Development of a resilience maturity framework for project-based organisations

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Make today matter

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Introduction

- Black Swan Events: *"an event that is beyond our usual experience or expectations, so much so that we cannot predict it"* (Taleb, 2007)

- **Problem Statement**
  - In today's rapidly changing world, project-based organisations face the challenge of managing risk and uncertainties while trying to remain competitive and profitable.
  - Limitations of risk management practices for black swan events.

- To address the research problem at hand, it is suggested that :
  - The resilience maturity of a project-based organisation can be assessed by evaluating its performance on a specific set of key indicators.
  - The maturity levels in a resilience maturity model can be defined by the extent to which an organisation exhibits the behaviours and capabilities associated with each level.

Research Objectives

- This study aimed to establish the key resilience indicators in project-based organisations and their maturity levels to develop a resilience maturity framework.

- **Research Questions**
  - What key indicators contribute to the resilience of project-based organisations?
  - What maturity levels can be used to assess the various resilience key indicators?
  - What key factors contribute to the effectiveness of resilience maturity models?

    – Scope restricted to PBOs in South Africa working within FMCG organisations

Resilience

- *"Any company that can make sense of its environment, generate strategic options, and re-align its resources faster than its rivals will enjoy a decisive advantage. This is the essence of resilience"* (Fiksel, 2003).

- The idea of resilience was first introduced in the field of physics during the late 1960s.

- Alexander (2013) defined engineering resilience as the ability to resist force or rigidity, while Holling (1973) defined ecological resilience as the ability to renew, reorganise, and develop.

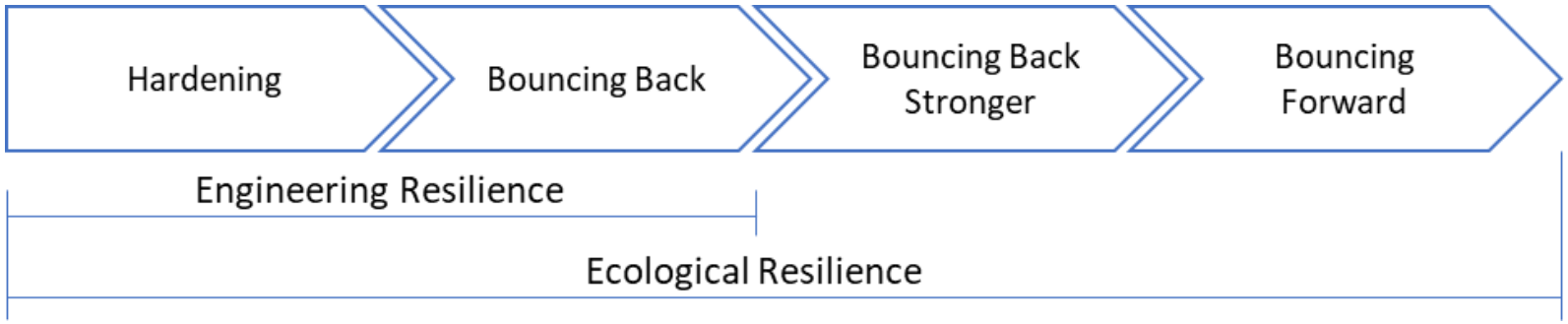


Fig 3: Consequences of foundations of resilience Source: Blay (2017)

Scoping Literature Review

- Scoping Review Method
  - Identifying the research questions
  - Identifying relevant studies
    - Inclusion criteria
    - Contextual inclusion criteria
    - Exclusion criteria
    - Search strategy
  - Selection of studies
  - Charting of data
  - Results

