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# Sense of coherence and technological adaptation during the Fourth Industrial Revolution



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**Orientation:** This qualitative study explores the interlinkage of Sense of Coherence (SOC) and technological adaptability among managers in the banking sector during the Fourth Industrial Revolution.

**Research purpose:** The purpose of the study was to understand the interplay between SOC principles and technological adaptability through the lived experiences of managers.

**Motivation for the study:** As organisations increasingly adopt digital tools, understanding the psychological factors that enhance or hinder technological adaptability becomes crucial. This study addresses the limited exploration of SOC within the context of technological transformation in organisations.

**Research approach/design and method:** A qualitative, interpretive research design was adopted. Semi-structured interviews with 10 managers from diverse professional and demographic backgrounds were analysed thematically.

**Main findings:** A high SOC significantly enhances technological adaptability by fostering problem-solving and a sense of purpose. Comprehensibility aids in understanding and navigating new systems, manageability is supported by collaboration and organisational resources, and meaningfulness motivates individuals to embrace change despite challenges. However, systemic inefficiencies and insufficient guidance emerged as sources of dissatisfaction.

**Practical/managerial implications:** Organisations can enhance technological adaptability by implementing targeted training programmes, strengthening communication channels and fostering a collaborative culture.

**Contribution/value-add:** The findings offer actionable insights for managers, practitioners and policymakers seeking to navigate technological transformation effectively.

**Keywords:** sense of coherence; salutogenesis; technological adaptability; workplace; Fourth Industrial Revolution.

*Those who cannot change their minds*
*cannot change anything.*
*George Bernard Shaw*

## Introduction

Salutogenesis, introduced by Antonovsky (1979), focuses on enhancing health by leveraging existing resources rather than addressing illness (Makoge & Maat, 2023). The model seeks to explain why certain individuals maintain their health when exposed to stress (Dziuba et al., 2021). It emphasises resources over risk factors and advocates for strategies that optimise well-being (Shmarina et al., 2021). Its central concept, the Sense of Coherence (SOC), encompasses comprehensibility, manageability and meaningfulness, which together enable individuals to navigate stress through generalised resistance resources (GRRs) (Braun-Lewensohn & Mayer, 2020).

Technological advancements, particularly during the Fourth Industrial Revolution (4IR), have reshaped work practices by increasing flexibility while also introducing stress and mental health challenges (González-López et al., 2021). These challenges involve adapting to new technologies and managing increased work demands, notably in sectors such as banking, where digital transformation is significant (Taherdoost, 2023). Sense of Coherence may benefit managers during these transitions, as it is inversely related to mental health issues (Schaefer et al., 2023).

This study broadly defines technology to include tools and processes relevant to SOC and the 4IR, such as artificial intelligence (AI), robotics and data analytics. It also aims at fostering a positive perspective on SOC and technology advancement (Barmeyer & Mayer, 2020).

The 4IR, which integrates physical, digital and biological domains, has transformed workplaces and accelerated digital adoption, a trend that intensified during the 2020 pandemic (Marsh et al., 2022). Although the 4IR requires rapid skill development and adaptation, it has been associated with increased stress and mental health concerns (González-López et al., 2021). The finance sector illustrates this shift, with banks transitioning from traditional methods to automated, digital operations (Melnyk, 2023).

Bank managers encounter stressors from both adapting to technological changes and managing routine operations, such as handling client requests and system management (Chitamba et al., 2024). Effectively leading these changes demands agility, strategic intent and alignment with organisational goals (Chitamba et al., 2024). However, there is limited research on how SOC affects managers' perceptions of stress and their adaptability to technological changes in the context of the 4IR, especially within the banking sector. This study seeks to address this gap.

## Research purpose and objectives

To ensure the study addresses its primary aim effectively, specific research objectives were established. The following objectives aim to explore the SOC and technological adaptability of managers in the banking sector during the 4IR and their interlinkages.

This study addresses the following research questions, which are closely aligned with its aim and objectives. The main research question is as follows:

1. *How are SOC and technological adaptability interlinked in the experiences of managers in the banking sector during the 4IR?*

This is followed by the sub-questions which are:

1.1. *How is SOC displayed by managers in the banking sector?*
1.2. *How do managers adapt to technology in the banking sector?*

## Salutogenesis in workplaces and industrial and organisational psychology

Antonovsky (1979, 1987a) introduced the concept of salutogenesis to explore how diverse stressors – social, economic, cultural, physical, mental and biochemical – affect health outcomes (Polhuis et al., 2020). Salutogenesis, combining the Greek 'genesis' and Latin 'salus' to mean 'origin of health', focuses on enhancing well-being by leveraging both individual and collective resources (Polhuis et al., 2020). Antonovsky challenged static health models by portraying health as a continuum towards well-being, emphasising continued engagement despite adversity and the importance of trust in meaningful contexts (De Oliveira Olney & Kiss, 2021).

The continuum model of health defines health as a spectrum from ease to disease, highlighting persistence amid life's challenges – likened to navigating a 'dangerous river' (Pelikan, 2022). Antonovsky developed the SOC scales to assess individuals' abilities to perceive stressors as comprehensible, manageable and meaningful (Hewis, 2023). These dimensions, along with GRRs, form the core of salutogenesis (Pelikan, 2022).

