An adaptive organisational leadership framework through systems thinking

Khalid Abukalusa

Department of Engineering and Technology Management, University of Pretoria Faculty of Engineering Built Environment and IT, Pretoria, South Africa

Rudolph Oosthuizen*

Department of Engineering and Technology Management, University of Pretoria Faculty of Engineering Built Environment and IT, Pretoria, South Africa

*Corresponding author: Rudolph Oosthuizen can be contacted at: rudolph.oosthuizen@up.ac.za

Abstract

Purpose: The purpose of this study is to present an adaptive organisational leadership framework using systems thinking (ST) to address challenges within volatility, uncertainty, complexity and ambiguity (VUCA) environments. The framework is intended to guide leaders in improving organisational adaptability and resilience.

Design/methodology/approach: A systematic literature review was conducted alongside qualitative interviews with 16 experienced leaders from various sectors. A semi-structured interview format ensured robust validation of the proposed framework. The synthesis of primary and secondary data identified critical elements for effective adaptive leadership in a VUCA context.

Findings: The adaptive leadership framework consists of three core components: the leader, the followers and the organisational context. ST, future thinking, mental models and adaptive change management form the structural basis of the framework. Interviews with industry experts highlighted mental models' critical role in adaptive change, highlighting their importance for decision-making. The findings demonstrate the framework's potential for enhancing strategic responses to complex challenges.

Practical implications: The framework provides practical guidance for contemporary leaders, helping them to foster a culture of adaptability within their organisations to manage complex situations better.
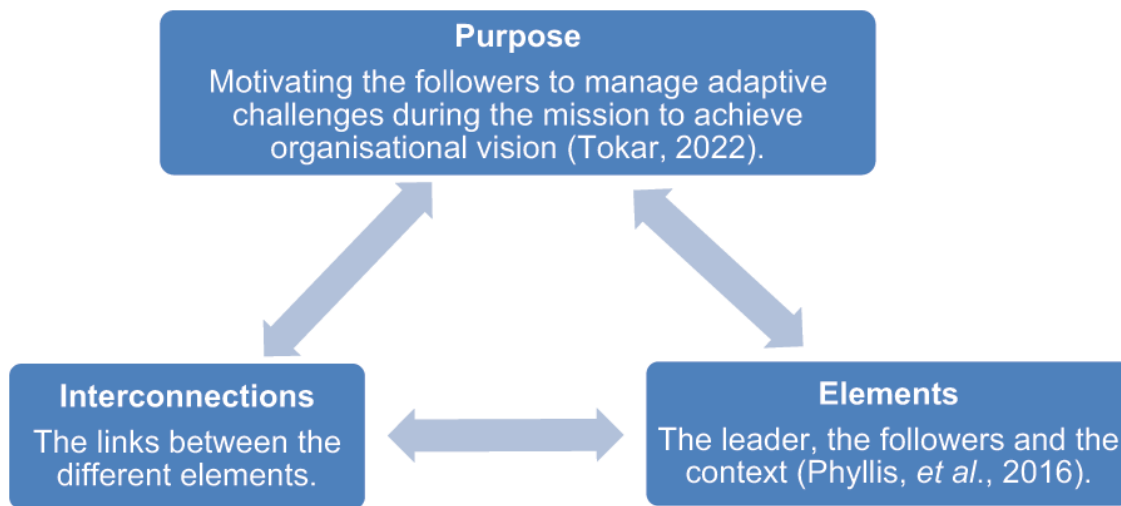
Originality/value: This research introduces a novel framework integrating adaptive leadership qualities with ST principles. A systemigram illustrates how interconnected elements empower leaders to navigate dynamic environments effectively. The framework addresses current leadership model gaps by promoting resilience and agility.

Keywords: Adaptive leadership, Systems thinking, Future thinking, Adaptive change management, VUCA

1. Introduction

Change is an inherent aspect of growth. Today, organisations face rapid and often disruptive shifts driven by economic, social and political forces. The volatility, uncertainty, complexity and ambiguity (VUCA) environment introduces a complex array of challenges that demand a shift from traditional leadership models rooted in rigid hierarchies of the early 20th century towards more adaptive approaches (Botha, 2018). Systems thinking (ST) is crucial in enabling leaders to understand adaptive challenges and their interconnections, thus fostering effective solutions.

A system is defined by its purpose, components and interrelationships (Arnold and Wade, 2015). Leadership can be understood as a system comprising the leader, the followers and the organisational context (Phyllis *et al.*, 2016). Figure 1 demonstrates this systemic interpretation of leadership, aligning with Arnold and Wade's definition. By applying ST, leaders can design frameworks that address adaptive challenges through a comprehensive understanding of leadership dynamics.

Purpose
Motivating the followers to manage adaptive challenges during the mission to achieve organisational vision (Tokar, 2022).

Interconnections
The links between the different elements.

Elements
The leader, the followers and the context (Phyllis, *et al.*, 2016).

Source: Authors' own work

Figure 1. Leadership as a system

ST encompasses a suite of analytical skills that enhance one's ability to identify and comprehend systems, predict their behaviour and implement changes to achieve desired outcomes (Arnold and Wade, 2015). Adaptive leadership enables leaders to evolve continuously, responding to the changing needs of their followers to establish a dynamic relationship between the leader, the followers and the business environment (Heifetz *et al.*, 2009).

Drastic changes affect organisational contexts, creating adaptive challenges that demand a holistic leadership approach. An adaptive leadership framework, informed by ST, is essential for all stakeholders in the business ecosystem. By fostering an adaptive organisational culture, leaders can align followers with organisational goals, promote economic growth and contribute to societal well-being.

The primary objective of this research is to develop a leadership framework tailored to the fast-evolving business landscape, leveraging ST principles. This objective is addressed through the following research questions:

>*RQ1.* How can an adaptive organisational leadership framework be created through systems thinking for a VUCA environment?
>*RQ2.* What are the elements of an adaptive leadership framework and their relationships?
>*RQ3.* How can systems thinking address the leadership challenges of a VUCA environment?

To answer these questions, a systematic literature review (SLR) is presented in Section 2, drawing insights from 32 sources to develop a conceptual framework outlined in Section 3. The research methodology, encompassing both secondary and primary data, is detailed in Section 4. The findings are discussed in Section 5, addressing the research questions. Section 6 concludes with recommendations for future research.

2. Systematic literature review

The literature review includes both a theoretical foundation and an SLR. The theoretical foundation clarifies key terms and principles, while the SLR synthesises data from various sources to develop the conceptual adaptive leadership framework.

2.1 Adaptive leader

Adaptive leaders adopt specific principles and behaviours to navigate challenges effectively.

2.1.1 Influencing the followers to embrace adaptive change.

Adaptive leadership requires observing challenges from multiple perspectives before interpreting and intervening (Heifetz *et al.*, 2009). Leaders must foster an environment that encourages open communication, enabling followers to engage in adaptive actions (Northouse, 2019).

2.1.2 Empowering followers through autonomy.

Northouse (2019) and Heifetz *et al.* (2009) emphasise giving knowledgeable followers responsibility and autonomy to address challenges. Cristina *et al.* (2022) highlight the status, certainty, autonomy, relatedness, fairness model as a framework for enhancing follower engagement and empowerment. Balanced power dynamics promote co-creation and shared responsibility in addressing complex environmental challenges (Herbst, 2022).

2.1.3 Cultivating agility and resilience.

According to Francis (2020), leaders enable agility in their organisation through effective integrations, quick decision-making, exploiting opportunities and maintaining effective communication. Cristina *et al.* (2022) indicated a crisis management approach through developing capabilities via resilience and agility. An agile organisation enhances its resilience to bounce back from an impact by resisting, recovering and adapting (Postma and Yeoman, 2020). According to Klockner (2017), mindfulness is the anchor of resilience. Leaders need to

create a mindful organisation by leading their followers through a culture shift, handling failures, managing challenges and empowering them.

2.1.4 Maintaining disciplined attention.

Disciplined attention to challenges and change processes is a cornerstone of adaptive leadership (Heifetz *et al.*, 2009). Leaders must create structured environments that guide diverse teams towards achieving shared objectives.

2.1.5 Adaptive leader qualities.

Leaders are possessive of many qualities. However, some qualities are more compatible with adaptive leadership. The qualities below are deemed to complement the objective of an adaptive leader:

- *Identify as a system*. Herbst (2022) indicates that identity for a leader is crucial to ensure that they do not lose themselves in the details during VUCA challenges. Leaders need to identify themselves as a system by accepting different qualities and acknowledging the relationships between the qualities. Leaders need to examine their values and surrounding relationships, uncover their shortfalls, inspire themselves, influence followers, understand their role and establish the authority and purpose of their journey to an adaptive organisation.
- *Self-balance*. The leader needs to balance the triad of heart, head and hands. Leaders need to centre themselves in the middle of the three elements of affect and emotions (heart), cognition and rationality (head) and behaviour and conation (hands). The triad requires an apex of direction for the leader to provide the context with emotional capacity, resilience, agility, effective communication and open-mindedness (Uys and Webber-Youngman, 2020).
- *Emotional intelligence*. Leaders need to possess the ability to connect organisational change to the values of stakeholders, predict the reluctant followers and show emotional intelligence to influence and empower, orchestrate conflict, have patience for change processes, admit mistakes, reconfigure the strategy, take risks and proactively find opportunities (Heifetz, *et al.*, 2009).
- *Promoting support structures*. Being adaptive needs the capacity for harsh criticism, failure and humble success (Heifetz *et al.*, 2009). Therefore, leaders need to have their personal support networks and self-sanctuaries to renew their position after a shock.
- *Complementing qualities*. According to Fleming and Millar (2019), leadership qualities needed during complexity are resilience and agility, vision alignment, ST, marketing, inspiration, continuous improvement and stakeholder cooperation. Bashir (2021) highlights awareness, ethical mindset, emotional agility, big thinking, positivity, creativity, ST and adaptive intelligence. The various qualities would complement the principles of adaptive leadership.

Leaders possess various qualities, but certain traits are particularly well-suited to leadership in a VUCA environment. These qualities enable leaders to navigate the complexities and challenges inherent in volatile, uncertain, complex and ambiguous situations. Essential qualities of an adaptive leader include:

- *Identifying as a system*: Herbst (2022) highlights the importance of leaders identifying themselves as a system, which helps them avoid becoming lost in the details of complex

challenges. This involves understanding and acknowledging the interconnections between their qualities and their relationships with others. Leaders can introspect on their values and the dynamics around them, uncover their limitations, inspire themselves, influence followers, comprehend their roles and define the authority and purpose guiding their journey towards creating an adaptive organisation.

- *Self-balance*: An adaptive leader must maintain balance across three key dimensions: heart, head and hands. This triad represents affective and emotional aspects (heart), cognitive and rational elements (head) and behaviour or action (hands). A leader's ability to balance these elements is crucial for fostering resilience, agility, effective communication and open-mindedness (Uys and Webber-Youngman, 2020). This balance serves as the direction necessary for providing context and support to the team.
- *Emotional intelligence*: Leaders have to possess emotional intelligence to align organisational change with stakeholders' values, predict follower reluctance and influence and empower others during transitions. Heifetz *et al.* (2009) explain that leaders must be able to orchestrate conflicts, exercise patience through change processes, admit mistakes, reconfigure strategies, take risks and proactively seek opportunities. Emotional intelligence is vital for empowering followers and creating trust, especially in high-stress situations where change is constant.
- *Promoting support structures*: Adaptive leadership requires the ability to handle criticism, failure and success with humility. According to Heifetz *et al.* (2009), leaders must develop personal support networks and self-sanctuaries to help them recover from setbacks and maintain their adaptive mindset. These support structures allow leaders to renew themselves and remain grounded when navigating the challenges of a VUCA environment.
- *Complementary qualities*: Several qualities complement the principles of adaptive leadership. Fleming and Millar (2019) emphasise resilience, agility, vision alignment, ST, marketing, inspiration, continuous improvement and stakeholder cooperation as critical to leadership during challenging conditions. Bashir (2021) further underscores the importance of awareness, an ethical mindset, emotional agility, big thinking, positivity, creativity, ST and adaptive intelligence. These diverse qualities contribute to leadership adaptability and ensure the organisation can respond effectively to changing conditions.

