumptions (Schein & Schein 2017). In Schein's framework of the three levels of culture, 'language' is one of the major artifacts and characteristics of a national culture; it is a representational technology that actively organizes, constructs and sustains social reality (Chia & King 2001). Belief (i.e. ideology), activity (e.g. norms and rituals), language and other symbolic forms are those mechanisms through which members of an organization (agents) both create and sustain their view of the world - and create an image of themselves within the world (Smircich 1983) Other authors underline the importance of 'communication': for instance, Schall (1983) maintains that an organization is essentially "social interaction and interpretation", which ultimately are "communication activities".

The two terms ‘language’ and ‘communication’ often recur in OC-related literature, possibly with ‘communication’ occurring more often than ‘language’. The primacy of communication in comparison with language may be due to the long-standing tradition of considering language is a ‘tool’ for communication (see for instance Ruiz 1984; and for a critical view of such metaphor of Western origin, see Mühlhäusler 1995, p. 254). Besides such constructed relationship between the two notions, the prevalence of the attention to communication might be based on its broader realm, encompassing “verbalizations, vocalizations (nonword sounds, as well as rate, pitch, and tone), and nonverbal behaviors or cues (e.g., gestures, appearance, furnishings, spatial relationships, posture, etc.)” (Schall, 1983). Finally, an underlying presumed connection between good management and communication skills (Bargiela & Harris, 1997) may have influenced the prevailing attention or notion of communication, at the expense of the more technical discipline of linguistics in the management academic field.

b. Language, language policy and language service

In a situation of crisis, communication is undeniably of utmost importance. During the Covid-19 pandemic in China, miscommunication was declared “a threat to public health” (Shen, 2020, p.3). Public health experts investigating doctor-patient communication, recognise that miscommunication brought upon by linguistic barriers create potentially life-threatening situations for patients who are unable to express their symptoms in a second or foreign language (Dreisbach & Mendoza-Dreisbach, 2021). The relevance of crises in the contemporary world is such that a discipline about crisis communication has flourished, in particular since mid-1990s (Pratt 2012). In China, the activity (and the related scientific discipline) of “crisis communication”, even though it has its literal translation as *weiji goutong* 危机沟通, is more often referred to as “emergency language service” (*yingji yuyan fuwu* 应急语言服务 – (ELS)).

ELS in Chinese literature usually falls into the wider realm of language policies. Language policies may be defined as the collection of “the actual language practices of the members of the speech community [...], the values assigned by members of a speech community to each variety and variant and their beliefs about the importance of these values [and the] efforts by some members of a speech community who have or believe they have authority over other members to

modify their language practice” (Spolsky, 2012, p.5). Grossly put, language policies are measures related to language, enacted within society; these measures encompass those implemented during emergencies, i.e. whatever critical event affecting public interests. ELS in particular are the measures provided by a public entity to the benefit of the entire society (Kang Z. & Wang M. 2021). Literature mostly describes the activities falling into the category of ELS mainly as those based on the overcoming of interlinguistic barriers: specialised translation, as well as the compilation of multilingual information and the training of multilingual staff (Wang L. & Chen X. 2020; Zhang J. & Wu Y. 2020). Moreover, the actors of these intercourses are the public entity and society, with a unidirectional line where the former is the provider and the latter is the beneficiary (Teng Y. & Wang L. 2022). Sociolinguists have provided several descriptions of the features of ELS; among them, Wang L. & Chen X. (2020) propose that the nature of ELS must be effective, open, consistent, and even proactive and bias-free.

Methodology

In our systematic literature review (SLR), we selected the methodology proposed by Briner and Denyer (2012). Briner et al. (2009, p.27) posit that systematic literature reviews aim to “report as accurately as possible what is known and not known about the research question” addressed in the review. The selected approach is regarded as a highly effective approach in the area of organization and management studies, where different disciplines and perspectives are interwoven.

The Briner and Denyer (2012) method allows for the collection of multiple data, which gives researchers the flexibility to understand themes with coherence. The criteria require adherence to four main principles that ensure the rigour of the scientific method, namely a) organization, b) transparency, c) replicability and d) quality.

SLR must be conducted according to systems or methods specifically designed to address the research question of the review. For the purpose of transparency, the method followed must be clearly stated as to ensure other researchers the ability to effectively replicate the review. Lastly, the result must be synthesized into a structured and organized format, in relation to the research question for the purpose of replicability, credibility and relevance.

The principles put forward by the Briner and Denyer (2012) method translate into concrete research stages and steps that must be followed to conduct the SLR. The research team invested a

protracted period in 1) planning of the review (i.e. defining the research question/s and numerous pilot literature searches) which was complicated by the inter-disciplinary nature of the study as well as the multinational sources of data. This stage was followed by a 2) structured search and collation of material, whereafter the researchers 3) evaluated and sifted through the material. The final stages involved 4) analysing and synthesizing the information, and 5) presenting the findings.

Figure 1 demonstrates the phases of the literature review process, with the arrows demonstrating movement (shifting) of documents out or into synthesis.

Fig1.