Introduced in *Health, stress, and coping* (1979), SOC is central to salutogenesis, reflecting the capacity to navigate stress through comprehensibility, manageability and meaningfulness (Mittelmark & Bauer, 2022; Williams et al., 2022). Comprehensibility involves seeing life as logical and predictable (Yalnizca-Yildrim & Cenkseven-Önder, 2022); manageability is about having sufficient resources to cope effectively; and meaningfulness relates to deriving purpose and motivation from life (Piiroinen et al., 2024). Empirical research links SOC to better mental and physical health (Mayer & Van Zyl, 2013), persistence and overall quality of life (Dziuba et al., 2021), as well as intercultural competencies (Mayer, 2011).

As workplaces evolve with increased psychosocial demands, Antonovsky's salutogenic theory offers a valuable framework for fostering well-being. Sense of Coherence is associated with positive organisational climates, job security, enhanced well-being (Jenny et al., 2022), constructive conflict management in organisations (Mayer, 2012) and career development (Mayer, 2014). Employees with high SOC tend to view challenges as opportunities, improving their stress management and coping strategies (Fayard & Mayer, 2023; Rothmann et al., 2005). In South Africa, for example, SOC has played a crucial role during crises such as the coronavirus disease 2019 (COVID-19) pandemic by mitigating psychological distress and promoting adaptability (Padmanabhanunni & Pretorius, 2023).

In the 4IR, SOC remains pivotal in navigating technological shifts (The Presidency, 2019). It supports employees in coping with the demands of innovation, as illustrated in workplace counselling studies emphasising SOC's role in fostering engagement (Moralo & Graupner, 2022). Overall, SOC's holistic approach to understanding and managing stress (Mayer et al., 2021a, 2021b) makes it integral to enhancing employee well-being and adapting to the changing workplace landscape.

## The importance of the sense of coherence in the workplace

Work environments inherently encompass both positive and negative elements, often leading to employee stress (Nelson & Simmons, 2003). Stressors can manifest as eustress (positive) or distress (negative), prompting adaptive coping mechanisms

(Nilsson et al., 2012). Workplace interventions traditionally focus on reducing distress to mitigate disease and improve well-being (Nilsson et al., 2012). Hochwälder (2024) applies Antonovsky's continuum of health, with ease and disease at opposing ends, to highlight the significance of SOC – comprehending situations holistically and utilising resources effectively. Consistent and balanced work experiences that foster decision-making opportunities are critical for a strong SOC (Antonovsky, 1987a, as cited in Idan et al., 2022).

Comprehensibility, the cognitive component, denotes an individual's capacity to view work environments as structured and coherent, enabling effective navigation of challenges (Louw & Mayer, 2014). Without it, frustration and misaligned goals may emerge (Pazell & Boylan, 2024). Manageability relates to the perception of having sufficient tangible resources to address workplace demands. Meaningfulness, the motivational aspect, underlies emotional engagement and fosters commitment, making it a vital salutogenic resource (Mousa & Chaouali, 2022). This subjective element significantly shapes work perceptions and engagement. Personal factors and workplace features, such as organisational structure and processes, influence these SOC components (Babapour Chafi et al., 2021).

Improved stress management promotes well-being and productivity, underscoring the need to reduce workplace stressors (Demerouti & Bakker, 2023). In contrast, unmitigated stress can reduce focus, engagement and motivation, thereby hindering productivity (Gabriel & Aguinis, 2022). A supportive work environment, however, enhances SOC, which in turn fosters adaptability and engagement (Mayer, 2020; Mayer & Oosthuizen, 2020). The SOC components are interdependent: comprehensibility bolsters manageability, and meaningfulness drives resource utilisation and understanding (Antonovsky, 1987a). In addition, GRRs predict a higher SOC, further strengthening individuals' capacity to overcome challenges (Louw & Mayer, 2014; Mitonga-Monga & Mayer, 2020).

# Research design and methodology

Research methodology involves the structured organisation of research activities, systematically addressing research questions through a sophisticated strategy grounded in ontological and epistemological principles (Nayak & Singh, 2021). Research design provides a framework to coherently organise a study, addressing its research questions effectively by guiding the selection of methodology, data collection and analysis techniques (Babbie & Mouton, 2001).

## Research approach

Qualitative research examines participants' experiences to understand how they interpret and ascribe meaning to their environments, addressing complex social issues with interpretive and naturalistic methods (Small, 2021). It enables a nuanced exploration of phenomena, particularly where existing knowledge is scarce, emphasising subjectivity as a valuable analytical component (Braun & Clarke, 2022). This study explores employees' SOC and technological interactions within workplace contexts, adopting a subjective perspective to provide rich, descriptive insights (Small, 2021).

This study adopts an interpretive research paradigm, which views reality as socially constructed through subjective meanings developed in interaction with the world (Hesse-Biber & Leavy, 2011). Guided by a relativist ontology and constructivist epistemology, the research emphasises participants' lived experiences and contextual understandings, co-constructing knowledge through dialogic engagement (Hesse-Biber & Leavy, 2011).

## Research strategy

Employing a phenomenological strategy, the study focuses on understanding managers' lived experiences regarding their SOC and technological adaptability. Phenomenology identifies patterns in subjective realities and their contextual dependencies, providing insights into how SOC influences managers' ability to adapt to technological advancements in dynamic work environments (Ozuem et al., 2022).

### Sampling techniques

Recruitment involved direct workplace visits and coordination with gatekeepers to inform potential participants. Consent was obtained through information letters and signed consent forms, and interviews were conducted virtually using telephonic communication. Participants, predominantly isiZulu speakers, held diverse roles in middle management, senior management and specialist positions, with varied educational backgrounds and tenure.