2.2 The followers

Leaders are crucial in guiding followers through adaptive change in a VUCA environment. The success of this change process relies heavily on followers' trust and belief in their leader's vision. As adaptive challenges often stress followers, leaders must provide a supportive and nurturing environment. According to Fleming and Millar (2019), followers are more likely to embrace adaptive change when they trust their leaders and align with their vision. Furthermore, leaders have to be present, compassionate, accepting and healing throughout the adaptive process.

Burrell *et al.* (2021) suggest that followers must align fully with the organisational vision, which can be achieved through well-designed measurement systems, rewards and empowerment strategies. Waller *et al.* (2017) stress that understanding the psychological and hormonal aspects behind reward systems is crucial in fostering follower productivity, promotion, engagement, agility, resilience and collaboration. Maran *et al.* (2022) reinforce the importance of autonomy and empowerment in encouraging followers to engage with the organisation's strategic goals, ensuring their actions align with the broader vision.

Mellner *et al.* (2022) highlight the need for leaders to manage stress effectively to sustain followers' work-life balance. Mindfulness is crucial in achieving this balance, as it helps followers manage job demands, psychological detachment, sustainability and healthy boundaries. In the face of complex challenges, mindfulness enhances followers' capacity to navigate complex emotional and cognitive challenges, ultimately contributing to the overall success of the adaptive change process.

2.3 The context

The VUCA environment is now a defining characteristic of contemporary organisational contexts. Taskan *et al.* (2022) provide a conceptual framework that clarifies the individual components, offering insights into how these elements interrelate. Understanding these nuances is vital for leaders seeking to apply adaptive strategies effectively. By identifying the specific impacts of each component on decision-making and organisational dynamics, leaders can create structured foundations for leadership in complex, unpredictable environments.

VUCA challenges often manifest as unexpected disruptions that challenge existing business strategies. Figure 2, adapted from Bennett and Lemoine (2014), visually categorises unfamiliar events on a grid that measures the predictability and knowledge associated with each element. This framework aids leaders in making informed decisions, allowing them to anticipate and respond to emerging challenges.
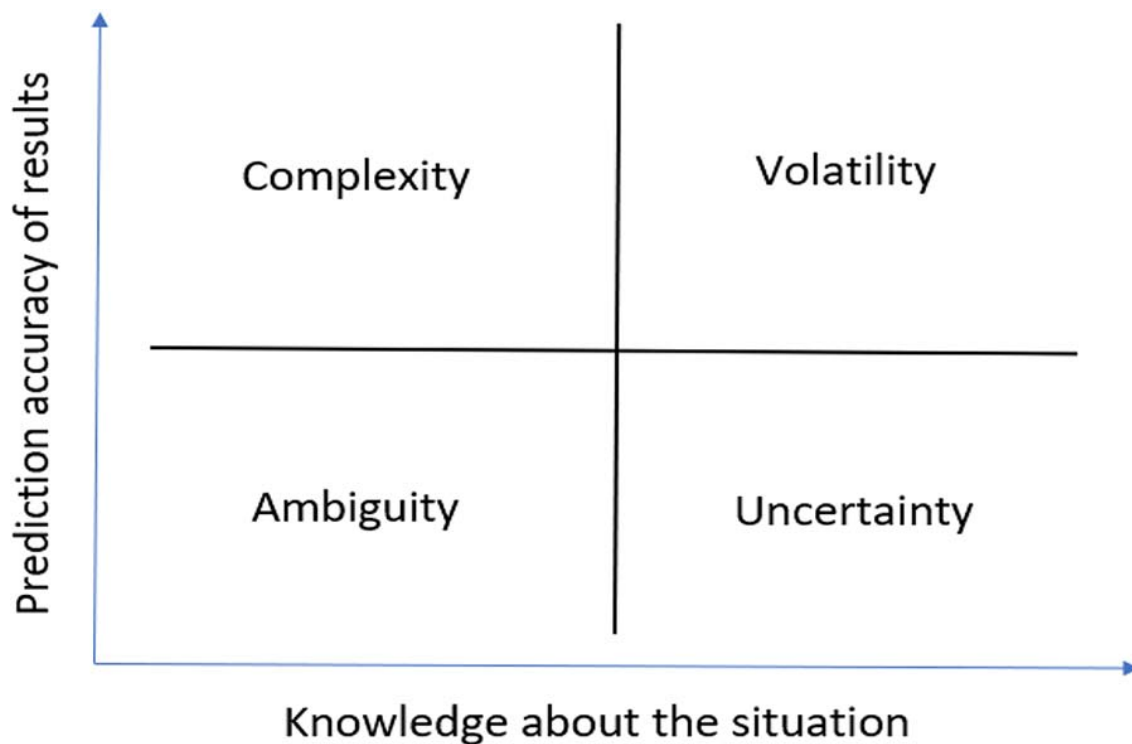
Source: Adapted from Bennett and Lemoine (2014)

Figure 2. A guide to VUCA events

The contemporary trend in organisational design emphasises less rigid control and more flexibility and creativity, which are essential to responding to VUCA events (Johnson-Kanda and Yawson, 2018). Leaders today must function within a "new normal" environment characterised by continuous change, driven by both external and internal forces (Fleming and Millar, 2019). In the past, the lifespan of an S&P 500 company was approximately 60 years, but in today's complex world, it has shrunk to just 20 years (Pregmark, 2022).

As a result of these shifts, leaders must possess a range of skills to manage rapid change, including the ability to convey purpose, build trust and foster positive emotional connections within their teams. Flexibility and adaptability are paramount as organisations must continuously adjust to the changing environment to remain competitive.

The context of adaptive leadership is ultimately about understanding the organisation and its environment. Moen (2017) suggests that an organisation consists of structure, human resources, politics and symbolism. Leaders need to fully comprehend how these elements are interconnected to implement effective leadership strategies in a VUCA business environment. A holistic view of the organisation enables leaders to manage adaptive change processes while maintaining stability and ensuring long-term success.

2.4 Key principles

The fundamental principles underpinning adaptive leadership are designed to guide leaders in addressing the complexities of a complex environment. These principles help leaders steer the framework towards its objective: enabling organisations to navigate and thrive amid uncertainty, change and challenge.

2.4.1 Systems thinking.

ST is a foundational principle in adaptive leadership, facilitating the leader's ability to navigate the complexities of adaptive challenges. Heifetz *et al.* (2009) and Northouse (2019) emphasise that effective leadership in a modern world requires a "balcony" perspective, a broad, birds-eye view of the situation. This allows leaders to identify the elements at play, their relationships and the context in which they operate. Viewing challenges from this higher vantage point ensures that leaders can understand how different factors interact within the system, helping identify adaptive challenges and opportunities for change.
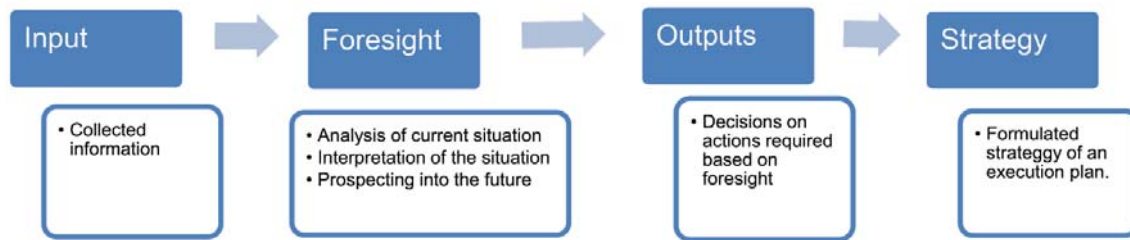
Johnson-Kanda and Yawson (2018) further argue that adaptive challenges inherently involve ST, which supports leaders in testing strategies and learning from challenges due to their nonlinear nature. The ST approach includes conceptual modelling, which allows leaders to understand and manage the complexities of adaptive situations. After identifying the key elements, system analysis can be used to develop solutions and inform strategic actions.

For adaptive leadership to be effective, ST must be integrated into the leadership process. Davis (2015) explains that leaders use ST to discover, frame and act, which aligns with Heifetz *et al.* (2009)'s steps of observing, interpreting and intervening, as well as Alexander *et al.*'s (2018) probe, sense, act method. This approach allows leaders to navigate the adaptive challenge while maintaining a holistic view of its interconnected components, ensuring more effective responses.

2.4.2 Future thinking.

Future thinking (FT) is a crucial component of adaptive leadership, helping leaders maintain a strategic vision for the organisation in the face of uncertainty. This integrated approach considers potential opportunities across four levels: possible, plausible, probable and preferred futures (Botha, 2018). Figure 3 illustrates the holistic stages of FT, starting from information input, progressing through analysis and foresight and culminating in decision-making and strategy adjustment for execution (Voros, 2003).

FT allows leaders to remain agile and prepared, anticipating possible outcomes and adjusting their strategies accordingly. By incorporating ST, adaptive leaders can analyse the interconnected factors influencing the future, enabling them to make more informed decisions that align with a preferred future vision. This approach allows leaders to manage the present with a clear direction towards the future, ensuring that the organisation remains adaptable and resilient in the face of ongoing challenges.

Input
- Collected information

Foresight
- Analysis of current situation
- Interpretation of the situation
- Prospecting into the future

Outputs
- Decisions on actions required based on foresight

Strategy
- Formulated strateggy of an execution plan.

Source: Adapted from Voros (2003)

Figure 3. Foresight guide

2.4.3 Mental models.

Mental models are the underlying assumptions, beliefs, values and philosophies that shape an organisation's understanding of reality. These implicit models are integral to ST and are pivotal in addressing adaptive challenges (Meritt, 2022). Mental models serve as the roots of behaviour, influencing patterns that ultimately give rise to observable events. Adaptive leaders focus on identifying and understanding these mental models to guide change effectively.

These mental models are dynamic and can evolve, especially as organisational needs shift in response to changing environments. The mental models stakeholders hold, ranging from cultural and political to infrastructural and regulatory, must be aligned to form a unified vision and execution plan. Leaders must work to reshape and refine these mental models to support adaptive change, ensuring that the organisation's collective beliefs and values are in harmony with its goals.

Mental model thinking is essential for adaptive leaders who seek to resolve complex challenges and guide their organisations towards a more adaptable and responsive future. Leaders need to pay attention to the events arising from mental models and work to adapt the organisation's implicit beliefs to foster sustainable change.

2.4.4 Adaptive change management.

Effective adaptive change management (ACM) is central to guiding organisations through VUCA challenges, which can destabilise the organisation. Pregmark (2022) suggests that adaptive leaders act as coaches, guiding followers through the stress of change while fostering a change-friendly environment. Heifetz *et al.* (2009) identify several key practices crucial for managing adaptive changes. Leaders must create a culture that encourages raising uncomfortable issues, nurtures shared responsibility with followers, establishes independent judgement and fosters leadership development within the team. This ongoing process of reflection and learning is essential for sustained adaptability.

Adaptive change extends beyond people alone. It impacts the entire organisation, including its supply chain. Organisations may need to undergo strategic reconfigurations to align with evolving complex situations. Heifetz *et al.* (2009) propose that adaptive leaders have to normalise challenging conversations ("naming the elephant in the room"), encourage independent thinking, develop leadership capacities and emphasise continuous learning.