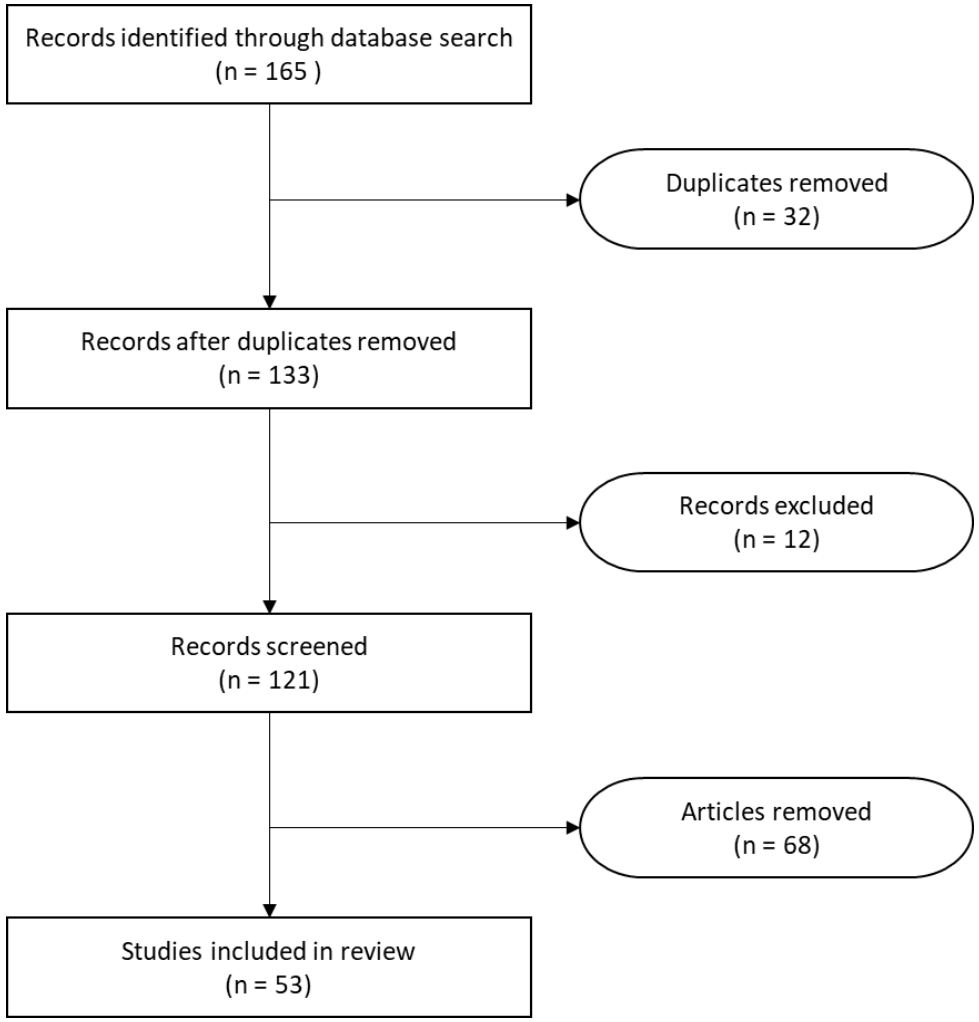


Fig 1: Search strategy flow chart

Scoping Literature Review

- Resilience researched in the fields of psychology, eco-systematics, engineering and management
- Most studies focused on the definition of resilience
- Resilience research has increased during the period from 2002 to 2008
- Research on resilience indicators and measurement increased after 2020