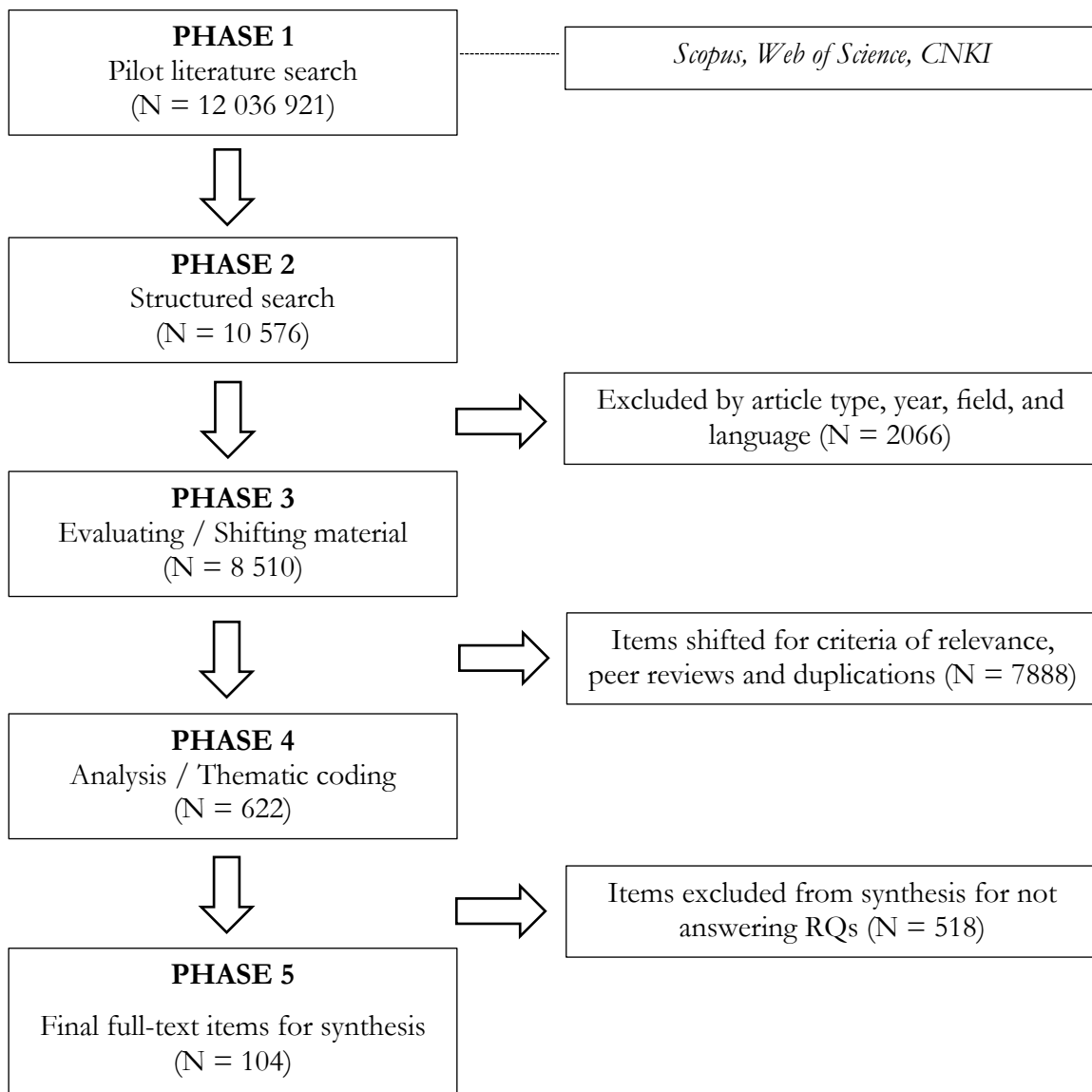


Figure 1: Phases of the literature review process (Briner & Denyer, 2012).

Data collection

During the *planning stage* (first phase), we developed and refined our research questions and piloted the search of databases using key terms. We conducted a title, abstract and keyword search from three main sources: Scopus, Web of Science and Chinese National Knowledge Infrastructure (CNKI).

We continued with the *structured research* (phase 2) in which we used a detailed structure combining a set of keywords relating to organizational culture in healthcare (block 1), and a set of keywords referring to language policy and language services (block 2). The searches were divided into Scopus and Web of Science firstly, then adapted for the CNKI search engine. With respect to the first block, we used “Organizational culture” OR “Organisational culture” OR “Corporate culture” OR “Corporate strategy” OR “Workplace culture” OR “Workplace strategy”, “Organizational cohesion” OR “Organisational cohesion” OR “Organizational strategy”, “Organisational strategy”. With respect to the second block, we used “Linguistics” OR “language” OR “communication” OR “language service” OR “language systems” OR “language policy”. For the purposed of context and period, the following was used: “healthcare” OR “health” OR “wellness” OR “public good” OR “covid-19” OR “coronavirus” OR “sars-cov2” OR “Emergency response” OR “Health emergency” OR “pandemic”. Equivalent or similar keywords were searched for in the Chinese language resources published in CNKI, in order to have a comparable corpus of texts. We confined our search to the period January 2020-March 2023, which would capture the organization culture and policies brought into the pandemic as well as how these were applied and altered in response to the pandemic. Due to the multi-disciplinary nature of the study, we included research from *economics, business, management, psychology, linguistics and health*. We only included peer reviewed articles, other reviews and book chapters. We excluded working papers, dissertations, and conference proceedings. This structured research resulted in a combined N = 8510 articles.

Data extraction and initial analysis

In the third phase of *evaluating/shifting material*, we evaluated the search results by initially applying the inclusion and exclusion criteria based on abstracts. Abstracts of the sourced material

were viewed in light of the scope of our research question. Two reviewers independently read through the abstracts to fully understand concepts presented, and shared the material to garner specialized expertise on the same body of work. The abstracts were screened for studies related to language, language policy and organizational cultural aspects as it relates to the context of the text. After selection of relevant abstracts (N=104), we proceeded to the fourth phase, i.e. analysis/thematic coding, by reading the articles. We used a structured approach to evaluate each contribution and this was shared on an Excel sheet and shared on regular intervals via an online drive. During the *final text synthesis* (phase 5) 104 articles were analysed.