The concept of unlearning is also crucial. Peschl (2019) defines unlearning as abandoning ineffective routines, behaviours, values or beliefs. Unlearning becomes essential because leaders cannot rely solely on past experiences or historical data to solve new problems. Leaders must create an environment where followers are encouraged to embrace change, question old assumptions and develop creative solutions. Unlearning is a key step in promoting organisational agility, as it allows leaders and followers alike to break through barriers and explore new opportunities.

Heifetz *et al.* (2009) emphasise that creating a process-driven leadership culture is essential for sustaining adaptability. This approach enables organisations to respond to unforeseen events while remaining agile and capable of ongoing change. Adaptive leadership fosters resilience by encouraging iteration, reflection and learning, which allows organisations to reduce the impact of individual traits and empower followers to engage meaningfully in the change process.

Adaptive leaders who build capacities beyond traditional skills are better equipped to navigate VUCA environments. Castillo and Trinh (2019) propose a model that integrates absorptive, adaptive and generative capacities. Absorptive capacity enables organisations to learn from volatile conditions. Adaptive capacity ensures flexibility in responding to change, and generative capacity drives creativity and innovation, enabling leaders to shape the future proactively. These capacities underscore a process-centred, reflective approach, ensuring leaders can drive sustainable adaptability even in high-stakes, unpredictable situations.

2.5 Systems thinking for adaptive change process

The adaptive change process within organisations involves a strategic, multistep approach, drawing from Heifetz *et al.'s* (2009) leadership framework, Alexander *et al.*'s (2018) Cynefin framework for decision-making and Davis's (2015) ST leadership model. In addition, it incorporates the planning process from Cheung and Yu (2020). This integrated approach is structured into three key steps:

1. *Observe/probe/discover*. This stage involves scanning the organisational environment, identifying boundaries, exclusions and inclusions, and engaging with stakeholders. It

relies on system diagnostics to understand the situation at hand. Leaders must gather information, map the problem's scope to detect evident and hidden patterns and engage with all relevant stakeholders for input.

2. *Interpret/sense/frame*. In this phase, leaders identify adaptive challenges and map feedback loops. This step includes pinpointing areas of leverage, establishing a decision-making process and preparing the framework for intervention. Leaders need to assess the situation holistically and ensure that the framework addresses the issue's root causes, not just its symptoms.

3. *Intervene/act/action*. This step includes taking action to implement the change, involving stakeholders in the process, promoting communication and fostering collaboration. The goal is to endure the change process, ensuring all resources are aligned and that the direction set by the leader is followed in a coordinated manner. It requires managing the execution phase and ensuring the organisation adapts to achieve the desired vision.

The observe/probe/discover step can be either reactive or proactive. Organisations aiming for a competitive advantage should adopt a proactive approach, using FT and foresight to anticipate potential challenges. According to Voros (2003), foresight involves gathering information, analysing and creating action plans. By incorporating foresight into the process, leaders can stay ahead of challenges and act before issues become critical.

During the interpret/sense/frame stage, Barlach and Plonski (2021) highlight the importance of avoiding the *Einstellung effect*, which can hinder creativity. The Einstellung effect refers to the tendency to apply previously known solutions to new challenges, regardless of whether they are the most suitable. By understanding the interconnections and elements of a problem, leaders can apply novel solutions, leveraging their cognitive flexibility in adaptive situations. Unlearning (Peschl, 2019) plays a crucial role here, as leaders can set aside past assumptions and embrace innovative, adaptive approaches to problem-solving. This mental flexibility fosters more effective decision-making in environments characterised by uncertainty and complexity.

ST places the leader in a process-oriented role, emphasising repeatable steps of observing, interpreting and intervening to guide the organisation through complex environments. Leaders can establish systems supporting these steps, ensuring the focus remains on structured processes rather than individual traits. An ST framework encourages real-time engagement with stakeholders, detecting patterns and implementing interventions that respond to challenges as they arise (Davis, 2015; Alexander *et al.*, 2018).

2.6 Existing adaptive leadership frameworks

Adaptive leadership is a versatile and valuable framework for navigating today's unpredictable world. It enables leaders to remain resilient and adaptable in complex environments. Johnson-Kanda and Yawson (2018) emphasise the importance of reflective practices, flexibility and adopting multiple perspectives when addressing complex, wicked problems. It involves the leader's capacity to respond swiftly to changing circumstances, making it essential for maintaining organisational resilience in a rapidly shifting landscape.

2.6.1 Complexity leadership theory.

Complexity leadership theory focuses on adaptability and innovation to respond to complex, dynamic environments (Uhl-Bien, M., 2021). The framework recognises the inherent complexity of interconnected systems, dividing leadership functions into three distinct categories: administrative, adaptive and enabling. Adaptive leadership fosters environments conducive to innovation and novel solutions within this context. Leaders are tasked with creating adaptive spaces that allow these dynamics to emerge.

The theory also calls for generative emergence, where crises push systems into disequilibrium, forcing the system to evolve. Uhl-Bien (2021) notes that this contrasts with the Adaptive Organisational Leadership Framework developed in this paper, which integrates ST for holistic problem-solving. The complexity leadership theory demands that leaders create spaces for generative emergence, whereas the Adaptive Organisational Leadership Framework provides a structured process to align adaptive practices with foresight, mental models and change management principles.

Both frameworks promote open communication, adaptive spaces and collaborative learning. In high-stakes environments, such as military organisations (Surace, 2019), complexity theory demonstrates its value in complex adaptive systems. It shows that organisations require flexible, network-based approaches to perform effectively, reinforcing the need for adaptive structures that respond to uncertainty and complexity.

2.6.2 Meta-leadership.

The meta-leadership framework addresses leading in complex crises (McNulty and Marcus, 2020). The framework encourages "meta-thinking" to holistically make sense of interrelated crisis issues by focusing on connections across organisational levels. Leadership must be balanced with management across different phases of a crisis. Leaders must avoid tunnel vision, delegate authority, promote adaptive responses and focus on unity across the organisation. Meta-leadership focuses on helping leaders maintain a broad situational awareness and manage interconnected challenges in crises. However, the Adaptive Organisational Leadership Framework permanently encourages an adaptive organisational culture through ST principles over the long term. Meta-leadership is an approach best suited to managing immediate, intense challenges where quick adaptability and broad perspective are essential (McNulty and Marcus, 2020).

2.6.3 Transformational leadership.

Transformational leadership focuses on inspiring and motivating followers to exceed their interests for the organisation's benefit, often through a compelling vision (Bass, 1999). It creates an environment of idealised influence, intellectual stimulation and individualised consideration, aiming to align individual goals with organisational objectives. The goal is to foster creativity, enhance morale and elevate performance (Bass, 1999).

While transformational leadership can drive significant change in stable or evolving environments, it does not emphasise ST or the adaptability required in rapidly changing, ambiguous contexts. Therefore, it may be less effective in these situations. In contrast, the *Adaptive Organisational Leadership Framework* incorporates ACM and fosters a culture of continuous adaptation, collective responsibility and resilience. Although transformational

leadership can inspire followers with a compelling vision, the framework provides a more structured, systems-based approach to ensure long-term organisational success in dynamic environments (Khan *et al.*, 2021).

3. Conceptual framework

The conceptual framework, illustrated in Figure 4, has been developed by synthesising the SLR findings to address the research questions. The framework uses a systemigram, a tool rooted in ST, to visually depict the dynamic system of organisational adaptive leadership. This framework reflects the interdependencies and critical components necessary for leadership in a VUCA environment. The critical aspects of the framework are listed below:

1. Adaptive leadership elements: This aspect includes three major elements: the leader, the followers and the context. The context encompasses the internal organisation and the external business environment characterised by complexity. The leader adopts qualities, influencing the followers to align with the organisation's vision of adaptability. The leader and the followers work together within the organisational framework to confront adaptive challenges posed by the VUCA context.
2. Adaptive leadership qualities: Leaders must embody and nurture these key characteristics or qualities to effectively guide the organisation through adaptive challenges. These qualities complement the principles of ST and are essential for enabling the adaptive leadership process.
3. Fundamental principles: The framework is underpinned by four foundational principles:
    o Systems thinking: Viewing the organisation as an interconnected system, where all components influence each other.
    o Mental models: The cognitive frameworks that shape how the organisation perceives and interprets its environment.
    o Future thinking: Incorporating foresight and strategic planning to anticipate and prepare for future challenges.
    o Adaptive change management: A structured process that guides organisations through adaptive changes to remain resilient in the face of new challenges.
4. Systems thinking adaptive change process: The framework outlines the process of adaptive change through a three-step approach: observing (situation awareness), interpreting (sense-making) and acting (decision-making). These steps form a continuous loop that drives the organisation's adaptive capacity. The process is aligned with the Diagnosing, Orienting, Observing, Deciding, Acting principles (DOODA), ensuring that adaptive actions are grounded in systematic analysis and real-time feedback.
5. Adaptive organisational leadership objective: The ultimate goal of the framework is for the organisation to survive and thrive within the business environment. Organisations can develop the agility and resilience necessary to achieve a competitive advantage today by adopting adaptive organisational leadership principles.

The adaptive leadership elements, leader, followers and context, are deeply interconnected within the organisational ecosystem. The leader must adopt specific qualities, shaping the organisational culture and guiding the followers towards the vision of adaptability. The leader and the followers interact continuously to address the challenges posed by the VUCA environment, while the context (the organisation and the external business environment) influences and is influenced by these interactions.
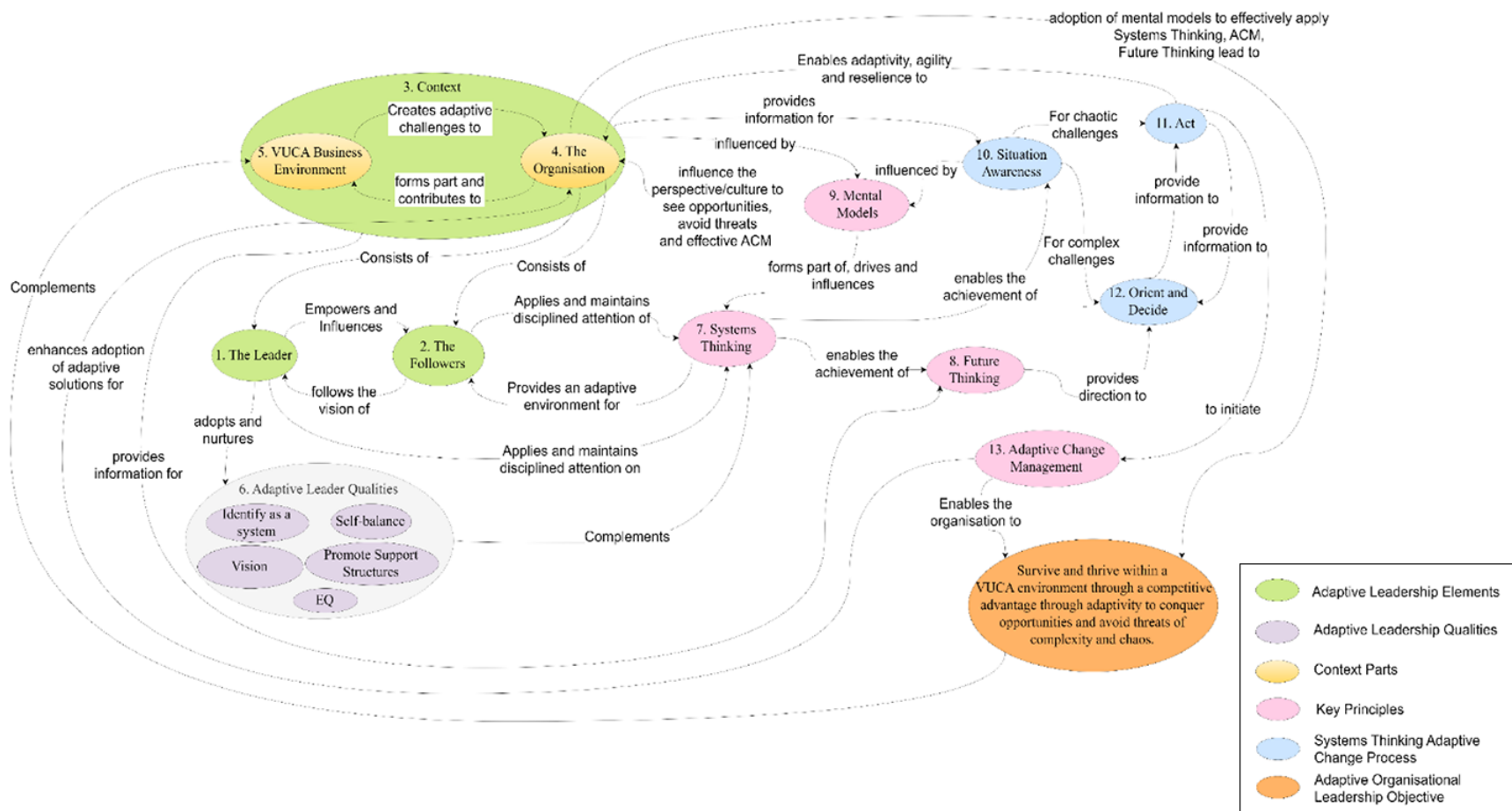
Source: Authors' own work