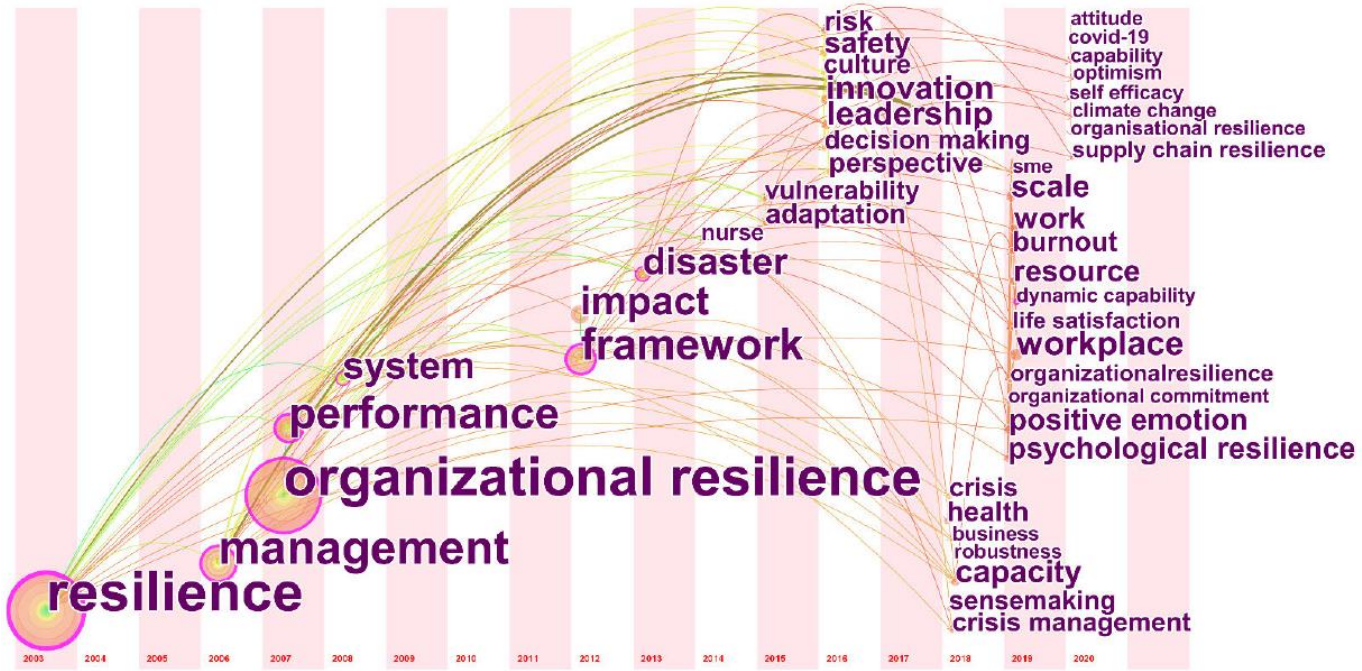


Fig 2: Time zone map of organisational research between 1984 and 2020 Source: Chen et al. (2021)

Existing Models

Resilience ethos[a]		
Commitment to resilience[a] Network perspective[a]		
Situation awareness	Management of keystone vulnerabilities	Adaptive capacity
Roles and responsibilities	Planning strategies	Silo mentality
Understanding and analysis of hazards and consequences	Participation in exercises	Communications and relationships
Connectivity awareness	Capability and capacity of internal resources	Strategic vision and outcome expectancy
Insurance awareness	Capability and capacity of external resources	Information and knowledge
Recovery priorities	Organizational connectivity	Leadership, management, and governance structures
Internal and external situation monitoring and reporting[a]	Robust processes for identifying and analyzing vulnerabilities[a]	Innovation and creativity[a]
Informed decision making[a]	Staff engagement and involvement[a]	Devolved and responsive decision making[a]

[a]Indicators proposed as additions to the McManus model of relative overall resilience.

Fig 4: Adjusted version of McManus's indicators of ROR Source: Lee et al. (2013)

Situation awareness	Management of keystone vulnerabilities	Adaptive capacity
Roles and responsibilities	Planning strategies	Silo mentality
Understanding and analysis of hazards and consequences	Participation in exercises	Communications and relationships
Connectivity awareness	Capability and capacity of internal resources	Strategic vision and outcome expectancy
Insurance awareness	Capability and capacity of external resources	Information and knowledge
Recovery priorities	Organizational connectivity	Leadership, management, and governance structures

Fig 5: McManus's factors of relative overall resilience Source: Lee et al. (2013)

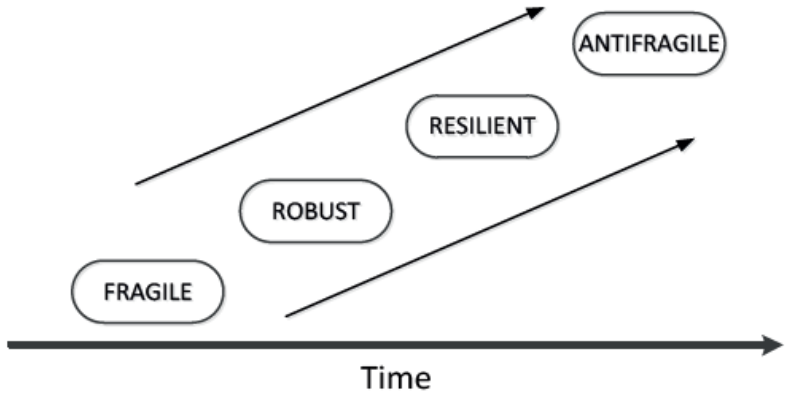


Fig 6: Four-level Maturity Model for Organisational Resilience Source: Ruiz-Martin et al. (2018)