### Research participants and sampling methods

This study utilised convenience and snowball sampling methods. Convenience sampling enabled efficient data collection by selecting readily accessible participants (Kennedy-Shaffer et al., 2021). To mitigate the limitations of convenience sampling, particularly potential selection bias, snowball sampling was used to expand the sample through referrals within participants' social networks, creating a cascading effect (Kennedy-Shaffer et al., 2021). This approach enabled access to a broader pool of participants, allowing for the inclusion of diverse managerial roles and departments, thereby enhancing the richness and credibility of the data. The population comprised managers from a selected bank, with 10 participants selected based on criteria such as employment in the banking sector, being above the age of 18, regular use of workplace technology and representation across diverse work environments (Table 1). Together, the combination of convenience and snowball sampling facilitated access to information-rich participants while increasing variation in perspectives on technological adaptation and SOC.

### Data collection methods

Semi-structured interviews were employed as the primary qualitative method, combining pre-determined questions with flexibility to explore participants' perspectives in depth

**TABLE 1:** Demographic data of participants.

| Participant number | Participant role | Sex | Age range (years) | First language | Second language | Level of employment |
|---|---|---|---|---|---|---|
| 1 | Branch Manager | Female | 35–45 | Zulu | English | Middle Management |
| 2 | Branch Manager | Female | 35–45 | Zulu | English | Senior Management |
| 3 | Branch Manager | Male | 35–45 | Zulu | English | Middle Management |
| 4 | Branch Manager | Male | 35–45 | Zulu | English | Senior Management |
| 5 | Branch Manager | Male | 35–45 | Zulu | English | Middle Management |
| 6 | Branch Manager | Male | 35–45 | Sotho | Zulu | Middle Management |
| 7 | Training and Development Manager | Male | 50–60 | English | Zulu | Specialist |
| 8 | Digital Marketing Manager | Male | 29 | Zulu | English | Specialist |
| 9 | Sales Enablement Manager | Male | 35 | Xhosa | Zulu | Senior Management |
| 10 | Area Manager/Financial Adviser | Male | 35 | Zulu | English | Specialist |

(Adeoye-Olatunde & Olenik, 2021). This approach provided insights into participants' SOC and adaptation to workplace technology by using open-ended questions to elicit reflective responses. A pilot phase with three participants refined the interview protocol for clarity and depth (Castillo-Montoya, 2016). Interviews were recorded via Microsoft Teams with consent and supplemented with notetaking for accuracy. The researcher transcribed the interviews personally, deepening engagement with the data and aiding in theme identification. Data collection continued until saturation was achieved, ensuring comprehensive coverage of the research objectives. Saturation was reached after conducting 10 interviews with managers from different departments and roles within a selected bank, all of whom met the inclusion criteria. This point was identified through ongoing thematic analysis, where successive interviews confirmed existing patterns without introducing novel concepts.

### Strategies employed to ensure data quality and integrity

The study adhered to Lincoln and Guba's (1986) constructs of credibility, dependability, confirmability and transferability. Credibility was enhanced through member checks, prolonged engagement and triangulation, while dependability was ensured through transparent research processes. Confirmability and transferability were maintained through audit trails and detailed documentation, supporting the study's integrity and applicability (Guillemin & Gillam, 2004).

### Data analysis

The study utilised thematic analysis according to Braun and Clarke's (2022) framework to reveal patterns and meanings within the data. This inductive method allowed themes to emerge naturally from the transcripts, grounding the findings in participants' lived experiences (Ozuem et al., 2022). The process comprised five steps: familiarisation and transcription, identification of keywords, coding, theme development and conceptualisation of emerging themes. A conceptual model was then developed to contextualise the findings and inform future research (Grodal et al., 2021). Strict adherence to ethical guidelines, including maintaining confidentiality and using accurate quotations, preserved data integrity (Lingard, 2019).

Data saturation, defined by Glaser and Strauss (2017) as the point when no new themes emerge, was achieved, confirming comprehensive coverage of the research topic (Ozuem et al., 2022). Research indicates that most themes appear within the first 10 interviews, which aligns with the findings of this study (Grodal et al., 2021).

### Reporting style

The study employed a qualitative reporting style.

## Ethical considerations

Ethical approval to conduct this study was obtained from the University of Johannesburg (IPPM-2024-917[M]). The study complied with ethical standards to safeguard participants' rights and well-being as well as key principles which included anonymity, privacy, informed consent, voluntary participation and the right to withdraw at any time (Mumford et al., 2021). Non-maleficence was emphasised to minimise harm and ensure participants' comfort (Guillemin & Gillam, 2004). Data were managed with integrity, ensuring confidentiality and adherence to ethical guidelines throughout the research process.

# Results

Thematic analysis of interview transcripts, conducted through multiple reviews, led to the identification of 16 distinct codes that were refined into 8 key themes, encapsulating participants' experiences with SOC and technological adaptability.

These themes, as depicted in Figure 1, highlight the interplay between comprehensibility, manageability and meaningfulness within SOC, alongside emotional responses, adaptive strategies, institutional support and meaningful integration of technology in technological adaptability. Furthermore, the interconnections between SOC and technological adaptability, such as self-regulation and troubleshooting, were explored, underscoring how these variables influence one another. Selected participant quotes were used to illustrate each theme, maintaining the authenticity of their narratives.

The themes revealed critical elements of managers' navigation of technological adaptation while preserving coherence in their roles. For instance, comprehensibility reflected understanding systems and client needs, while manageability emphasised resource availability, such as team support.