Figure 4. Systemigram of Adaptive Organisational Leadership Framework

ST complements the adaptive change process by linking situation awareness (gathered from the context) with the steps of interpretation and action. Analysing complex or chaotic challenges helps leaders decide on the necessary adaptive actions. Whether the challenge is urgent or complex, the process adopts a cyclical approach through orientation and decision-making, followed by action and refined based on feedback data. This cyclical nature, powered by FT and mental models, ensures the organisation's continual adaptation and ability to learn from past actions.

Mental models shape organisational perceptions, especially in identifying opportunities and threats. They play a crucial role in guiding the organisation through uncertainty. As part of the adaptive leadership framework, mental models directly influence key decisions, fostering a responsive and proactive culture to change. They also interact with ST to improve situation awareness, decision-making and action-taking processes, allowing the organisation to better anticipate and navigate adaptive challenges.

The ACM process ensures that organisational change is implemented effectively, embracing agility and flexibility. The organisation's mental models are constantly evolving, allowing the organisation to adapt and thrive in an ever-changing landscape.

The systemigram in Figure 6 visually represents the dynamic and interactive elements of the organisational adaptive leadership framework. Each component, element, quality, ST, mental models, FT and the adaptive change process, operate interdependently within a continuous feedback loop. This loop ensures that leadership actions, decisions and responses are not isolated but are continuously refined based on emerging contextual feedback.

This interconnected structure ensures that individual qualities do not simply drive leadership and followership but are part of an organisational ecosystem where ST, feedback loops, and real-time adjustments are vital to sustaining alignment with the environment. The organisation's adaptability is embedded in the system, enabling it to respond to external and internal challenges with resilience and agility. To effectively implement the Adaptive Organizational Leadership Framework, leaders must possess the following skills:

- Systems thinking: Leaders have to view the organisation holistically and understand the interdependencies between different elements. Tools like causal loop diagrams and systemigrams should be used to analyse and address these interdependencies.
- Strategic foresight and FT: Leaders should be able to anticipate future challenges through scenario planning, emerging trend analysis and vision alignment to ensure the organisation remains proactive in its responses.
- Adaptive change management: Leaders must guide the organisation through the complexities of change, empowering followers to provide feedback that informs the change process. This fosters resilience and agility within teams.
- Emotional intelligence: Managing relationships and maintaining morale during periods of change is crucial. Emotional intelligence ensures leaders can navigate conflict, build trust and foster a supportive environment during uncertainty.
- Resilience and agility: Leaders should manage stress, make rapid decisions and learn from setbacks. These skills are critical for maintaining organisational effectiveness in a volatile and uncertain world.

The Adaptive Organizational Leadership Framework, as the systemigram represents, demonstrates the dynamic interactions between the various elements required to thrive. By

adopting a systems-oriented approach, leaders can guide their organisations through complex challenges, creating a sustainable ecosystem of adaptability, agility and resilience. This approach goes beyond individual leader traits; instead, it focuses on the continuous interaction between leadership, followership and context to achieve organisational goals in rapidly changing environments.

Several distinct advantages emerge when comparing the proposed Adaptive Organisational Leadership Framework with existing models such as complexity leadership theory (Uhl-Bien, 2021) and Meta-Leadership Framework (McNulty and Marcus, 2020). Unlike these models, which emphasise generative emergence and crisis management, respectively, the proposed framework integrates ST as a core principle to provide a structured, holistic approach. This integration addresses immediate challenges and fosters long-term adaptability and resilience. In addition, the proposed framework's focus on mental models and their dynamic alignment offers a unique lens for addressing the cognitive underpinnings of adaptive leadership. While existing works such as Bass's Transformational Leadership Model (Bass, 1999) have been instrumental in driving organisational change, they lack the systems-oriented perspective required in a VUCA environment. This framework fills that gap by combining FT and ACM into a cohesive process. However, specific models, such as the Cynefin Framework (Alexander *et al.*, 2018), which specialises in decision-making under uncertainty, offer complementary insights that could be explored further in future studies.

4. Research method

The research is set up for a multi-method approach. The approach uses secondary data literature to establish a conceptual framework and then validates the framework through primary data interviews. The mixed approach balances theory and practicality to achieve an applicable conceptual framework. Figure 5 presents the method where topic definition ignites the process by defining the topic's key terms for the research questions.
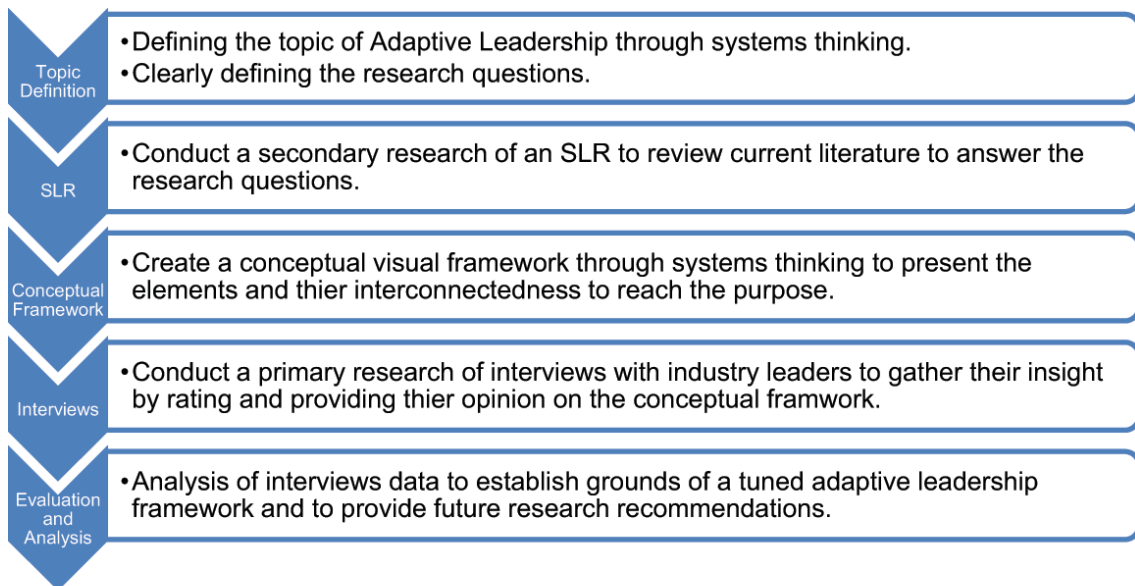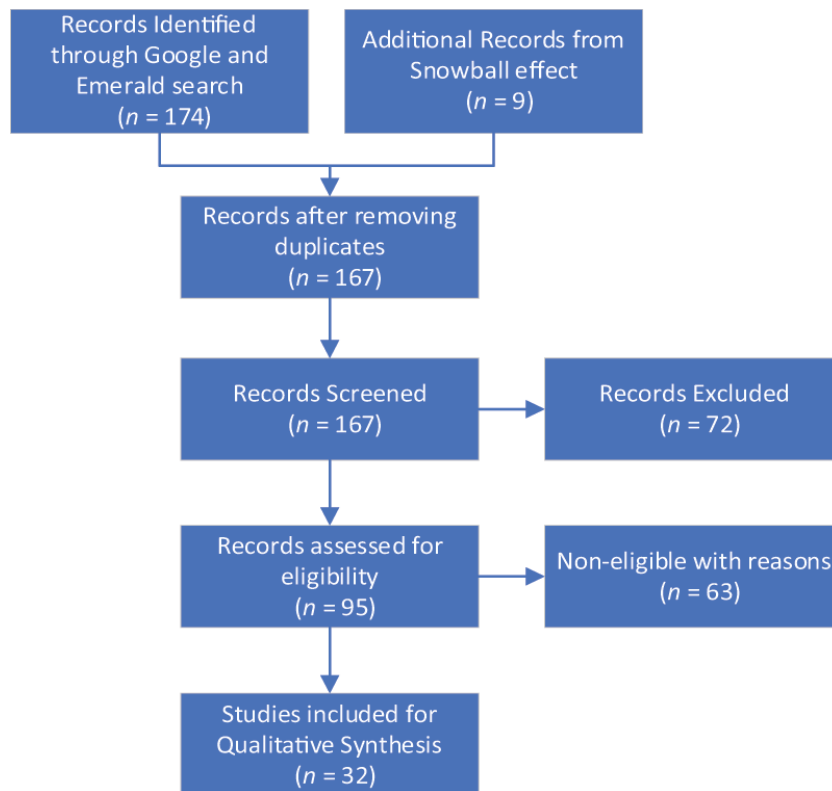
Source: Authors' own work

Figure 5. Research methodology

4.1 Systematic literature review

The protocol for conducting the SLR followed the process described below (Okoli and Schabram, 2010):

1. Establishing the research questions (as per the introduction).
2. Select search terms structured around answering the research questions. Two separate searches are conducted with keyword phrases:
    o "Leader*" and "VUCA" and "Future thinking" and "Adapt*".
    o "System thinking" and "Adaptive leadership" and "VUCA".
3. Sources include journal articles from online libraries such as Google Scholar and Emerald. For an article to be selected, the following criteria were used:
    o Journal articles.
    o English Language.
    o Dates: 1950–2022.
    o Highly related to the research topic to answer the research questions.
4. Figure 6 shows that screening and selection processes were performed by scanning the article abstract and titles for relevance.

Source: Authors' own work

Figure 6. SLR progress

5. Download the complete article and screen it for eligibility and relevance:
    o Internal validity. The extent to which a study is free from methodological biases. Statistically proven the accuracy of a causal relationship.
    o External validity. Degree of precision of the study to generate the same results outside the sample population.
    o Reliability. Replication and consistency of the study to achieve the same findings when replicated by another researcher.
    o Research methodology. Review the research methodology to ensure the data is reliable.
    o Peer-reviewed. Peer-reviewed articles are considered to be more reliable.

The qualifying articles are reviewed and examined for related topic codes. Multiple codes have been established. Once all articles are reviewed, the data is extracted through an Excel report export from the Atlas.ti. The report presents the research title, the quoted text, the text interpretation and the interpretation code. After finalising the SLR to develop the framework, a snowballing approach was used to retrieve the latest articles to compare with the framework.