Findings

The relationship of language service and OC

ELS is largely illustrated in the articles analyzed. The work provided by the Language services groups has been widely illustrated: groups, constituted by language experts of the first-tier universities of China, compiled a good number of phrasebooks and audio materials, both in foreign languages and in local dialects. The goal was to smoothen the communication between doctors, coming from all the areas of the country, and the patients, mostly those of Hubei province as well as foreigners living in bigger cities (Li Y. et al. 2020). Such work has called even more strongly for a proper general “National emergency language competence” (NELC), that is “the capacity to use language to cope with domestic and international public emergencies” (Li Y et al. 2020). In order to build a solid NELC, the State must take care of the four dimensions of ELS activities: it is to consider the phase of the crisis during which language intervention is implemented; it is relevant which type of language has to be employed (standard language, dialects, minority languages, as well as sign languages and major foreign languages); the intervention might have different tasks (information, comfort or monitoring). The fourth dimension are the non-linguistic resources needed: not only the State must possess and be able to employ promptly technologies to implement plans and corpora for building lexicons in several languages, the State must be prepared with a general capacity of mobilizing people and organization as well as with knowledge-related resources (plans and programs), which finally means to be endowed with the management capability to govern them all. Li X. & Gong Y. (2015)

in an older study have already affirmed the importance of the awareness of the critical role of language and of communication attitude towards patients (including the selection of the type of language to use), as well as a linguistic management by the hospital direction in order to enhance a good language environment. But literature under scrutiny did not show any consensus on the formal relationship of language service to OC, and the language service is constantly thought as a service to the patients and not to the primary benefit of the staff. This is consistent with international literature on cultural and language mediation in the healthcare sector: the language used in the doctor-patient relationship is the main object of attention of involved linguists, and whatever language policy proposed is in the view of the benefit of the patients and not also of the workers of a healthcare unit (Landuzzi et al., 2011).

The relationship of communication and OC

Literature more strictly involved in OC, make statements about the importance of communication, therefore communicative aspects of OC are more easily accessible and available. Yates et al. (2020) place communication as the first foundational core value in health units as a protective factor for staff toward a psychosocially safe work environment. Notably, a significant minority of contributions did not report any reference to theoretical aspects and definitions, and simply considered language, communication and platforms for interpersonal sharing as directly linked to the larger cultural work environment. For example, Seddighi et al. (2022) posit that poor communication policies as seen during the Covid-19 pandemic at both organizational and governmental levels serve to compound worker stress (for ‘self’, ‘family’ and ‘others’), and as such the potential to incur economic consequences. Kruskal and Shanafelt (2021) report that the recent pandemic highlighted within hierarchical organization cultures that inequality to information access exists, and that policies were called for to address effective language and communication in these cases.

According to our analysis, the majority of the collected contributions refer to a traditional organizational and corporate cultural view which allowed our team to organize the structures. Denison and Mishra (1995) suggest a four-quadrant system for understanding an organization’s culture archetypes and effectiveness, namely: adaptability, mission, responsiveness, and

consistency (Denison et al., 2012). These culture traits are grouped into an internal or external focus, or cultures that promote change and flexibility versus those that provide stability and give direction. We developed from here a very articulated framework that has the goal of the description of the communication characteristics of organisations and how it relates to the OC concepts.

Fig 2

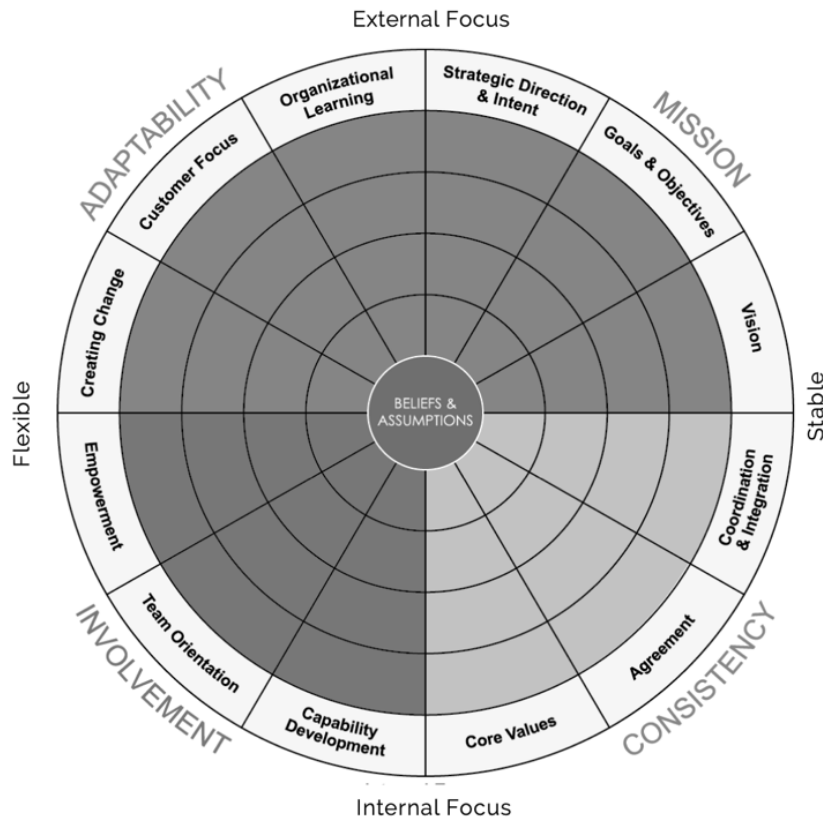


Figure 2: The original Denison framework of organizational culture. Source: adapted from Denison and Mishra (1995).

Our analysis of definitions and theories yielded four categories of communication use that align with the generally accepted organizational cultural groups, namely 1) *Supple* which forms a complementary fit with adaptability cultures, 2) *Stoic* which aligns with mission focused cultures, 3) *Stable* which is congruent with consistency cultures, and finally 4) *Standard* which aligns well with the modern view of responsive organisational cultures.

1. *Supple models of communication.* A number of the contributions refer, explicitly or implicitly, to the communication systems that complement the adaptability in organizational cultures. The communicative style in this category aim to cultivate innovation towards improved customer/patient service. Examples are found in shared discourse design and firm cultures that promote collaborative design of strategies.

Within healthcare, the codesign language principles on knowledge sharing platforms, are often found to positively impact safety for the providers and users alike (Yates et al., 2020). Communication that is ‘improved’ (Mehta et al., 2022) towards an authentic corporate culture, has an objectively noticeable effect on the working environment and group or team dynamics (Thomas & Suresh, 2023). Many scholars make reference to healthcare as a complex adaptive system, and hint at the the non-linear effect of language policies on diverse native patient populations as well as larger political influences, e.g. migration (Lu et al., 2019).