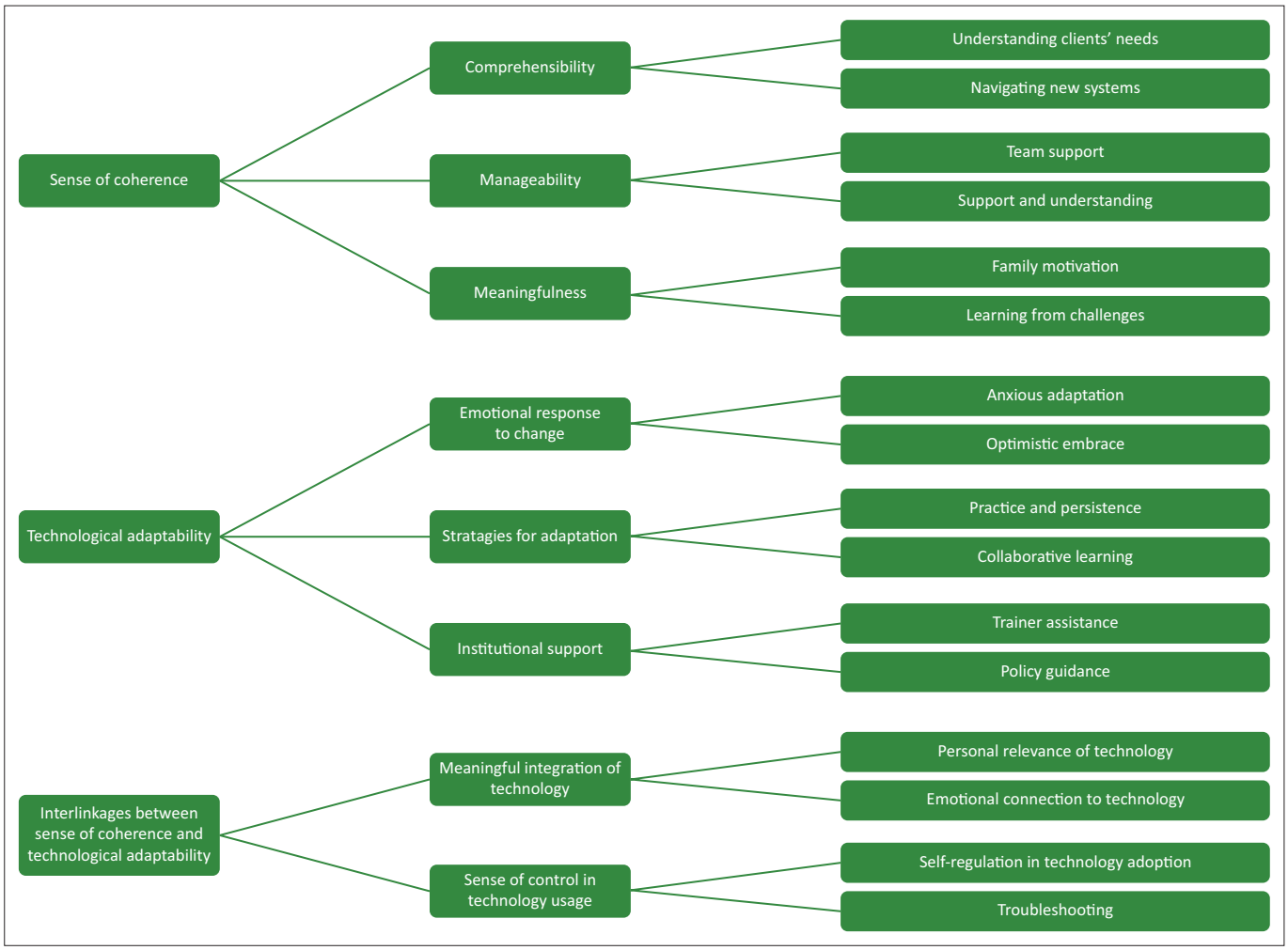


**FIGURE 1:** Themes and codes identified through thematic analysis for sense of coherence, technological adaptability and the interlinkages between them.

Meaningfulness encompassed motivation derived from family and learning. Technological adaptability themes included emotional responses (e.g. anxious adaptation and optimism), strategies such as collaborative learning and persistence, and the importance of institutional guidance and personal relevance of technology. Figure 1 provides a visual representation of these interconnected dimensions.

Ten participants from diverse professional and demographic backgrounds contributed to the study, with interviews lasting 40–60 min. Anonymised identifiers (P1–P10) ensured confidentiality. The participants' varied experiences provided a robust foundation for linking the findings to the research questions and situating them within the existing literature. This comprehensive approach highlighted shared challenges and individual insights into SOC and technological adaptability, emphasising the nuanced relationship between these factors.

## Comprehensibility

### Understanding client needs

Comprehensibility emerged as a critical theme, highlighting the importance of tailoring managerial approaches to meet diverse client needs. Participants emphasised situational awareness and empathy as essential for addressing client-specific requirements. For example, P1, a Zulu-speaking female branch manager, underscored the necessity of adapting services to clients' demographics, particularly the elderly, stating:

> 'One needs to first think about the clients … If you're introducing digital platforms, you need to assess whether that person will be able to use or understand them.'

P2 reinforced the role of empathy, describing the need to 'put yourself in the shoes of our clients' to better assist those unfamiliar with digital solutions.

Similarly, P9, a Xhosa-speaking senior manager, emphasised interpersonal communication in building trust, explaining:

> 'Some customers are still intimidated by the space within banks. Once they come in, they don't really know how to tell us what they need.'