4.2 Interviews

The framework developed from the SLR was validated through interviews with industry leaders. Transparency and reliability are ensured by using a comprehensive interview methodology involving expert, convenience and snowball sampling techniques (Etikan, 2017):

- *Sample size and selection criteria*: A total of 16 participants were included, representing diverse organisational levels and sectors. Participants were selected based on their leadership experience, familiarity with VUCA environments, and engagement with adaptive leadership principles. Convenience sampling was minimised by proactively contacting leaders across multiple organisations and levels. Snowball sampling further expanded the pool by leveraging existing participants' networks.
- *Interview process*: Standardised email and message templates were used to invite potential participants, providing a clear overview of the study's purpose and relevance. A semi-structured approach combined pre-defined questions with flexibility to explore participants' insights. Informed consent was obtained from all participants after approval from the university's ethics committee. Participants received an information sheet outlining objectives, benefits, risks and data protection measures.
- *Pre-testing*: The interview guide and methodology were pre-tested with experienced researchers and master's graduates to identify potential issues and improve reliability. This process ensured that the questions aligned with the study's objectives and elicited meaningful data.

The interview data was analysed and evaluated to update the conceptual framework. Qualitative interviews were chosen as they are directed and guided communications based on questions that follow a particular structure to explore the research subject. Interviews provide mutual understanding, discovery, reflection and explanation through an adaptive and energising pathway (Easterby-Smith *et al.*, 2021). The mixed approach between structured and semi-structured interviews would follow a synchronous data collection method with immediate interaction with the participant. A mix of structured questions and allowing answers to open questions was implemented to achieve the study's objective (Easterby-Smith *et al.*, 2021). This study assumes that business leaders are occupied, and it is not easy to reach for their input.

A topic guide ensured that the researcher was evident with the interviewee about the exact objectives of the study and the areas of interest. The research questions selected were not leading but instead focused on extracting information from the participants without a biased influence from the interviewee (Easterby-Smith *et al.*, 2021). The opening questions were about the interviewees, their job roles background and expertise. The interviewees were asked to rate their perception of their knowledge of the framework key terms of VUCA, ST, FT and adaptive leadership. The main interview questions were guided by the elements and interfaces of the systemigram in Figure 6. The framework is presented and explained thoroughly to the interviewee. The open-ended statements invited responses on a scale ranging from "strongly agree" to "strongly disagree" about the structure of the systemigram:

- The organisation consists of the leaders and the followers, where the leader influences and empowers the followers to adopt and follow the vision.
- Adaptive leadership qualities complement and support the application of ST.
- ST provides an adaptive environment for the followers, which supports their adaptivity.
- ST supports the understanding and application of FT.
- ST supports the understanding of situation awareness.
- For complex challenges, situation awareness should lead to orientation and decision-making, followed by taking action and then orientation and decision-making until resolution.
- For urgent chaotic challenges, situation awareness should lead to urgent action first, then orientation and decision-making, followed by adjusted action in a cycle until resolution.
- ACM enhances the adoption of adaptive solutions in organisations.
- ACM enables organisations to survive and thrive in the complex environment by obtaining a competitive advantage through adaptivity.
- Survival would modify the organisation's mental models towards adaptivity.

After answering each structured interview question, the interviewee was guided to discuss the elements. They were specifically asked to expand on the reasoning behind their answer and provide any recommendations for improvements. The topic guide is used to manage the semi-structured part of the conversation with the interviewee. Once the data is collected, it is thoroughly analysed for insightful recommendations on the framework. For the structured part of the interview, the analysis is conducted on the content as per below (George and Merkus, 2022):

- The choice categories are translated into a numeric value to allow for the calculations of percentages per category.
- The values are added up for each line and represented with a percentage. The percentage is based on the actual score vs. the total possible score.
- The gathered data is represented in graph(s) to show the scores and percentages.

For the semi-structured part of the interview, all interview sheets are uploaded to Atlas.ti for analysis as per the below steps (De Hoyos and Barnes, 2012):

- *Reflection*. Adding memos and points based on the researcher's interpretation of the interview data.
- *Coding*. Reading the transcript and identifying codes that refer to specific points in the process. The interpretation needs to be unbiased and related to the data transcripts.

Further coding analysis is applied to combine common codes as needed. Important codes are highlighted for further analysis.

- *Theme links identification*. Review the codes for patterns, themes and relationships. The links between the themes are identified for pattern recognition. The analysis is completed on a conceptual level, and results are presented on an abstract level with a holistic (zoomed-out) view.

5. Results

This section evaluates how the findings support and challenge the adaptive leadership framework while considering its d implications for leadership practice. The insights gathered from the interviews with organisational leaders provide valuable context for interpreting the viability and relevance of the framework in addressing complex, volatile, uncertain and ambiguous challenges.

5.1 Framework validation

The data validates the adaptive leadership framework by demonstrating that participants who occupy leadership positions across various levels of experience are familiar with the fundamental principles of adaptive leadership. With 47% of respondents identifying as general managers, 40% as managers and 13% as directors, the distribution reflects a representative sample of leadership across the organisational hierarchy. The mix of participants with varied experience, ranging from less than four to more than six years, offers a comprehensive view of leadership practices, reinforcing the framework's applicability. The diversity in leadership levels adds depth to the findings by illustrating how the framework is perceived from different organisational perspectives.

The presence of a balance between experienced leaders and those with "fresh eyes" challenges any assumptions about the inherent value of seniority in leadership. It suggests that a blend of perspectives, ranging from instinctive decision-making to structured analysis, can provide richer insights. The study's results reflect this balance, confirming that the framework benefits from experienced leadership and a more flexible, less constrained viewpoint, potentially resulting in innovative problem-solving.

The self-assessment ratings, calculated using the process in Appendix 1, further affirm the participants' familiarity with VUCA, mental models, adaptive leadership, ST, and FT. As seen in Figure 7, while respondents rate themselves as relatively knowledgeable, their acknowledgement of the need for further development in areas such as adaptive leadership and ST is significant. This modest expertise suggests a promising foundation for applying the framework in real-world settings, yet it also highlights areas for further development, particularly in more profound expertise in ACM.
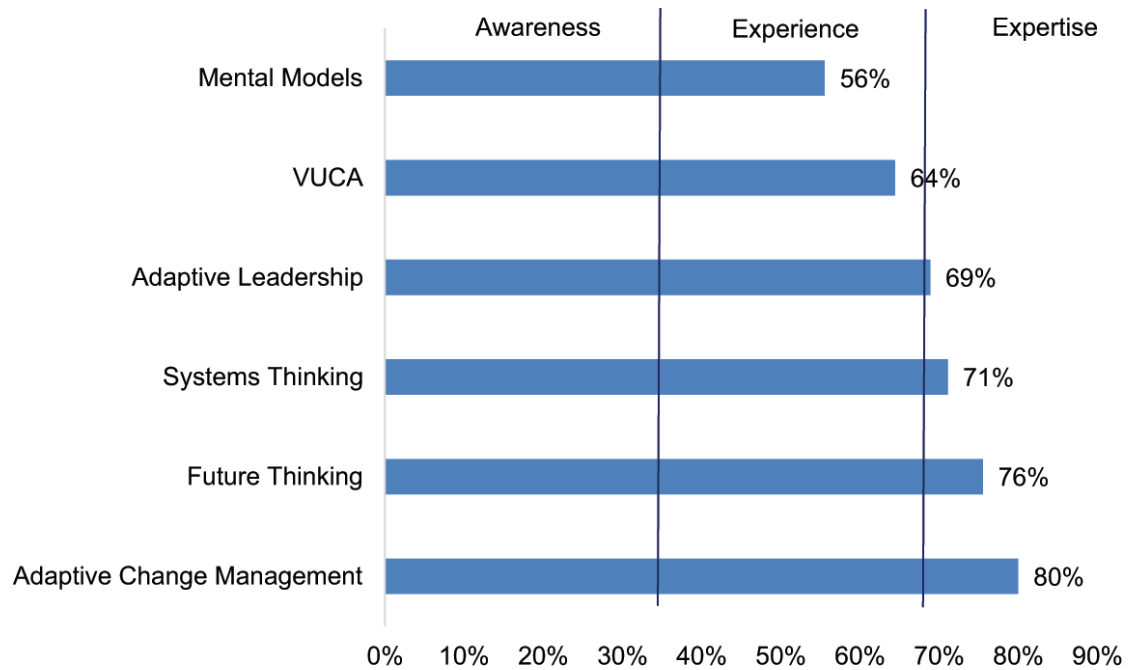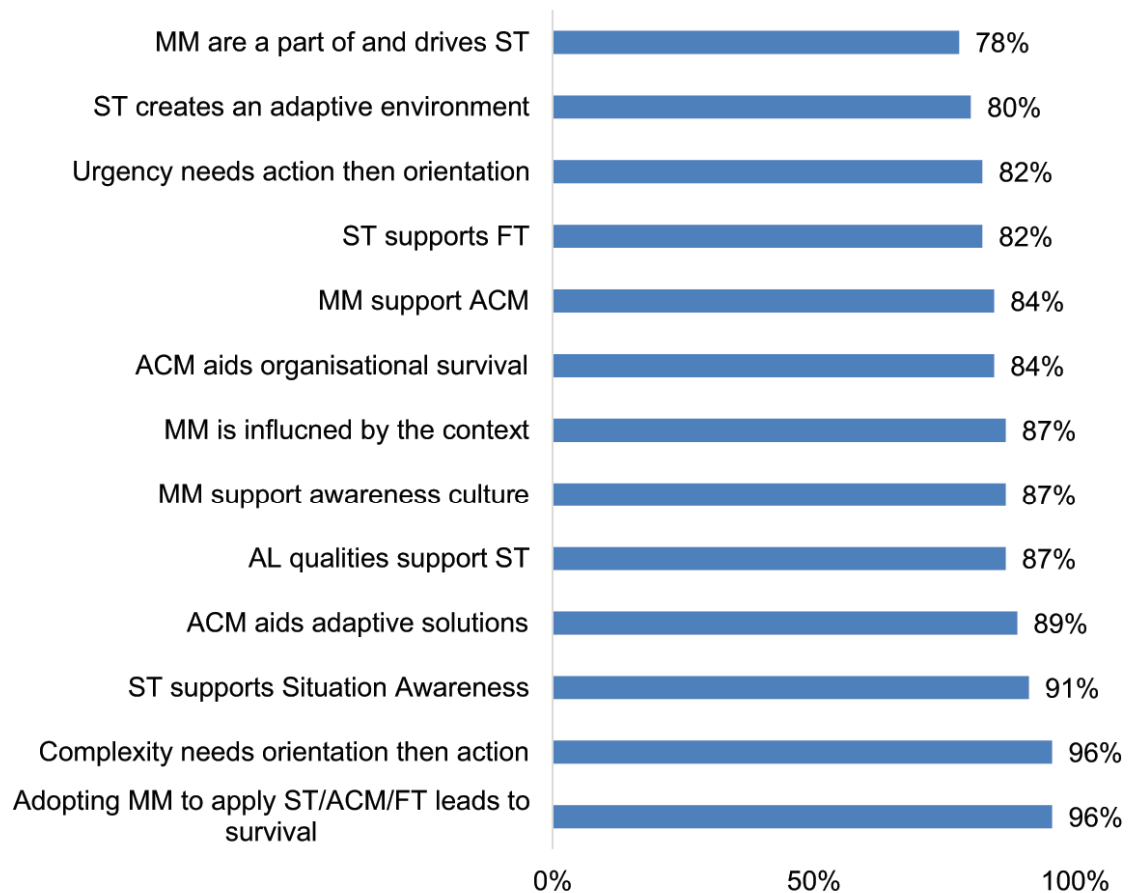
Source: Authors' own work

Figure 7. Self-knowledge score per adaptive leadership framework key term

5.2 Leaders' quantitative input

The participants are asked to rate each framework interconnection link, as described in Appendix 2. The agreeability rating is then translated into numbers to calculate the percentage of agreeability for each link in Figure 8. Each framework link's ratings reveal essential patterns supporting the model's validity. The highest-ranking links related to complexity, orientation, action and mental models are particularly noteworthy. With 96% agreement on the importance of orientation followed by action in facing complexity, the data reinforces the central tenets of the framework, particularly the need for leaders to act quickly yet thoughtfully. The emphasis on mental models as integral to organisational survival in a challenging environment also highlights their critical role, as discussed in the quantitative and qualitative analyses.