Existing Models

Fig 7: Organisational resilience framework Source: Ahmad et al. (2013)

The model presents two dimensions:

- X-axis: Supply Chain Resilience Elements
- Y-axis: Level of Maturity

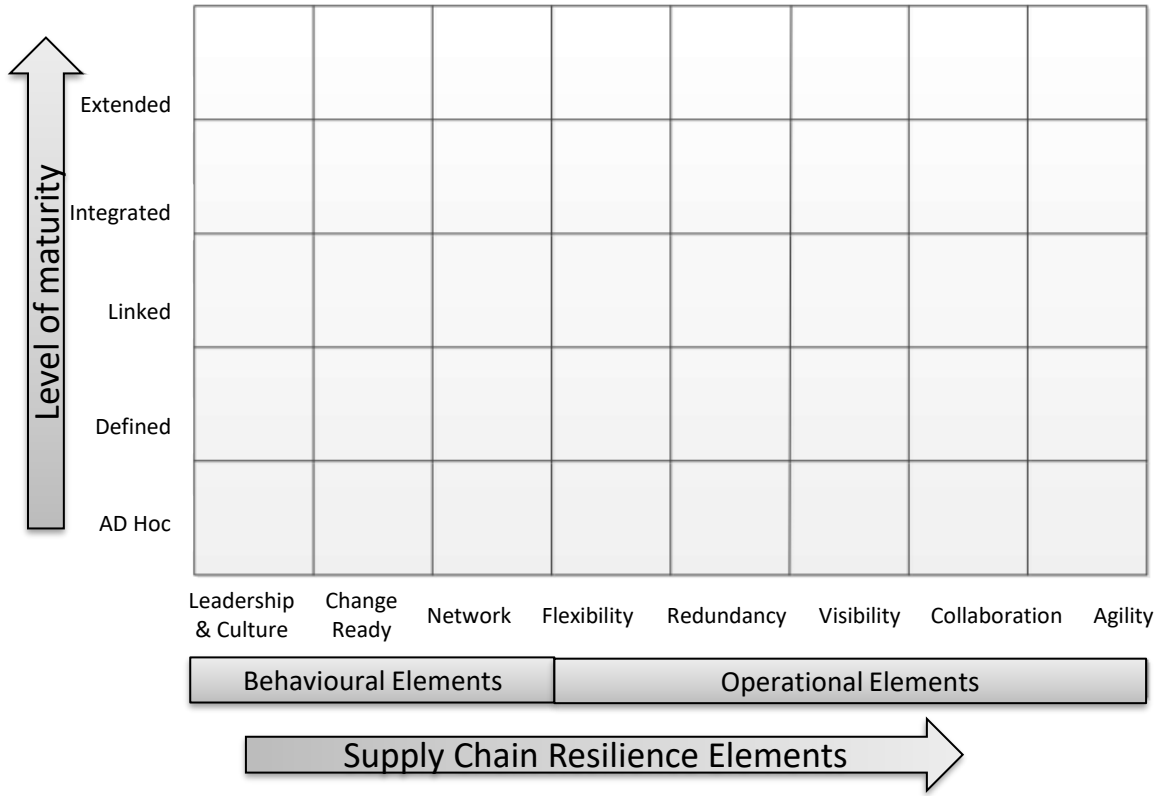


Fig 8: Supply chain resilience maturity model Source: Ahmad et al. (2013)

Conceptual Model

- The maturity model consists of five levels or stages to indicate organisational resilience maturity, ranging from lowest to highest.
- Resilience indicators determined by scoping literature review of existing models, none specific for PBOs.