He described a guiding approach, ensuring clients understood their options. P4 stressed personalised service, noting that attentiveness fosters trust:

> 'One of them even said they think I forget myself in the room.'

## Navigating new systems

Participants also identified navigating new systems as a key dimension of comprehensibility, emphasising persistence, adaptability and continuous learning. Generational challenges were acknowledged, with P1 stating:

> 'I feel challenged, especially with my age. I'm really depending on the young ones for support.'

However, she highlighted the importance of embracing change and seeking support. P3 echoed this sentiment, emphasising proactive engagement through extra practice and immersive learning. P3 explained:

> 'By practicing how to use this interface, I had to put in more hours after work.'

P5 noted generational differences in technological adaptability but recognised professional benefits, stating:

> 'I always make this reference to the new kids … They're exploiting technology and its potential.'

P10 adopted a self-directed approach, investing extra time in trial-and-error, saying:

> 'I went ahead and spent additional hours just clicking around, reading up on it, and watching available materials.'

P7 demonstrated humility in seeking retraining when necessary:

> 'If I need to be retrained, I'm not scared or embarrassed because I know that I'm technologically challenged.'

While P7's willingness to ask for help shows openness rather than resistance, it also highlights a deeper reliance on external structures rather than internal mastery. P7's use of 'technologically challenged' underscores a fixed mindset and suggests a barrier to developing comprehensibility. In addition, the lack of mention of self-directed practice indicates a different form of coping, one based on seeking retraining rather than independent exploration. This contrasting view is critical in balancing the interpretation of this theme. It reveals that not all managers navigate new systems with the same confidence or strategy.

In summary, comprehensibility encompasses understanding client needs and navigating new systems effectively. By fostering empathy, personalising services and maintaining adaptability, managers enhance clarity and ensure alignment with clients' expectations.

## Manageability

### Team support

Manageability in the workplace is reinforced through team support, ensuring adaptability and engagement. P1 emphasised the importance of remaining up to date with relevant literature:

> 'Keeping yourself up to date with policies and procedures … nothing should be really a surprise or difficult.'

P6 highlighted hands-on support:

> 'I assist my team members by going to them with clients, visiting them during interviews, and giving feedback.'

Transparency was another crucial element, with P2 stressing:

> 'The most important thing is to be transparent to a team. Explain what is happening. Be truthful to them.'

Mentorship played a significant role, as P7 stated:

> 'With junior members, I act as a mentor because of the experience I have.'

P9 underscored collaboration, noting:

> 'Due to the versatile nature of the group, it is not hard to see who needs help and help each other.'

These insights illustrate how relevant knowledge, transparency, mentorship and collaboration contribute to team manageability.

## Support and understanding

Support and understanding were key factors in creating a manageable work environment. P1 reinforced the need for continuous learning:

> 'Read your policies and procedures all the time … that way you stay educated.'

P2 described using meditation for stability:

> 'When I'm facing challenges, I meditate a lot … that gives me peace.'

Supportive leadership was highlighted by P5:

> 'I am fortunate to have a supportive manager who understands what really goes on at the ground level … they step in when I feel overwhelmed.'

P8 spoke about leveraging external networks:

> 'If it's career driven, I reach out to those who have higher rankings than me outside my organisation.'

P9 emphasised spiritual reliance:

> 'If it's a big problem, I go to God … and then I need to make a decision.'

P4 reinforced the importance of collective wisdom, stating:

> 'I ask others for their opinions. I also go to more senior people for input.'

These perspectives highlight the role of continuous learning, support systems and personal strategies in workplace manageability.

## Meaningfulness

### Family motivation

Family emerged as a primary source of motivation. P1 stated:

> 'My family. My children. I look at the world outside and I think what will a person be … without a proper job and a

decent salary to get every month for me to be able to take my kids to a good school … That motivates me to wake up every morning.'

P3 reinforced this, saying:

'I am a husband. I am a father. I am a son. I am a brother. These are all my positions in life, and I try to be the best version of me that I can be within those positions.'

P6 emphasised financial responsibility, noting:

'I have kids. I have family, so I have to provide for them. That would be the first thing that makes me wake up in the morning.'

## Learning from challenges

Participants viewed challenges as opportunities for growth. P1 noted:

'There's always something to learn out of a certain challenge … every time there's a situation that I'm going through, I'll find ways to overcome it.'

P2 echoed:

'Every challenge is an opportunity to learn something new.'

P9 emphasised:

'When the situation is over, I will be a better version of myself. As long as I learned something from it … I will have learned how to handle it better.'

P4 reinforced this view, stating:

'Every difficult situation gives us a view on life and shapes us into the individuals that we grow up to be.'

## Emotional response to change

### Anxious adaptation

Many participants experienced anxiety about technological changes. P1 admitted:

'I feel challenged. Especially with my age. And I always feel that I'm, I'm really depending on the young ones for support.'

P3 acknowledged:

'If there is a change of sorts like software change, I'm anxious, to be honest with you … it does impact our performance in our workplace.'

P2 recalled:

'When the organisation introduced a new system, they said they were going to discontinue the one we were using. It was challenging.'

P10 described frustration, stating:

'It's extremely frustrating to have to start from scratch and understand the new software … because our clients need to be serviced, and there's no time to start over and relearn this particular software.'

P9 reflected on generational struggles, noting:

'I remember how the older generation kept on complaining when we used to teach them about computers, and now it seems like I have become one of them.'

## Optimistic embrace

Despite challenges, some participants embraced change positively. P1 credited institutional support:

'We are being given an opportunity to learn … there has never been a moment where they introduce a new technology without giving us information around it.'