The mid-range ratings (82%–91%) further reflect the mixed but generally positive reception of the leadership framework, while the lower ratings, such as 78% agreement on the link between mental models and ST, suggest areas for improvement. While the 78% score remains relatively strong, it points to the possibility that mental models are not always well understood or fully embraced in practice despite being foundational to the framework. This discrepancy suggests a potential challenge for leaders in realising the full potential of the framework without further developing their understanding of mental models.

Horizontal bar chart:

Category	Value
MM are a part of and drives ST	78%
ST creates an adaptive environment	80%
Urgency needs action then orientation	82%
ST supports FT	82%
MM support ACM	84%
ACM aids organisational survival	84%
MM is influcned by the context	87%
MM support awareness culture	87%
AL qualities support ST	87%
ACM aids adaptive solutions	89%
ST supports Situation Awareness	91%
Complexity needs orientation then action	96%
Adopting MM to apply ST/ACM/FT leads to survival	96%

Source: Authors' own work

Figure 8. Rating of each important link

5.3 Leaders' qualitative input

This section presents a qualitative analysis of the adaptive leadership framework, with the five result themes mapped to their principal codes, as shown in Figure 9. Each theme is examined in detail to explore its contribution to understanding adaptive leadership. The elements discussed here are numbered according to the framework outlined in Figure 4, and each theme is analysed to derive insights that inform the leadership approach.

5.3.1 Diagnosing, Orienting, Observing, Deciding, Acting – elements of systems thinking adaptive change process (numbers 10, 11 and 12).

The participants offered five key insights related to the DOODA framework, highlighting the practical application of this method by leaders in adaptive challenges:

1. Agility in decision-making: Organisations must act swiftly to stay ahead of competitors. Delays can allow others to lead, forcing the organisation to play catch-up. The decision to act quickly or delay depends on the organisation's core business model.
2. Orientation in chaotic challenges: When faced with chaotic challenges, an orientation element is necessary before action is taken. Organisations must be prepared to quickly

adjust to VUCA waves, as failure to do so could result in significant losses. Actions are necessary to absorb the shock and align with the adaptive need.

3. Urgency and action: Adaptive challenges require a blend of orientation and decisive action. Leaders determine the level of urgency based on the nature of the challenge. Leaders should resist hasty decisions and analyse the situation thoroughly before taking action if there is time.

4. Leaders' instincts and qualities: A leader's ability to act quickly and effectively is linked to their mindset and experience. A well-rounded combination of qualities, experience and instinct is essential for confronting chaotic, adaptive challenges.

5. The importance of feedback loops: Due to the unpredictable nature of adaptive challenges, feedback loops are essential to gauge and adjust the course of action. Effective leadership relies on ongoing feedback from various elements, such as situational awareness, action and decision-making, to ensure the best possible outcome.
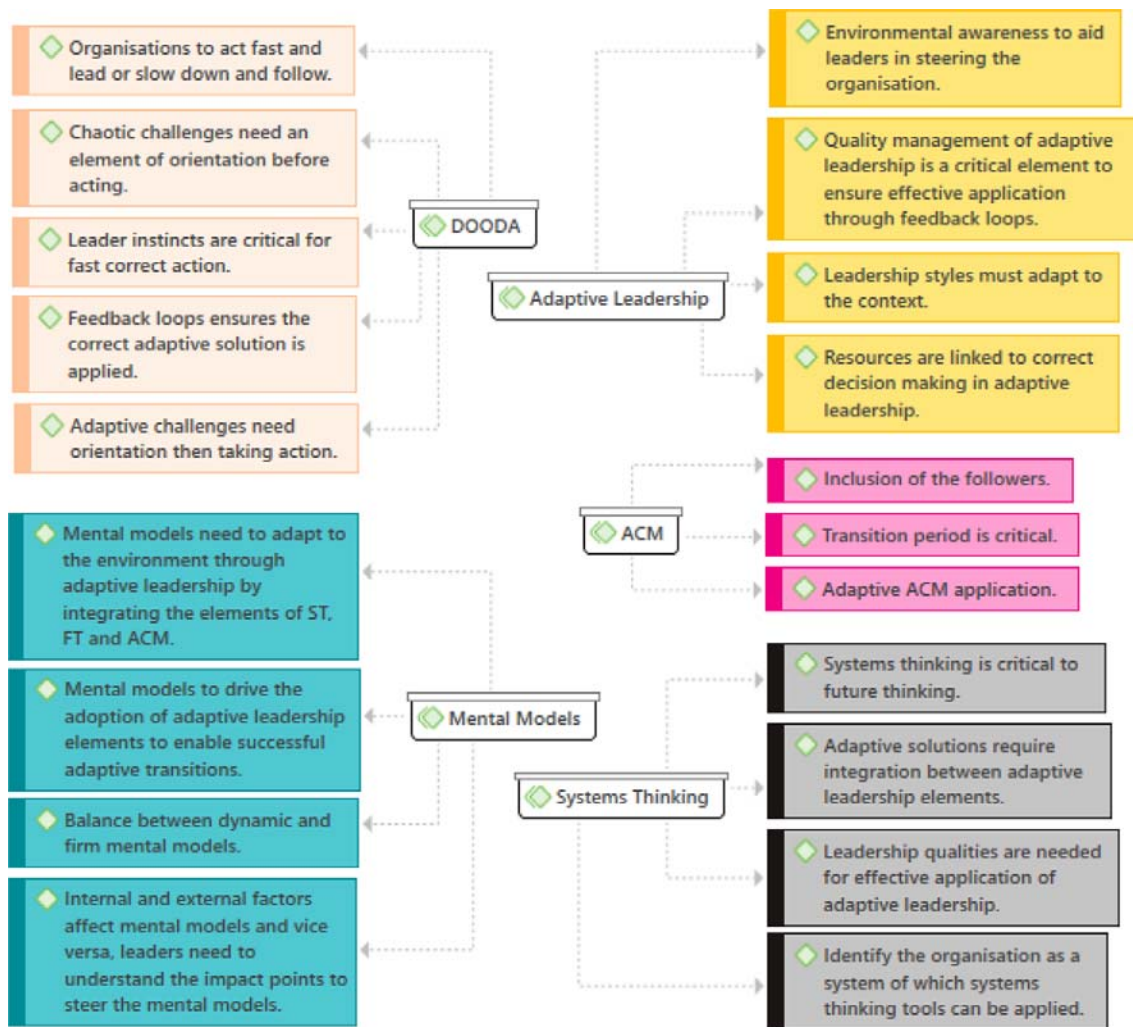
Source: Authors' own work

Figure 9. Qualitative analysis of leader interviews

5.3.2 Adaptive leadership – adaptive leadership elements (numbers 1, 2, 3, 4 and 5).

The adaptive leadership elements focus on how leaders guide followers through the challenges a VUCA environment poses. The key points identified by participants are:

- *Environmental awareness*: Leaders can remain attuned to the environment, using present conditions to forecast future possibilities. This awareness helps guide adaptive decision-making and actions.
- *Quality management in adaptive leadership*: Effective leadership involves quality management, which complements the DOODA framework. Feedback loops between situational awareness, action and decision-making help leaders apply the best solutions to adaptive challenges. Early intervention is key to improving outcomes, although success is ultimately measured by how well the organisation achieves its objectives.
- *Contextual leadership style*: Adaptive leadership requires flexibility. In difficult times, an authoritarian approach may provide the necessary direction and security, while in other situations, a servant-leader approach may foster collaboration and orientation. The key is adapting the leadership style to fit the specific needs of the moment.
- Resource availability: Leaders in organisations with more resources are better positioned to succeed in adapting to change. Small, medium and micro enterprises, crucial to South Africa's GDP, are particularly vulnerable to adaptive challenges. Leaders in such organisations should allocate resources for adaptivity to reduce the risks associated with challenging conditions and enhance their chances of survival.

5.3.3 Adaptive change management – part of key principles (number 13).

Participants emphasised the importance of involving followers, preserving core values and managing the transitional phases of change. They suggested the following for effective change management:

- *Involving followers in decision-making*: Engaging followers in the decision-making and action processes increases their sense of ownership and commitment, making them more likely to adopt and support adaptive solutions.
- *Navigating the transition phase*: The transition period is critical for successful change management. During this phase, the solution is under intense pressure to be adopted. Leaders must ensure that the organisation has a shared vision and clear mental models to prevent disjointed efforts that could undermine the adaptive process.
- *Balancing core values with change*: Effective ACM relies on the organisation's ability to maintain its core values while navigating change. Strategic assessment of mental models helps distinguish between core and dynamic values, ensuring that the organisation's principles remain intact while adapting to new challenges.

5.3.4 Mental models – part of key principles (number 9).

Mental models are the core of this framework. To apply adaptive leadership effectively, mental models are the real target of an adaptive leader to consider the following:

- *Changing mental models*: For leadership to succeed, organisations must first transform their mental models to incorporate the principles of FT, ST and ACM. Without organisational buy-in, efforts to adapt will fail and the organisation may struggle to survive.

- *Driving adoption of AL principles*: Once mental models are aligned with leadership principles, the organisation's capacity for adaptation increases. This leads to greater resilience and agility when facing VUCA challenges.
- *Balanced adoption of mental models*: Rapid adoption of mental models without careful selection can be risky. It is essential to balance core values that should remain unchanged and dynamic values that can evolve. This balance preserves the organisation's identity while fostering adaptability.
- *Impact of internal and external factors*: Mental models are shaped by both internal and external factors. Leaders need to assess how these factors influence the organisation's mental models and guide change to stay true to the organisation's vision while adapting to the broader environment.

5.3.5 Systems thinking – part of key principles (number 7).

ST is integral to the adaptive leadership framework. Participants emphasised the following points:

- *FT and ST*: Effective FT depends on a holistic understanding of all interconnected elements within the organisation. ST enables leaders to create plausible future scenarios by considering these interrelationships.
- *Integrating leadership elements*: Adaptive solutions require a holistic approach, which can only be achieved by integrating the various elements of adaptive leadership. ST allows for the seamless connection of FT, ST and ACM, enabling the organisation to respond effectively to VUCA challenges.
- *Leadership qualities for adaptive leadership*: The qualities of leaders, such as vision, empathy and decisiveness, play a significant role in the success of leadership. These qualities must be nurtured in leaders to help them guide the organisation through complex adaptive challenges.
- *Understanding the organisation as a system*: For ST to be applied effectively, leaders must view the organisation as a system that requires adaptivity to thrive. Recognising the interconnectedness of the organisation with its environment is crucial for sustaining long-term success.

5.4 Research questions discussion

The research questions addressed in this section focus on how ST and adaptive leadership principles interact to guide organisations through the VUCA environment. The interviews strongly support the framework's validity, especially its capacity to enhance organisational resilience and agility:

> How to create an adaptive organisational leadership framework through systems thinking for a VUCA environment?

As validated by the interview data, the framework's creation effectively integrates vital leadership principles such as ST, mental models and ACM. Leaders' satisfaction with the framework further supports the claim that ST is essential for organisational survival. This aligns with the growing recognition of ST as a necessary approach for understanding complex, interdependent challenges in the modern business landscape:

> What are the elements of an adaptive leadership framework and their relationships?

The research highlights that the elements of the leadership framework, leadership qualities, ACM, mental models, ST and the DOODA process are interdependent. These relationships are crucial for successfully implementing adaptive solutions, as they provide a holistic approach to leadership in dynamic environments. The qualitative data emphasises the importance of mental models in aligning organisational culture with adaptive principles, reinforcing their role as the foundation for ST and ACM:

How can systems thinking address leadership challenges for a VUCA environment?