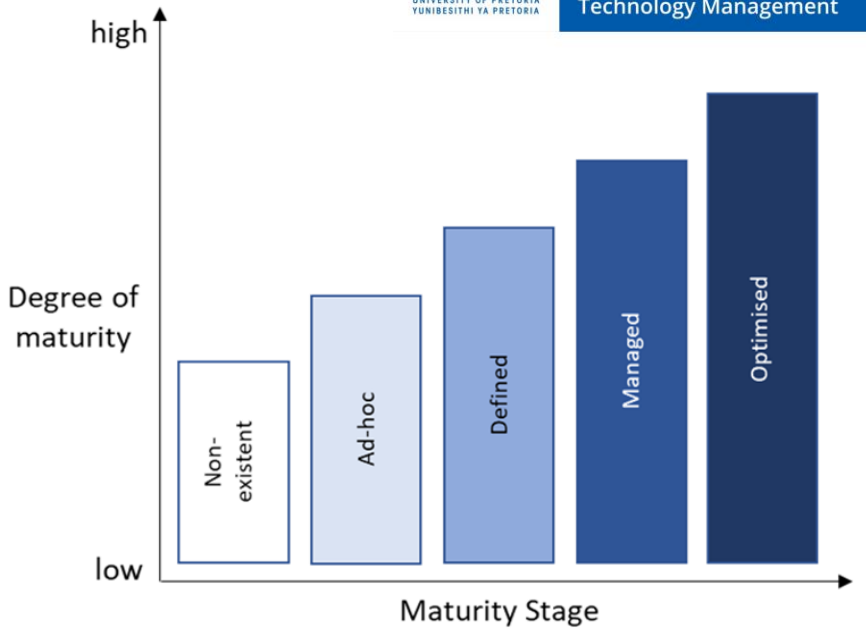


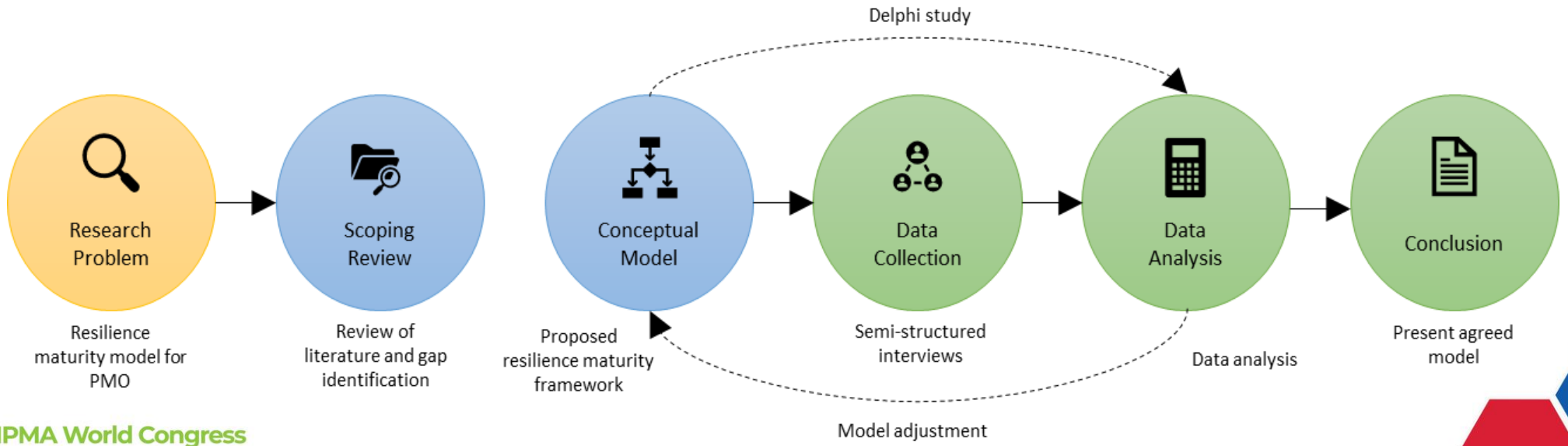
Fig 9: Key resilience indicators

Network	Culture	Planning & Preparedness	
Connectivity	Communication	Analysis and assessment	Countermeasures
Connectivity Awareness	Decision making	Detection	Hazards & Consequences
Effective Partnerships	Innovation and creativity	Documentation	Participation in exercises
External resources	Leadership	Effectiveness checks	Proactive posture
Information and knowledge	Minimisation of silos	Insurance	Simulations and exercises
Internal Resources	Staff engagement and involvement	Planning strategies	Situation monitoring and reporting
Roles & Responsibilities		Recovery priorities	Stress Testing Plans
		Situation Awareness	Unity of Purpose
		Strategic Vision	