P3 added:

'Back in my varsity years, they used to say when a system changes, it's normally to be user-friendly, so a software change is supposed to be more user-friendly than the previous one.'

P6 accepted change as necessary:

'It's there for a purpose and it's there to enhance your capability of operating. We're moving into the digital world, so it's better for me to accept this technology.'

P2 highlighted her team's adaptation:

'Not only me but also my team – we've embraced these technological tools.'

P9 pointed out practical benefits:

'I am embracing technology right now. We are having this interview on MS Teams. Had it not been for technology, this would not have been possible.'

P4 noted:

'We're now making applications more user-friendly … Now we can bank 24/7, 365 due to the assistance of technology.'

P5 emphasised improvement:

'I always hope, and I believe that when a new system comes, it comes to make things easier, to make the processes quick, and to make my life and the customer's life easier.'

Conversely, resistance remained a challenge. P7 stated:

'I must be honest with you, I totally, totally resist … I'm very, very, very resistant towards it. I hate change. I don't adapt to technological change.'

These findings suggest that while many embrace technological change because of its benefits and institutional support, resistance persists. Addressing concerns and providing resources can foster a culture of adaptability.

## Strategies for adaptation

### Practice and persistence

Participants emphasised the importance of practice and persistence in adapting to technology. Curiosity, trial-and-error, and structured learning were key strategies. P3 highlighted curiosity as a motivator:

'Personally speaking, well, its curiosity, I guess. I try to adapt to how it works and so on and so forth.'

P6 emphasised trial-and-error, stating:

'The more you make mistakes on the systems, the more you learn.'

P4 stressed the value of hands-on learning:

'I believe that experience is the best teacher.' Structured learning approaches, such as additional study hours and step-by-step exploration, also facilitated adaptation.

## Collaborative learning

Collaboration played a crucial role in learning new technologies. P1 highlighted intergenerational knowledge sharing:

'We depend on senior people for experience, but we need young people in the system because they give us the latest inputs.'

Mentorship and IT support were essential, with P6 stating:

'I had to partner up with one of the older guys who was going on retirement. He showed me shortcuts and ways to navigate the systems.'

Expert consultation was preferred over independent troubleshooting, as noted by P5:

'If I can't do anything or I don't know something, I consult. I don't even want to try to make mistakes.'

Adaptation strategies combined individual persistence with collaboration, where curiosity, structured learning and practice enhanced personal adaptation, while teamwork, mentorship and IT support improved overall learning outcomes.

These findings underscore the complementary roles of individual persistence and collaborative learning in fostering adaptability, emphasising the synergy between personal initiative and external resources.

## Institutional support

### Trainer assistance

Trainer assistance emerged as vital in navigating new technologies. Participants valued structured training programmes. P3 noted the importance of dedicated trainers:

'There are people assigned as trainers in order to use this particular interface better and to be well-acquainted with it.'

P2 appreciated training that incorporated both theoretical and practical aspects:

'When you go through the policies and procedures, you get a deeper understanding of how the system works.'

Ongoing training was necessary because of technological changes, as P4 stated:

'The banking industry itself is volatile. While dealing with one problem, a new one might arise.'

## Policy guidance

Policies provided essential guidance. P1 stressed the importance of staying updated:

'Keeping yourself up to date with policies and procedures … nothing should be really a surprise or difficult.'

P9 emphasised balancing customer service with policy adherence:

'I need to find the best possible solution … without stepping out of the organisation's policies.'

Institutional support through structured training and policy frameworks enabled employees to adapt confidently to technological changes.

## Meaningful integration of technology

### Personal relevance of technology

Participants consistently emphasised the role of technology in enhancing efficiency and relevance in banking. Technology improved efficiency and streamlined workflows. P1 described banking apps as transformative:

'The banking app has been, you know, like you've got a bank in your hand.'

P3 noted the shift from manual to digital processes:

'Using the computer makes it simple and easy, saving files on the network.'

P6 highlighted technology's role in business efficiency, while P5 stressed the need for user-friendly systems:

'If the system is not user-friendly, then it becomes a big problem.'

## Emotional connection to technology

Participants had varying emotional responses, ranging from anxiety to enthusiasm. P1 described initial unease:

'Unease and anxious. To think, am I able to do it?'

In contrast, P6 found learning new technology exciting:

'It's always exciting because, once you master that technology, it will make your life easier.'

P9 noted that frustration diminished once technology proved useful:

'If the technology being implemented serves a purpose, those feelings of frustration will disappear eventually.'

These insights demonstrate the interplay between emotional responses and technological adaptability, highlighting how relevance and emotional connections shape users' experiences.

## Sense of control in technology use

### Self-regulation in technology adoption

Participants took proactive steps to integrate new technology. P1 acknowledged challenges but embraced change:

> 'Recently they've been introducing MS Teams on our cell phones … That's challenging for me. But you just have to embrace it.'

P6 immersed himself fully in new systems:

> 'I face the new technologies head-on and immerse myself into it.'

P8 used trial-and-error learning:

> 'I went ahead and spent additional hours just clicking around, seeing what was where.'

### Troubleshooting

Troubleshooting was integral to maintaining control over technology. P8 described generating support tickets:

> 'I had to generate a tag and send it to a dedicated person who managed it.'

P6 emphasised learning through mistakes, while P9 preferred expert assistance:

> 'We always have to call the call centre and tell them about the problem.'

These findings suggest that proactive learning, institutional support and troubleshooting skills empower managers to navigate technological challenges effectively.