Hølge-Hazelton et al. (2021) describe the central role of communication in bringing about change in hierarchical corporate structures. Another group of scholars extended the importance of language in similar structures when attempts are made to reduce patient errors and promote patient-centeredness (Seddighi et al., 2022).

Table 1

SUPPLE (S1) communication characteristics	AUTHORS	
	Grasseni (2022)	Shared discourse promotes understanding.
	Yates et al. (2020)	Communication as core value to protect staff and users of the service.
	Mehta et al. (2022)	Improving communication can improve the environment.

Thomas & Suresh (2023)	'Transparent communication' for the purposes of team empowerment.
Fu et al. (2020)	Language and health policy alignment for the benefit of migrants during Covid-19.
Hølge-Hazelton et al. (2021)	Suggests means of re-orientating OC through collaborative, inclusive and participative processes.
Raposa et al. (2023)	During [Covid] event the stagnant organizational attributes were harmful to staff, and showed a decreased commitment to staff safety.
Triemstra et al. (2021)	Importance of OC to establish a learning culture, as protective factor during the pandemic.
Cheng et al. (2022)	Language and credibility is linked to turnover within environment.
Hancock & Minor (2021)	Innovative OC could identify pandemic as an opportunity and language could focus on caregiver wellbeing.
Hølge-Hazelton et al. (2021)	Language (and routines) are the means to change hierarchical structures in hospitals.

Seddighi et al. (2022)	Improvements in communication reduced errors and improved quality of care.
Wang (2020)	It is important to change the communication with the personnel from a simplified 'preaching' to a humanized form of persuasion.
Chen et al. (2020)	Considering that free media are not stoppable, hospital personnel has to be kind, respectful, and painstaking, because public opinion has a great influence on personnel.
Kang & Wang (2021)	ELS <i>lato sensu</i> : resources are social cultural values, <i>stricto sensu</i> are corpora and database for managing language.
Xu (2021)	Instruction in the form of games, discussions, and training to render the climate more cheerful and light-hearted.
Gong & Xue (2020)	Co-division of information is the tendency for coping with highly fast changeable situations, the main policy to stimulate workers.

**STOIC (S2)
communication
characteristics**

AUTHORS

Kruskal & Shanafelt (2021)	Hierarchies in communication policy influences access.
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Pandit (2021)	Clear communication with strategic intent – especially during a crisis.
Goldschmidt-Clermont (2020)	‘Prolific’ communication strategies to achieve agreement.
Bodomo et al. (2022)	Language policy has a place, is to be safeguarded and allows for innovation.
Cai & Mason (2022)	Communication should be correct and useful, rather than truthful. Succinct and clear language has utility.
Gao & Zhang (2021)	Authoritarian language is more efficient during emergencies.
Tan et al. (2021)	Authoritarian communication is most useful during multi-level negotiations.
Pandit (2021)	During crisis a clear directive and succinct communication within OC is foundation/bedrock.
Cai & Mason (2022)	Correct and useful message is better than truthful message.
Duckett & Munro (2022)	Trust in government garnered through communication style and credibility for the plan communicated and plan executed.
Gao & Zhang (2021)	Authoritarian rule is beneficial during emergencies – it enhances efficiency.

Tse & Li (2022)	State as foundational contributor to organizational culture is crucial to economic success and strategy.
Latif et al. (2021)	Language policy as the point of focus for changing large restrictive systems (e.g. HEI) for pharmacists.
Lü et al. (2022)	Compliance behaviour is greatly influenced by the tone of communication policy.
Huang (2020)	“Party is the root and the spirit of public firms”
Qu et al. (2020)	Timely, accurate, and effective disclosure of epidemic information to the public and popularization of epidemic prevention measures are extremely important, and news reports play an irreplaceable role.
Teng & Wang (2022)	Information must be available, accessible, acceptable and adaptable.

2. *Stoic language policies.* Several authors posit that hierarchies in communication policies are very common in the medical sector (Kruskal & Shanafelt, 2021), that these are further complicated when based in a broader authoritarian environment (Gao & Zhang, 2021). Tan et al. (2021) emphasise the importance of an authoritarian communication tone to navigate multi-level negotiations, and this compliments the view of authors that innovative cultures should safeguard their explorative perimeters through an immovable rule structure (Bodomo et al., 2022) to ensure patient safety.

Under these auspices, many authors promoted the efficiency of authoritarian cultures – especially during time-sensitive decision-making periods such as the event during the pandemic (Gao & Zhang, 2021; Pandit, 2021). The scholars describe the tone as succinct and clear (Cai & Mason, 2022), and immediately useful. Several contributions describe how the consistent use of this style over time garnered trust, especially when linked to credibility (Duckett & Munro, 2022). Conversely, scholars captured many examples of how credibility and trust are abruptly lost when the stoic language and actions are not aligned (e.g. corporate social responsibility projects not honoured), with dire consequences of staff buy-in and loss of motivation for quality care (Cheng et al., 2022).

3. *Stable forms of communication systems.* Several authors describe the systems, processes and structures to chronicle communication within consistency cultures. Building better communication systems (Kruskal & Shanafelt, 2021) most notably from the contributions examined, involves investment in protocol development (Mehta et al., 2022). A majority of scholars emphasise that a clearly communicated strategy, captured in the correct format can galvanise commitment by employees (Ramos-Estrada et al., 2021).

Many authors make clear connections between accurate information and accountable leadership (Min et al., 2019; Min et al., 2021), and the importance of this stability during crisis management (Pandit, 2021). Also described as steadfast organizational strategies, scholars laud these communication systems for their effect on employee commitment (Ramos-Estrada et al., 2021) as well as the citizens that they serve (Cai & Mason, 2022).

Fig 3.