ST emerges as a pivotal tool for navigating leadership challenges. The interviews highlight that by understanding organisations as interconnected systems, leaders can better anticipate and address the challenges of the complex environment. ST enhances situational awareness and enables leaders to foresee potential consequences and adapt strategies accordingly. The interviews suggest that this systemic approach is integral to making sense of complexity and driving effective leadership.

5.5 Hypotheses discussion

The hypotheses, tested through both qualitative and quantitative data, align closely with the results obtained from the interviews. The framework's ability to support organisational survival in a VUCA environment has been strongly endorsed, with participants indicating a high degree of agreement with the framework's core principles. In addition, the role of ST in solving adaptive organisational challenges has been validated, confirming that it is not just a theoretical concept but a practical tool for leaders dealing with complex environments:

An adaptive organisational leadership framework enables and supports the survival of organisations within a VUCA business environment.

The level of endorsement and validation of the framework amounted to 73%, and 27% agreed and strongly agreed with the participants. All framework links received staggering scores ranging between 78% and 96% in agreeableness. The qualitative interview input supported the framework by providing insights into the elements and their interconnections of DOODA, ACM, mental models, adaptive leadership and ST. Therefore, the framework, created through an SLR and endorsed by organisational leaders, enables and supports the survival of organisations that face adaptive challenges:

Systems thinking is used to solve adaptive organisational challenges and can be part of the adaptive organisational leadership framework.

ST forms the building blocks and the interconnections between them. ST develops the skills of a leader to deal with chaotic environments. Due to the structured agile method used to tackle adaptive challenges, the adaptive change process of DOODA and mental models, ST is the core of this framework. The interviews endorse the importance of ST in facing adaptive challenges, where the highest rated link is mental models for achieving success. Five other framework links support ST and are further supported in the qualitative analysis. Therefore, this hypothesis has been proven true and validated through the support of organisational leaders.

5.6 Practical applications

The framework can be applied across sectors, such as corporate healthcare, businesses, government, education and military settings. The framework can help healthcare leaders manage patient care's complex and often unpredictable nature and policy changes. Here, ST assists in anticipating challenges, such as managing resource shortages. Adaptive leadership principles encourage collaborative decision-making among diverse teams and team members to ensure swift and coordinated responses to crises. ST helps map interdependencies among departments, such as emergency care, intensive care units and supply chain logistics. A causal loop diagram highlighted bottlenecks in resource allocation, enabling effective prioritisation of critical supplies. ACM can provide a flexible staffing model. Leaders empowered department heads to reassign personnel dynamically, ensuring coverage during peak patient surges. Applying FT with scenario planning can be used to prepare resources and align stakeholder expectations. This approach enhanced the hospital's agility, enabling it to maintain quality care while navigating uncertainty.

In the corporate environment, the framework can aid leaders in navigating rapid technological changes and market fluctuations and lead digital transformation. Leaders can identify interdependencies within their organisations with ST for quick responses to market shifts. ACM can also support a smoother integration of digital transformation initiatives. Mental models can be targeted to shift employee perspectives. Leaders need to challenge existing assumptions about traditional workflows and build a shared understanding of the benefits of automation. Feedback loops using regular employee surveys allow leadership to refine the implementation strategy based on frontline feedback iteratively.

Education can face unique VUCA challenges, such as shifting educational demands, fluctuating funding and evolving technology needs. This framework helps establish resilient learning environments. Using the mental models of educators and staff, this framework encourages forward-thinking policies that address current needs and future trends in education.

Government and public sector agencies operate where economic pressures, policy changes and social challenges create constant uncertainty and volatility. Leaders can enhance strategic foresight and develop resilient policies with this framework. Here, ST enables leaders to address inter-agency dependencies to create integrated solutions for public issues. High stakes and complex decision-making characterise the military environment. It can benefit from this framework's focus on complexity theory and adaptive responses. ST enables the identification of critical interdependencies between different departments. A systemigram mapped out stakeholders and influenced the design of a collaborative task force.

This analysis has revealed its robust applicability in real-world settings by synthesising the interview data case studies and aligning these with the theoretical underpinnings of the leadership framework. The healthcare, corporate and public sector examples validate the framework's potential to support organisational success in increasingly volatile and uncertain environments.

5.7 Broader societal and policy implications

The adaptive leadership framework extends beyond organisational contexts to offer a potential for influencing leadership practices in broader societal and policy settings. Its emphasis on ST, ACM and future-focused leadership can inform strategies for addressing complex, multi-

faceted challenges that transcend individual organisations. Governments and policymakers can apply the framework to manage societal challenges such as climate change, public health crises and economic inequality. By fostering ST, leaders can develop more integrated and collaborative approaches to policy-making that account for the interdependencies between societal systems. Leadership qualities, such as emotional intelligence and disciplined attention, can support consensus-building among diverse stakeholders, enabling the co-creation of resilient policies that align with long-term societal goals.

In community settings, the framework can empower local leaders to mobilise resources, adapt to shifting socio-economic conditions and build resilient communities. For example, using ACM, community leaders could facilitate participatory planning to address urban development challenges, ensuring alignment with residents' needs and priorities. The framework's focus on mental models is particularly relevant for addressing deeply rooted societal issues, such as systemic inequality. Leaders can leverage this principle to shift cultural narratives and promote inclusion and equity.

At an international level, the framework provides a structured approach to addressing global challenges like pandemics and environmental sustainability. Its ST principles can support transnational collaboration by identifying leverage points and fostering shared understanding across diverse cultural and political contexts. ACM can enable global coalitions to navigate the complexities of international governance, ensuring that efforts are sustainable and adaptable to evolving circumstances.

The framework's principles can shape leadership education and training, preparing future leaders to navigate the uncertainties of a rapidly changing world. Incorporating ST and future-oriented strategies into educational curricula can equip students with the tools to address organisational and societal challenges. By extending the adaptive leadership framework to these broader contexts, this study underscores its potential as a transformative tool for fostering resilience, collaboration and adaptability across societal systems. These implications highlight the importance of integrating ST and adaptive strategies into leadership practices at all levels, from local communities to global institutions.

6. Conclusions and recommendations

The fast-paced VUCA business environment continuously presents organisations with adaptive challenges, usually leading to organisational losses. As presented in Figure 10, an adaptive leadership approach aims to increase adaptivity, agility and resilience in the face of complex challenges. The qualitative analysis supported existing connections and further contributed by adding more links and an element to the framework. Appendix 3 presents ten supportive codes, one new element and four new links. The comments column presents the discussion for each of the codes. The yellow highlighted elements and links in 10 are numbered according to the references of the table in Appendix 3 to present the qualitative analysis in addition to the updated framework.

Adaptive leadership is about facing complex challenges by analysing the underlying challenges, sub-systems and dynamics. ST is the foundation of adaptive leadership as it views problems as interconnections of a larger whole, uses feedback loops, acknowledges elemental relationships and ultimately realises that a change in one part causes a nonlinear change. Adaptive leaders use fundamental ST tools such as causal loop diagrams to unpack the cause and effect of systems to establish feedback loops and realise balancing or reinforcing loops for
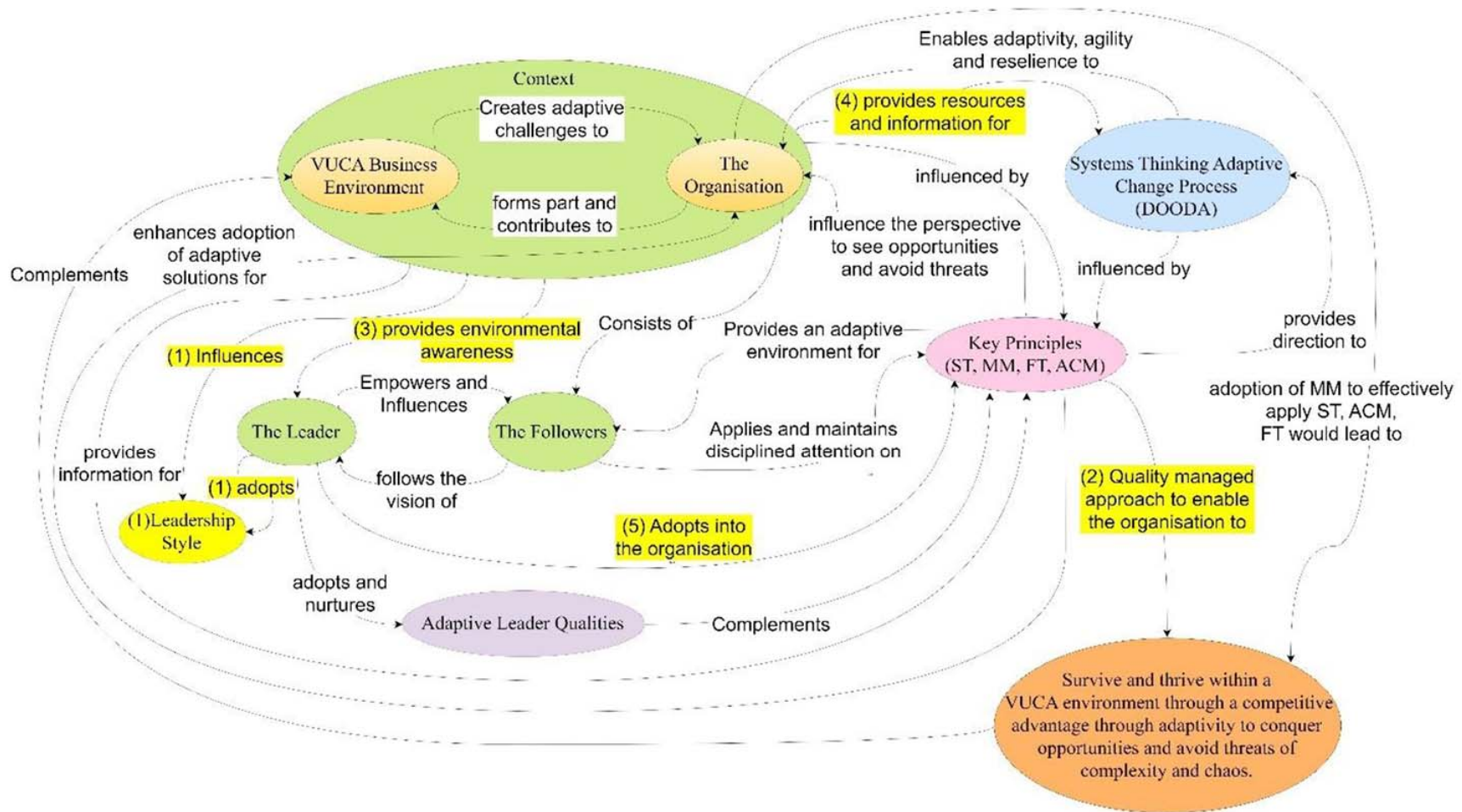
Source: Authors' own work

Figure 10. Summarised adaptive leadership framework

causing the most desirable change in the system. An adaptive leader can build the foundation of an adaptive solution based on the iceberg system thinking model. The underlying structures of an adaptive challenge are the root cause behind the surfacing of the visible challenge. Once leaders understand the underlying problems and their causal loops, they can identify system archetypes to develop an impactful strategy to resolve the root of the iceberg.

The leadership framework provides leaders with guiding principles that enable sensing and diagnosing adaptive challenges, managing the stress of the followers and enabling the absorption of organisational shocks while balancing values in the mental models. ST aids in realising underlying competing values in organisational mental models by understanding the interconnections and simulating the impact of one change in an element, at a trade-off from another, which can non-linearly impact the system. The ST-based framework views leadership as an interconnected process involving the leader, followers and organisational context. Leaders must establish processes that link these elements and enable them to adapt and evolve with changing conditions. Instead of relying on specific leadership traits, this approach implements processes that create organisational resilience.