### Integration of findings

The analysis explored SOC and technological adaptability among banking sector managers, focusing on the dimensions of comprehensibility, manageability and meaningfulness. Sense of Coherence significantly influences managers' responses to technological changes, fostering constructive approaches to workplace challenges.

Comprehensibility enhances adaptability by enabling managers to understand and navigate new systems effectively, aligning these with client needs. Manageability is bolstered through institutional and team support by providing resources for adaptation. Meaningfulness, rooted in personal and professional commitments, motivates managers to integrate technology into their roles, aligning advancements with their goals. The interconnection between SOC and technological adaptability highlights their reciprocal relationship, where a strong SOC fosters proactive and effective engagement with technology.

Managers demonstrate SOC through a clear understanding of client needs, adaptability in navigating new systems and empathy, particularly for clients unfamiliar with digital platforms. Manageability is evident in institutional and team support, complemented by personal coping strategies such as meditation and external guidance. Meaningfulness emerges as a driving force, with family responsibilities and professional challenges reinforcing their sense of purpose.

Adapting to technology involves a range of emotional responses, from anxiety to optimism, with managers viewing technological changes as opportunities for growth. Adaptation strategies include persistence, collaborative learning and structured training. Support from younger colleagues and institutional resources further enhances their adaptability. Managers integrate technology into their workflows to improve efficiency, client engagement and alignment with organisational objectives.

A sense of control is evident as managers adopt proactive approaches and develop troubleshooting skills, mastering new tools and addressing challenges confidently.

## Discussion

The findings of this study corroborate the theoretical framework of SOC proposed by Antonovsky (1987a), emphasising the dimensions of comprehensibility, manageability and meaningfulness in adapting to technological changes. These components align with existing literature while offering nuanced insights specific to the banking sector.

Comprehensibility equips managers to effectively navigate technological transitions, as understanding the functionality and purpose of new technologies enhances integration into workflows. This aligns with Braun-Lewensohn and Mayer (2020), who emphasise leveraging resources to make sense of challenges, and Chan and Shorey (2021), who underscore the role of clarity and predictability in fostering comprehensibility. The study expands the SOC framework by illustrating comprehensibility's relevance in client-focused industries, particularly in fostering empathy and adaptability in client interactions.

Manageability emerged as vital, enabling managers to utilise resources and support systems to adapt to technological demands. Institutional policies, team collaboration and personal coping mechanisms, such as stress management strategies noted by Babapour Chafi et al. (2021), bolstered engagement. This aligns with Mittelmark and Bauer (2022) on the importance of resistance resources in sustaining SOC. Structured training programmes and organisational support reduced the cognitive load of technological changes, resonating with Babapour Chafi et al. (2021). Relational aspects of manageability, particularly in collaborative problem-solving, highlight an extension of SOC principles in dynamic organisational environments.

Meaningfulness motivated managers to embrace technological advancements, deriving purpose from personal and professional goals. This aligns with Mousa and Chaouali (2022), who highlighted its role in fostering engagement. The study underscores meaningfulness as a bridge between personal values and organisational objectives, expanding on Braun-Lewensohn and Mayer (2020). Managers' ability to find meaning in experiences contributed to their adaptability, consistent with Berg et al. (2023). In addition, the compensatory role of strong motivation for low comprehensibility or manageability, as noted by Antonovsky (1987b), was evident in participants' efforts to navigate challenges.

Technological adaptability involved diverse emotional responses, with managers employing strategies such as persistence, collaborative learning and trial-and-error. These findings align with Braun-Lewensohn and Mayer (2020) on SOC's role in buffering stress and fostering engagement with change. However, systemic inefficiencies, such as technical glitches, induced stress, align with Dengler et al. (2022). The study also highlights the alignment of technology use with organisational goals, consistent with Piculell et al. (2021) and Malhotra and Grover (1998). Managers' ability to delegate routine tasks to technology to focus on value-adding activities underscores SOC's role in thriving within digital environments.

The study illustrates how meaningful integration of technology serves as a key linkage between SOC and adaptability. Managers' alignment of personal and professional goals with technological advancements concurs with Braun-Lewensohn and Mayer (2020). Ethical and relational considerations in technology adoption, such as maintaining the human element in digital environments, extend existing literature and suggest avenues for future research. The interplay of comprehensibility, manageability and meaningfulness collectively fosters innovation, consistent with Antonovsky's (1987a) principles and Vogt et al.'s (2013) emphasis on their interconnected nature.

Overall, the alignment of SOC principles with organisational structures is critical for fostering engagement and adaptability in the face of technological disruptions, balancing productivity gains with ethical and emotional considerations.

## Value-add of the study

This study advances the SOC framework by contextualising it within the 4IR, emphasising relational aspects such as client interactions and team dynamics. Unlike prior research focusing on individual and organisational benefits, this study integrates emotional, strategic and institutional factors, offering a holistic view of technological adaptability. However, gaps remain, particularly in understanding cultural influences on SOC and technology adoption, as noted by Braun-Lewensohn and Mayer (2020). Future studies should explore cross-cultural variations and ethical implications, including client trust and employee well-being, and extend the research to other industries for broader applicability.

This study extends the SOC framework by contextualising it within the 4IR, emphasising relational dimensions in client and team dynamics. It integrates emotional, strategic and institutional factors into the discourse on technological adaptability, broadening the SOC focus beyond health and stress management to address challenges in a rapidly evolving technological landscape. The findings reveal how SOC and technological adaptability interconnect, mutually reinforcing each other in dynamic organisational settings.