The S4 system of communication practices alignment with organizational culture

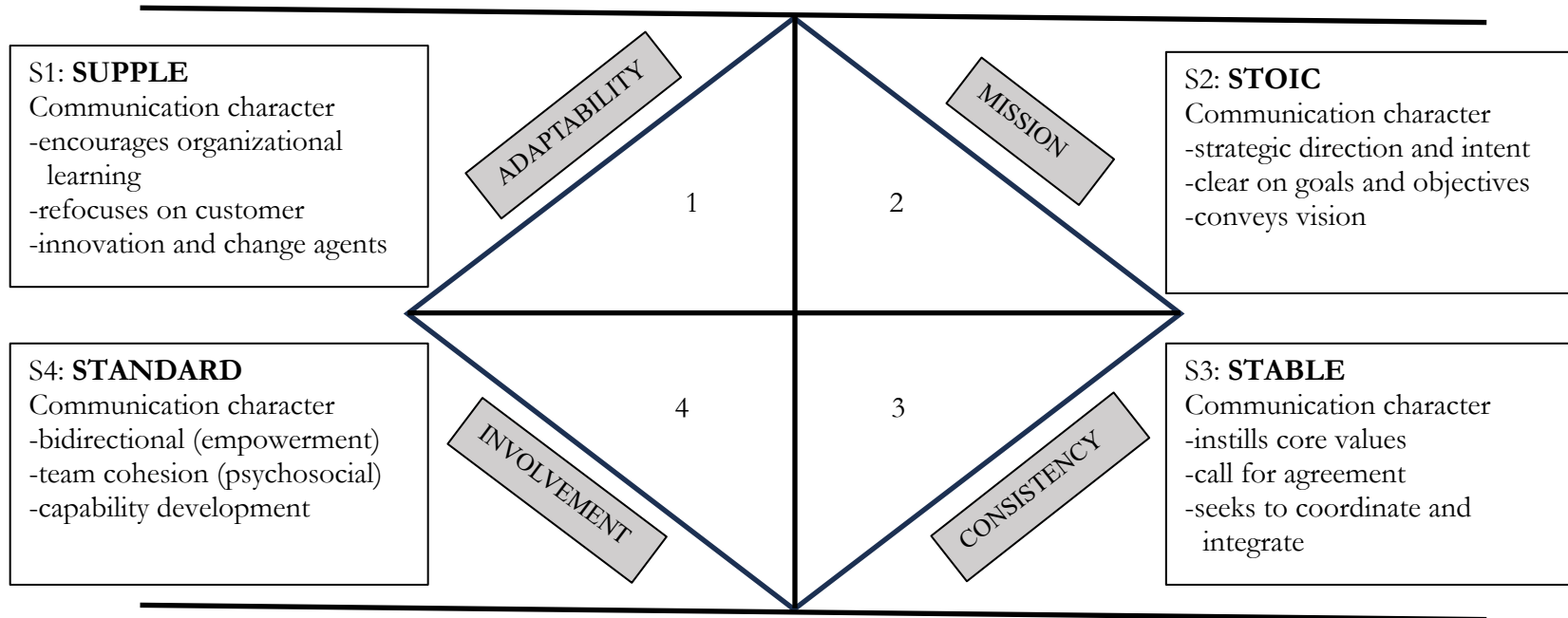


Figure 3: Language and communication characteristics aligned with organizational culture. Adapted from the Denison model.

4. *Standard forms and contemporary best practices.* Most authors refer to communication practices of responsive organizational cultures as the modern standard – especially within Western organizations (Raftery et al., 2022). Cheng et al. (2022) posit that the role of the organizational culture that health facilities cultivate should be aimed at establishing good physical and mental health for their employees.

During crisis management, and reflections on the recent pandemic, many scholars promote the establishment of a psychosocially safe environment as a protective factor against staff burnout (Raposa et al., 2023). Longitudinal studies performed throughout the entirety of the pandemic found communication practices that place psychologically safe environments of prime importance (Hunter et al., 2022), to mitigate workforce attrition and general intent to leave the organization (Squires et al., 2022).

Table 2

STABLE (S3) communication characteristics	AUTHORS	
	Kruskal & Shanafelt (2021)	Building better communication systems.
	Mehta et al. (2022)	Communication protocols could protect against personnel trauma.
	Min et al. (2021)	Accurate information and accountable leadership.
	Cai & Mason (2022)	Confidence resides in good communication systems.
	Pandit (2021)	A credible voice is comforting during a crisis. Addresses uncertainty.
	Ramos-Estrada et al. (2021)	A clearly communicated organizational strategy ‘galvanizes’ commitment by employees.

Stevens-Fabry (2021)	OC bolsters the ‘feeling’ of support at work (as felt by employees).
Cai & Mason (2022)	Having an interpretation framework for the government plan, is reassuring to citizens during uncertain times.
Gao & Zhang (2021)	Authoritarian influence on OC and corporate culture is significant and has a substantial effect on efficiency.
Li et al. (2022)	Leadership quality – through the culture that is created in organizations of Health – influenced health outcomes of small towns in China.
Tse & Li (2022)	Benefit of designing a corporate culture from state-employer-employee inputs in order to safeguard cultural heritage in China.
Hall et al. (2020)	OC and language influence the order within emergency responses (rotations, training, concern, etc.) and the quality of care.
Min et al. (2021)	Clear communication (captured in protocols) enhance safety for providers.
Huang (2020)	Good public servants abiding by the laws, act as a stable screw for the supply chain of goods, the pacesetter for the transformation of the risk in opportunity for the economy, and a

positive messenger for public opinion.

Hou & Zhang (2020)

CC may serve as the glue between Party departments and professional departments.

Zhu et al. (2021)

It is necessary to work on the construction of the 3 levels of material culture, rule culture and spiritual culture.

Xie et al. (2020)

If OC is recognized, trusted and abided by most of the workers, the sense of recognition to the organization arises, therefore OC influences organizational identification.

Zheng et al. (2020)

Communicative harmony among departments is critical. This is accomplished by a proper awareness of the complete situation of the hospital and a clear definition of the tasks of the departments.

**STANDARD (S4)
communication
characteristics**

AUTHORS

Seddighi et al. (2022)

Poor communication compounds the worker's stress.