As seen in Figure 10, the leadership framework, through ST, provides ground for further investigation in this field. This research provided a universal framework to connect the elements and their relationships to reach the organisational purpose of success. However, further research is required to understand better suitable leadership styles, personality traits and the framework's effectiveness in real-life VUCA situations. Below are suggestions for future research:

- How effective is the ST model in creating Adaptive Organisational Leadership?
- Which leadership style is suitable to which adaptive challenge situation?
- Which personality traits have the highest impact on adaptive leadership?

Leaders are the captains of organisations in the high seas of the business environment. Leaders need a compass that guides, steers and modifies the ship to at least survive, if not thrive. A compass does not guarantee survival, but it is a tool to enhance the chances of success. The adaptive leadership framework through ST is created through an SLR and endorsed by industry leaders. The implementation of the framework is where mental models are vital to navigating VUCA, delivering impactful change and leading through transformational organisations.

References

Alexander, A., Kumar, M. and Walker, H. (2018), "A decision theory perspective on complexity in performance measurement and management", International Journal of Operations & Production Management, Vol. 38 No. 11, pp. 2214-2244.

Arnold, R. and Wade, J. (2015), A Definition of Systems Thinking, Vol. 44, pp. 669-678.

Barlach, L. and Plonski, G.A. (2021), "The Einstellung effect, mental rigidity and decision-making in startup accelerators", Innovation and Management Review, Vol. 18 No. 3, pp. 276-291.

Bashir, J. (2021), "Total leader's mind", International Journal of Management Studies and Social Science Research, Vol. 3 No. 5, pp. 340-349.

Bass, B.M. (1999), "Two decades of research and development in transformational leadership", European Journal of Work and Organizational Psychology, Vol. 8 No. 1, pp. 9-32, available at:
www.tandfonline.com/doi/pdf/10.1080/135943299398410?casa_token=ZeHodQMuGVcAA AAA:R9oGowLO31rRb2j0qDQGyRwXNmJF1BAilimduwmaGYR2GrHBnh55rkrB6ejYUi OMotxnRxJRIEe3

Bennett, N. and Lemoine, G.J. (2014), "What VUCA really means for you", available at: https://hbr.org/2014/01/what-vuca-really-means-for-you (accessed 16 October 2022).

Botha, A. (2018), "Rapidly arriving futures: future readiness for Industry 4.0", South African Journal of Industrial Engineering, Vol. 29 No. 3, pp. 148-160.

Burrell, D.N., Aridi, A.S., McLester, Q., Shufutinsky, A., Nobles, C., Dawson, M. and Muller, S.R. (2021), "Exploring system thinking leadership approaches to the healthcare cybersecurity environment", International Journal of Extreme Automation and Connectivity in Healthcare, Vol. 3 No. 2, pp. 20-32.

Castillo, E.A. and Trinh, M.P. (2019), "Catalysing capacity: absorptive, adaptive, and generative leadership", Journal of Organizational Change Management, Vol. 32 No. 3, pp. 356-376.

Cheung, H.Y. and Yu, E. (2020), "A review of the strategic planning process in the Hong Kong Police Force", Public Administration and Policy, Vol. 23 No. 3, pp. 245-258.

Cristina, M., Russo-Spena, T., Corsaro, D. and Kleinaltenkamp, M. (2022), "Crisis management in the COVID-19 pandemic waves", Journal of Business & Industrial Marketing, Vol. 37 No. 10, pp. 1949-1958.

Davis, A.P. (2015), "A conceptual model of systems thinking leadership in community colleges", Systemic Practice and Action Research, Vol. 28 No. 4, pp. 333-353.

De Hoyos, M. and Barnes, S.-A. (2012), "Analysing Interview Data. s.l.", Warwick Institute for Employment Research, available at: www.researchgate.net/profile/RezaBiria/post/Can-you-provide-me-with-references-employing-Conversation-Analysis-of-Interviewsettings/attachment/5c90f4bccfe4a729949701ce/AS%3A738165149163521%40155 3003694025/download/analysing_interview_data_1_-_w6.pdf

Easterby-Smith, M., Jaspersen, L., Thorpe, R. and Valizade, D. (2021), Management and Business Research, Sage Publications, UK.

Etikan, I. (2017), "Sampling and sampling methods", Near East University Faculty of Medicine Department of Biostatistics, Vol. 5 No. 6.

Fleming, K. and Millar, C. (2019), "Leadership capacity in an era of change: the new-normal leader", Journal of Organizational Change Management, Vol. 32 No. 3, pp. 310-319.

Francis, D. (2020), Exploiting Agility for Advantage: A Step-by Step Process for Acquiring Requisite Organisational Agility, Development and Learning in Organisations: An International Journal, Berlin/Boston.

George, T. and Merkus, J. (2022), Structured Interview | Definition, Guide & Examples, available at: www.scribbr.com/methodology/structured-interview/

Heifetz, R., Grashow, A. and Linsky, M. (2009), The Practice of Adaptive Leadership, Harvard Business Review Press, Boston, MA.

Herbst, T.H.H. (2022), "Leading in times of disruption: reimagining leadership and repositioning leaders", Leadership New Insights, IntechOpen, doi: 10.5772/intechopen.100208.

Johnson-Kanda, I. and Yawson, R.M. (2018), "Complex adaptive leadership for organization and human development", *Proceedings of the 55th Annual Eastern Academy of Management Conference, 5*.

Khan, M.M., Ahmed, S.S. and Khan, E. (2021), "The emerging paradigm of leadership for future: the use of authentic leadership to lead innovation in VUCA environment", Frontiers in Psychology, Vol. 12, p. 759241.

Klockner, K. (2017), "Developing organisational resilience: organisational mindfulness and mindful organising", Australian Journal of Emergency Management, Vol. 32 No. 4, p. 47.

McNulty, E.J. and Marcus, L. (2020), "Are you leading through the crisis… or managing the response", Harvard Business Review, Vol. 68, pp. 531-532.

Maran, T.K., Baldegger, U. and Klösel, K. (2022), "Turning visions into results: unravelling the distinctive paths of leading with vision and autonomy to goal achievement", Leadership & Organization Development Journal, Vol. 43 No. 1, pp. 133-154.

Mellner, C., Osika, W. and Niemi, M. (2022), "Mindfulness practice improves managers' job demands-resources, psychological detachment, work-nonwork boundary control, and work-life balance – a randomised controlled trial", International Journal of Workplace Health Management, Vol. 15 No. 4, pp. 493-514.

Meritt, J. (2022), "Systems Thinker", available at: https://thesystemsthinker.com/what-are-mental-models/ (accessed 16 April 2023).

Moen, D. (2017), "The leader-investigator: using leadership studies as a model for conscientisation through adaptive leadership", Journal of Thought, Vol. 51 Nos 3/4, pp. 22-37.

Northouse, P.G. (2019), Leadership Theory & Practice, 8 ed., Sage, s.l.

Okoli, C. and Schabram, K. (2010), "A guide to conducting a systematic literature review of Sprouts", Working Papers on Information, pp. 10-26, available at: https://hal.science/hal-01574600/file/article.pdf

Peschl, M.F. (2019), "Unlearning towards an uncertain future: on the back end of future-driven unlearning", The Learning Organization, Vol. 26 No. 5, pp. 454-469.

Phyllis, B.S., Walton, P., Mawhiney, H. and Brown, A. (2016), "On political leadership", Journal of the American Academy of Arts & Sciences, Vol. 145 No. 3.

Postma, A. and Yeoman, I.S. (2020), "A systems perspective as a tool to understand disruption in travel and tourism", Journal of Tourism Futures, Vol. 7 No. 1, pp. 67-77.

Pregmark, J.E. (2022), "Renewing models for change", The Learning Organization, Vol. 29 No. 3, pp. 255-274.

Surace, A. (2019), "Complexity and leadership: the case of a military organization", International Journal of Organizational Analysis, Vol. 27 No. 5, pp.1522-1541, available at: www.emerald.com/insight/content/doi/10.1108/ijoa-12-2018-1614/full/pdf?casa_token=n1prKGRnh5sAAAAA%3AS7a-ZXCX0XKeXRBIbMAameSIl6_QZFZajynBi05ZPupgYdqmbCEsgTM_cy587SO3zwe2Bl_O-49fzddBv77KJ7A_pauREqDTJJrLsFPQIPLC_kNmfvo

Taskan, B., Junça-Silva, A. and Caetano, A. (2022), "Clarifying the conceptual map of VUCA: a systematic review", International Journal of Organizational Analysis, Vol. 30 No. 7, pp. 196-217,

Uys, J. and Webber-Youngman, R.C.W. (2020), "A 4.0 leadership model for mining and related industries in the context of the 4th industrial revolution", Department of Mining Engineering, University of Pretoria, available at: www.researchgate.net/profile/J-Uys-2/publication/351228806_A_40D_Leadership_Model_for_Mining_and_Related_Industries_in_the_Context_of_the_4th_Industrial_Revolution/links/608bf68c458515d315e71c25/A-40D-Leadership-Model-for-Mining-and-Related-Industries-in-the-Context-of-the-4th-Industrial-Revolution.pdf

Voros, J. (2003), "A generic foresight process framework", Foresight, Vol. 5 No. 3, pp. 10-21, available at: www.emerald.com/insight/content/doi/10.1108/14636680310698379/full/pdf?casa_token=zJycC1Ka94cAAAAA:2lNfrv0km6evgeZLRbz2zSJPAtlJX5V2RiGXI9NJkLQitolAFXsynvtQEt-Boa_9Mmpkf2SUvxo1fKSRsgVLPfTry_re1_PWfSRDZ4wOgkkoEWhfZA

Waller, L., Millar, C. and Culpin, V. (2017), "The science of leadership and implications for leadership development in a more complex world", Leadership and Organization Development Journal, Vol. 38 No. 4, pp. 502-512, available at: www.academia.edu/81326513/The_science_of_leadership_and_implications_for_leadership_development_in_a_more_complex_world

Further reading

Esenyel, V. (2024), "Evolving leadership theories: integrating contemporary theories for VUCA realities", Administrative Sciences, Vol. 14 No. 11, p. 270.

Florek-Paszkowska, A., Ujwary-Gil, A. and Godlewska-Dzioboń, B. (2021), "Business innovation and critical success factors in the era of digital transformation and turbulent times", Journal of Entrepreneurship, Management and Innovation, Vol. 17 No. 4, pp. 7-28.

Indeed Editorial Team (2021), "Reliability in research: definition and assessment types", available at: www.indeed.com/career-advice/career-development/reliability-in-research#:~:text=What%20is%20research%20reliability%3F,not%20influenced%20by%20external%20factors (accessed 28 December 2022).

Kellerman, B. (2016), "Leadership–it's a system, not a person!", Daedalus, Vol. 145 No. 3, pp. 83-94, available at: https://direct.mit.edu/daed/article/145/3/83/27116/Leadership-It-s-a-System-Not-a-Person

Kruse, K. (2013), "What is leadership?", available at: www.forbes.com/sites/kevinkruse/2013/04/09/what-is-leadership/?sh=579af35c5b90 (accessed 13 October 2022).

Noble, H. and Smith, J. (2015), "Issues of validity and reliability in qualitative research", Evidence Based Nursing, Vol. 18 No. 2, pp. 34-35.

Obolensky, N. (2010), Complex Adaptive Leadership: Embracing Paradox and Uncertainty, Routledge, s.l.

OECD Centre for Entrepreneurship (2009), The Impact of the Global Crisis on SME and Entrepreneurship Financing, OECD, France.

Paoletti, J., Reyes, D.L. and Salas, E. (2019), "Leaders, teams and their mental models", pp. 277-300.

Tokar, S. (2022), "What is organisational leadership?", available at: www.snhu.edu/about-us/newsroom/business/what-is-organisational-leadership#:~:text=Organisational%20leadership%20is%20a%20management,in%20service%20to%20those%20goals