## Practical implications of this study for organisations

Organisations can benefit from the study by implementing comprehensive training programmes, clear policies, and robust support systems to foster adaptability. Managers' reliance on collaborative strategies underscores the need for clear communication and resources that enhance comprehensibility and manageability. Proactive learning and skill development can empower employees to navigate technological transitions, while human resource practitioners should design inclusive training tailored to individual technological proficiencies. Aligning organisational goals with employee motivations fosters a culture of innovation, engagement, and reducing turnover and driving productivity in technologically dynamic environments.

## Implications for industrial and organisational psychology practice

Industrial and organisational psychologists (IOPs) can leverage these findings to develop interventions that integrate SOC principles with technological training. By balancing organisational demands with employee well-being, IOPs can enhance engagement and performance while addressing psychological demands posed by rapid technological change. Promoting environments that are comprehensible, manageable and meaningful will reduce stress and improve adaptability. Industrial and organisational psychologists can also advocate for systemic changes aligned with 4IR demands, creating frameworks that support collaborative learning, resource accessibility and experiential training.

## Future recommendations for theory, organisational practice and industrial and organisational psychology

Future studies should employ longitudinal designs to track the evolution of SOC and adaptability over time. Mixed-method approaches could provide a comprehensive understanding by combining qualitative and quantitative data. Research should explore cross-cultural variations, demographic differences and international comparisons to enhance global applicability and refine models integrating mental health with technological adaptability.

Organisations should prioritise tailored training initiatives, relational strategies and clear policies to accommodate diverse employee needs. Addressing systemic inefficiencies, such as software glitches and resource allocation, is essential to reduce barriers to adaptability. Emphasising employee well-being and inclusivity will be critical in navigating 4IR challenges.

Industrial and organisational psychologists should advocate for systemic changes that embed SOC principles into organisational practices, creating collaborative environments that foster adaptability. Engaging in ongoing research to refine methodologies and expand SOC applications

will enhance workforce engagement and organisational effectiveness in the 4IR.

### Limitations of the study

The study's focus on the banking sector limits cross-sectoral applicability, while cultural factors were not explicitly explored. The reliance on self-reported data and a sample of 10 managers, primarily from a Zulu demographic, introduces potential biases and limits diversity in findings potentially overlooking how individuals from different ethnic or cultural backgrounds interpret and respond to technological change. Gender dynamics that can shape access to support, opportunities for leadership and willingness to take technological risks, particularly in environments where women may face subtle barriers to advancement or visibility was not focused on in this study. These gaps highlight the importance of incorporating more diverse voices in future research to ensure a fuller understanding of how SOC and technological adaptability are experienced across different social identities. Qualitative interviews, while rich in insight, may not fully capture the breadth of experiences. These limitations highlight the need for caution in interpretation and emphasise areas for future investigation.

## Conclusion

This study offers a robust framework for understanding the interplay between SOC and technological adaptability, contributing significant theoretical and practical insights. Addressing the challenges of the 4IR, it provides valuable guidance for managers, organisations and IOPs to navigate the complexities of modern workplaces effectively.

Sense of Coherence plays a crucial role in helping managers in the banking sector navigate organisational challenges and technological changes. Comprehensibility enables managers to understand client needs and align technological tools with organisational goals, fostering clarity and adaptability. Manageability is supported by institutional policies, team collaboration and personal coping strategies, with structured training and clear guidelines enhancing stability during transitions. Meaningfulness serves as a motivational cornerstone, aligning personal and professional goals to enhance engagement in the face of rapid technological change, thus promoting a balanced and fulfilling work environment.

Technological adaptability encompasses emotional, strategic and institutional dimensions. Managers exhibited varied emotional responses to change, evolving from initial apprehension to proactive engagement and optimism. Proactive strategies such as collaborative learning and trial-and-error bolstered technological competence and cultivated a culture of continuous improvement. Institutional support, through training and clear communication, facilitated adaptability by reducing cognitive demands, although systemic inefficiencies such as software glitches highlighted areas for organisational improvement.

Sense of Coherence and technological adaptability are mutually reinforcing constructs. Comprehensibility allows managers to understand and integrate new technologies, manageability provides the necessary resources and support, and meaningfulness motivates alignment of personal and organisational goals. The intrinsic value that managers associate with technological tools further enhances proactive engagement. These interconnections underscore the systemic and relational dimensions of SOC and adaptability, offering a comprehensive framework for managing workplace transitions.

The banking sector demonstrates how organisations can navigate rapid technological changes through relational, strategic and institutional approaches. Sense of Coherence principles, particularly comprehensibility and manageability, enable managers to contextualise challenges and adapt effectively. Supported by structured initiatives, technological adaptability forms a foundation for sustained organisational effectiveness amid continuous innovation, exemplifying the critical interplay between SOC and adaptability in the modern workplace.

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The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### Authors' contributions

S.B.C.K. was responsible for conducting the research, collecting and analysing the data and writing the manuscript.

S.B.C.K.'s contributions encompassed the full research process, from conceptualisation to the final written report.

C.-H.M. served as the supervisor for this research, providing guidance, feedback and critical insights throughout the study. C.-H.M.'s expertise ensured the research met academic and ethical standards while refining the overall quality of the work.

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## Data availability

The data that support the findings of this study are available from the corresponding author, C.-H.M., upon reasonable request.

## Disclaimer

The views and opinions expressed in this article are those of the authors and are the product of professional research. The article does not necessarily reflect the official policy or position of any affiliated institution, funder or agency, or that of the publisher. The authors are responsible for this article's results, findings and content.

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