Thomas & Suresh (2023)

Communication systems can empower team members.

Tan et al. (2021)	Enacting authoritarian strategies requires codesign techniques and negotiation with staff.
Cheng et al. (2022)	Importance of OC to establish good physical and mental wellbeing for employees.
Min et al. (2021)	“Positive organizational culture” through active communication techniques.
Raftery et al. (2022)	There is a distinction between “role culture” and “task culture”.
Raposa et al. (2023)	Lack of attention to language policy in OC results in burnout in certain sectors.
Seddighi et al. (2022)	Psychosocial climate can be improved by the language policy capture in the OC.
Thomas & Suresh (2023)	Learning cultures with ‘transparent communication’ structures are linked to resilience.
Cheng et al. (2022)	Buy-in and trust of employees is determined with how closely language aligns with actions (e.g. CSR outcomes).
Hancock & Minor (2021)	OC and language should be geared towards caregiver wellbeing.

Hunter et al. (2022)	Language policy was applied to improve psychological safety of junior doctors.
Kruskal & Shanafelt (2021)	Effective communication was found useful against staff burnout.
Raftery et al. (2022)	The crisis (i.e. Covid-19) was used to generate and share new ideas.
Raposa et al. (2023)	Intent to leave (i.e. attrition) was greatly influenced by language within OC.
Squires et al. (2022)	Improving communication policies mitigated workforce attrition.
Hou & Zhang (2020)	Leading to more dynamic, reform-driven firms, with higher levels of sense of belonging and identification by the employees.
Wang (2020)	This can help the sense of identification of the personnel with the firm.
Wang (2022)	A vertical bidirectional web-form of communication is needed to avoid loss in communication, by giving forms of communication for opinions and feedback, results in a better circulation of information.
Lie & Zhang (2022)	There is a correlation between nursing organizational culture and nurses' professional self-concept and work engagement, and nursing

organizational culture has a mediating role between nurses' professional self-concept and work engagement.

Teng & Weng (2022)

The principles of information must be immediateness, comprehensibility, transparency, trust, and bidirectionality.

Management implications

Clarity and credibility. Lack of clear communication leads to uncertainty, as seen in examples of poor Corporate Social Responsibility (CSR) activities (Cheng et al., 2022). CSR activities different to what was initially communicated have resulted in cynicism and distrust in their organization (Teng & Weng, 2022). When health staff feel less confident about their organization's CSR commitment, they are more likely to doubt their organization's CSR activities as socially responsible or that it addresses social problems. As a consequence, they develop distrust in their organization (Cheng et al., 2022) and the quality of their work and offering to the patient will suffer.

Consistency. Further examples of local leaders and the view of their career incentives contributed to their reluctance to adopt effective measures – important and potentially life-saving measures such as implementing lockdowns to combat the virus. Conflicting warnings from the nation's top leaders obstructed the local leaders' desires to trade public health for economic growth (Cheng et al., 2022). China's COVID-19 pandemic response included some essential elements of authoritarianism, particularly firm leadership, strong government intervention, and the implementation of authoritarian measures. This includes direct intervention by national leaders in crisis management, the decisive lockdown of Wuhan, the establishment of cross provincial cooperation mechanisms, city-wide nucleic acid testing, mandatory quarantine policy and use of health codes (Gao & Zhang 2021).

Work environment. The psychosocial safety climate (PSC), a core dimension of organizational culture, could be regarded as social information that directly influences the interpretation of

the working environment. This may result in ill-health presenteeism which was found to be a risk for productivity, employee health and well-being, and high absence rates or patterns (Liu et al., 2020).

Corporate culture (CC) in China, and in particular the CC of public firms (including public hospitals), is recommended to be unified with the culture of the Party, inasmuch as it might serve as the “glue” of the relations inside the firm (Wang 2021). The Chinese government and the Party started to include the notion of CC (*qiye wenhua* 企业文化) in its documents in the early 1990s, and the leading role of the Party in synthesizing CC and Party values was officially established in the mid 2000s (Hawes, 2012). No wonder then that in the period of COVID-19 many scholars credit the authoritarian government efficiency (Gao J. & Zhang P., 2021) or authoritarian leadership and communication characteristics (Tan X. et al., 2021) for the successes achieved during the pandemic. However, even though the political system is outside the scope of this paper, studying the leadership narrative about COVID-19 and investigating the supportive narrative with their effective actions (Cai & Mason, 2022) holds great value for the management scholar. Any country that was able to remain in lockdown for more than two years speaks to a unique relationship of the native society with the government, and could produce valuable lessons and novel insights into people’s trust in the central government’s ability to promote a healthy environment and provide protection for the community (Cai et al., 2020; Cai & Mason, 2022). Moreover, Chinese sources recommend that hospital culture (HC) may develop a bidirectional system of communication between leaders and staff, a management devoted to the wellness of the staff, and a sound system of rewards (Hu X. et al., 2019). In a situation of emergency, communication in a sanitary area among different providers of information must be timely, precise and effective in order to be authoritative; it must have the characteristics of availability, accessibility, acceptability and adaptability (Hu Y. et al., 2022).

Discussion

To arrive at an application in the health sector, we examined why extended lockdowns and acute organization strategies worked in China, and what we can learn from this. Moreover, whether the findings are indeed scalable to other sectors, and other vastly different cultures. Of similar importance are whether the burden is carried by organizational-level competencies or

individual-level competencies, and where these contribute to current academic knowledge. Lastly, what are the comparisons to governing theories, both in sinology, linguistics, management and healthcare management.

Organizational culture in the Western world, has re-orientated towards the aspirations of Industry 5.0 and its Healthcare 5.0 counterpart, which promotes a more human-centered leadership (Hølge-Hazelton et al., 2021). This focus on shared discourse (Grasseni, 2022) and inclusiveness is aimed at improving the healthcare worker's psychosocial safety (Hunter et al., 2022). Establishing a culture of wellness and support (Lie et al., 2021) will enhance long-term resilience of the organization at all levels and is understandably become the gold standard.

When, however, the environment becomes volatile and chaotic (i.e. a VUCA environment) and crisis management is needed, pre-emptive investments in instructive elements of the organizational culture become more important (Pandit, 2021). During these instances, engagements should include clarity in the internal communication as well as those conveyed to partnerships. The modern employee (including the modern healthcare worker) criticizes the organization that remain static during crisis, and the modern organization believes it should adapt/change quickly and apply (or at least demonstrate) their dynamic capabilities and agility (Dollard & Bailey, 2021).

In China, it is thought that the content of whatever culture (*wenhua* 文化), may it be generally OC, CC, or culture of different groups of workers (i.e. doctors, nurses, logistics staff), and the awareness (*yishi* 意识) of the relevant culture or identification (*rentong* 认同) to that group, must be imbued with the content provided by the Party (Zhang, 2020). The stability that is necessary to face the worst emergencies must be provided by the guidance of the leaders of the Party (Hou F. & Zhang Z., 2020). As long as the undertaker of the guidance is unquestioned, the characteristics of the leader are to be promoted. Among the duties of the leader, there is the production of a clear, understandable and correct communication.

A stable guidance nonetheless does not exclude a balanced management of a work unit (such as the hospital). In a human-centric (*yi ren wei ben* 以人为本) organization of a hospital, the balanced management include sharing information, bidirectional communication from both levels of the staff, balanced distribution of the duties, and a reinforced system of rewards.

Conclusion

As policies are developed and training of responders are launched, the importance of language practices in public firms, among which hospitals are counted and may therefore be considered services, directly influence the interpretation of organizational culture design. Awareness of language services, included in a more general hospital language policy, should be priorities in the three phases of language management, namely: 1) tracing design from inception to implementation, 2) reading trends and optimising [future] responses, and 3) responding to worrying trends in job motivation and job leaving/absenteeism challenges. It is highly applicable to conduct research on language life, on communication and on language services provided (and language policies implemented) in healthcare work units during the last years of the pandemic, in order to learn the lessons, take the best practices, and propose them for [near-] future emergency and disaster management events in China and abroad.

Practical application and implications

Situated in the 3rd and 4th quadrant of the Denison framework, the emergency response during the pandemic – and the communication techniques as used in the makeshift hospitals of Leishenshan and Huoshenshan – was predominantly clear, direct, succinct, and focused on the ‘mission at hand’. In these quadrants, the linguistic expressions are rich in strategic intent (Pandit, 2021). When the message and the information are clear, it results in better psychosocial safety for healthcare personnel and improves the efficiency of the organization.

In Western healthcare systems, inclusiveness and collaborative organizational cultures are celebrated as the gold standard for leadership and communication policies. This stands in contrast to the preferred stability that is interpreted “better and positive” in the Chinese organizations. However, when the working environment changes towards uncertainty (i.e. VUCA) the rare skills of assertive communication will support the transition in both Western and Chinese settings. This technique, however, is not intuitive or naturally aligned with all types of leadership and should be practiced, even if only during emergency response exercises, trainings or drills.

The effects of clear and succinct communication have been found to have improved/positive association on staff retention across all settings. Staff absenteeism and other presenteeism markers show a proclivity for these communication techniques. Highly volatile environments and change management situations can benefit from examining these findings.

Limitations: A literature review across two platforms, with culturally different approaches to information sharing was a challenge, and means to address the approach have been investigated for the subsequent expansion of the study. The multi-disciplinary nature of the research design provides the opportunity for novel insight on either side of the collaboration but poses some challenges in both fields of application. Accounting for the national cultural differences will be addressed in the larger inductive process.

Future research: The health emergency response organization (HERO) project has been developed to gain a deeper understanding of the factors that interacted with organizational culture during the response at these sites. Capturing the elements that endured in the aftermath of the pandemic could prove valuable to contemporary organizations.

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Conclusion

Results narrative

We shall not cease from exploration, and
the end of all our exploring,
will be to arrive where we started,
and know the place for the first time.

T. S. Eliot, The Little Gidding, 1942.

This thesis is the result of a research path that originated from a wish to study a phenomenon that, above (and together with) all the other phenomena connected to organizational performance, connects people and their work.

Organizational culture, and our experience of the environment we find ourselves in when at work, is strongly associated with the level of effort we as employees apply – even intuitively, regardless of the conventional performance metrics used. The issue that this thesis is concerned with, is navigating change of the organization – whether by violent disruption, a planned merger or leadership change while still tasked with ensuring a high quality of care to those we serve. One of the areas that challenge our ability to deal with change, while delivering care, is in UHC. Achieving the ideals of universal health coverage, will invariably require partnerships with other institutions. An understanding of our own working culture is required before attempting to understand the habits and routines of those we wish to partner with.

Transformations – brought about by partnering - involving work modalities and processes, deriving from upheavals such as those caused by the Covid-19 pandemic and financial crises, placed management scholars in front of new challenges. Amongst these challenges are the languishing healthcare workers and employees of health facilities that should be valued and supported to flourish by our efforts (Islam & Sanderson, 2022; Winsløw et al., 2009).

The extant literature posit limits to comprehensive theories, and admittedly these theories straddle numerous fields such as work and organizational psychology, strategic management and health management. This research is driven by a wish to better understand these dilemmas and take a pluralistic view to understand organizational culture and provide a frame to navigate the complexities contained within. By no means does this propose an exhaustive formula, but particular attention has been paid to demonstrate novel and adaptable views that could prove useful to the manager especially when planning transformational change.

The constructs used within each chapter suggest considerations at various levels of the organization. In Chapter 1, the research focusses on the construct of psychological safety and its influence on team dynamics and team performance. Through an experimental design, a tool is validated to measure psychological safety, and evidence is captured that demonstrates this construct can be optimized by simple and practical means. In Chapter 2, the construct of resilience is investigated as an organizational trait. Here, we attempt to disentangle the individual-level competencies from the

organizational-level aspects of resilience, by applying a grounded theory approach to our data gathering. Expansion on an existing context-specific resilience framework was possible by aligning the firm's resilience goals to broader operational excellence ideals. This led to an understanding of the means to align individual strategic consensus with organizational strategic goals of operational excellence. The aim in Chapter 3 was to capture the efforts during a change management campaign and demonstrate the central role that routines play in developing a new organizational culture. Originally conceived as an action research project, the methodology was adapted given the events that followed when a wildfire forced an evacuation of the facility. A teaching case methodology is applied to make these LEAN techniques accessible to a broader and more junior academic audience. The capacity that the members of the facility develop when their acquired knowledge through routines increase, is demonstrated during the shock of the natural disaster and by means of the collective innovation applied during their response efforts. The design of the teaching case ensures constant development of new perspectives and critical questioning, and the exercises would allow the course presenter to elicit an understanding of the student's current job challenges. This design would allow for an interactive and more engaging teaching experience, and potentially result in greater impact.

Eventually, in Chapter 4 a systematic literature review is applied to an area of the strategic management process that connects the higher echelon of management to the employees. The use of language and communication strategies to share the leadership mission statement to a broader audience in the organization is studied in an unlikely environment – authoritarian socialist China. Using the Wuhan makeshift hospitals as a case study, the communication characteristics that allowed other facilities and their communities to remain in lockdown for nearly 2 years are investigated and compared to the Western standard using a newly developed framework. The aim here was to provide insights into management techniques that were able to construct, organize, and render a new health facility (i.e. Huoshenshan and Leishenshan hospitals) functional within 9 and 12 days respectively. This work demonstrates the tremendous impact of the communication characteristics managers choose to make their strategies understood, especially during periods of increased volatility and uncertainty.

It will thus be clear why I chose such a pluralistic view and a critical perspective on organizational culture. The research reported in this thesis is a product of this plurality,

taking into account the context of resource-constrained environments as well as providing a means to support and value the healthcare providers.

This research generates contextual importance in offering a contribution that can spur further initiatives to maintain high quality of care through periods of transformational change – even beyond the health sector. In order to do so, this closing section will aim to summarise the main points of the research in an attempt to provide a point of reflection – a result narrative – that opens new windows of exploration on how the organization is seen and moulded.

How we got here

In order to shed light on the new research possibilities that are opened up by this work, as well as its limitations, it is fundamental to provide an overview of this contribution and the chosen methodologies.

The starting point was the adoption of a critical perspective on organizational culture and providing conceptual clarification concerning the subject matter. In addition to methodological rigour, the management scholar should identify in this thesis a structure that allows for adaptation and malleability to context. Taking a critical perspective takes aim at an expansion on commonly known mainstream practices and methodologies, and proposes a reflexive knowledge on the object of study. Moreover, the goal is to make the knowledge accessible to a broader audience, and for diverse management styles to find resonance with the contributions.

With regards to methodology, a critical perspective requires pluralism: from the descriptive and conceptual approach (Introduction), an experimental approach as in Chapter 1, the grounded theory approach that expands on resilience theories in Chapter 2, and the teaching case study intended to include a junior research audience in Chapter 3. A systematic literature review in Chapter 4 on language policies in Chinese health systems includes another contrarian and interdisciplinary perspective, thanks in large part to colleagues in linguistics that were willing to collaborate. The pluralism obtained from peering through these different lenses has resulted in an appreciation of the potential that remains, to expand on these themes, especially through interdisciplinary collaboration.

The levels of the organization proposed in this thesis originated both from the findings in the studies (e.g. the explicit reference to levels by the participants in Chapter 2), but should also awaken an intuitive understanding in the experienced manager.

Where to from here

Organizational culture of healthcare institutions concerns the healthcare user, the provider, hospital staff and support teams, and the management teams – both operational and strategic. It is a term that envelops the individual, their work as well as the social context. The chapters in this thesis aim to be representative of as many of these levels, given the allotted space. The conceptual, empirical and reflexive mapping should be useful already, but we will attempt to offer a summary of some implications and some ideas on emerging models for the field of strategic management and organizational behaviour.

As discussed before, the first construct that was examined in Chapter 1 was psychological safety in healthcare team dynamics. Its primacy was established through the multi-disciplinary teams' close proximity to patient care, and the potential direct impact on patient experience and health outcomes. The construct has remained important and prevalent in subsequent literature but has been expanded to *psychosocial* safety - which has generalized the social context and has a much broader view of the importance of the environment. Later studies (i.e. Chapter 4) have been able to absorb this expansion.

The findings that emerged from the grounded theory approach in Chapter 2, greatly assisted in an alignment of individual-level attributes to that of the organization. However, subsequent development of resilience scales – that were refined during and after the Covid-19 pandemic – will assist greatly in developing a deeper understanding of resilience in this context, especially adding a quantitative foundation. Follow-up investigations post-pandemic will provide a richer understanding of the sustainability of resilience, especially in a multi-national manufacturing company such as this where a baseline assessment now exists.

Chapter 3 utilizes a teaching case format, designed for implementation and careful notation of new findings. Although the original design is for an Anglo-Saxon, master's level audience, a possible expansion could be made to cater to broader audiences. This work could also benefit from follow-up on the sustainability of the LEAN methods applied at the institution.

Chapter 4 is the systematic literature review foundation of a larger study which seeks to gather qualitative data from the health personnel that served in these makeshift hospital. This ambitious project would, if it succeeds in its aims, produce invaluable insights into the understanding of organizational culture, especially during such a global

event.

Critical limitation and reflections

Although most studies have been performed in the health sector in South Africa, there are generalizable management concepts that could prove useful to other sectors and other contexts. The constructs and themes that were investigated within the different levels of the organization are by no means restricted to that specific tier or group, but is intended to provide the academic community with an opportunity for critical reflection.

Much of the work is multi-disciplinary in nature and should reflect the complexity of organizational behaviour – especially in complex adaptive systems. This dissertation has made mere inroads into organisational culture, and if nothing else advocates for inter-disciplinary collaboration.

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