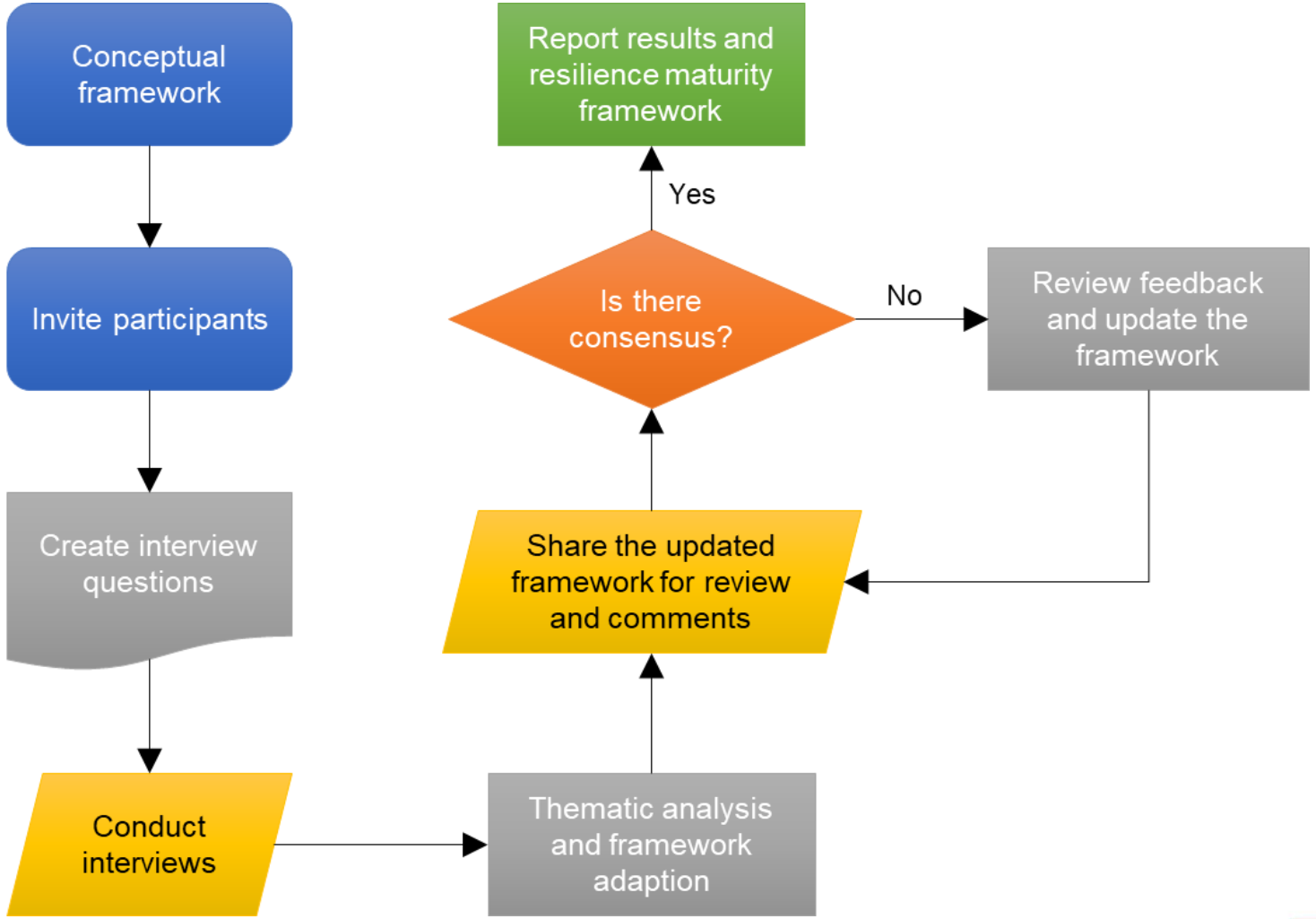
Research Methodology

- Data collection was done in three project-based organisations that have existed for over ten years
- All 3 organisations work with multinational manufacturing companies and are involved in engineering projects of varying complexity.
- Data was gathered through semi-structured interviews and a Delphi study.
- The data was organised and studied for similarities through thematic analysis

Fig 10: Research design



Research Process



Thematic Analysis

- The 30 indicators from the literature study were reduced to 23
- Higher code distribution:
  - Leadership
  - Communication
  - Countermeasures
  - Connectivity Awareness
  - Internal Resources
- Lower code distribution:
  - Detection
  - Documentation
  - Analysis & Assessment
  - Situation Awareness
  - External Resources

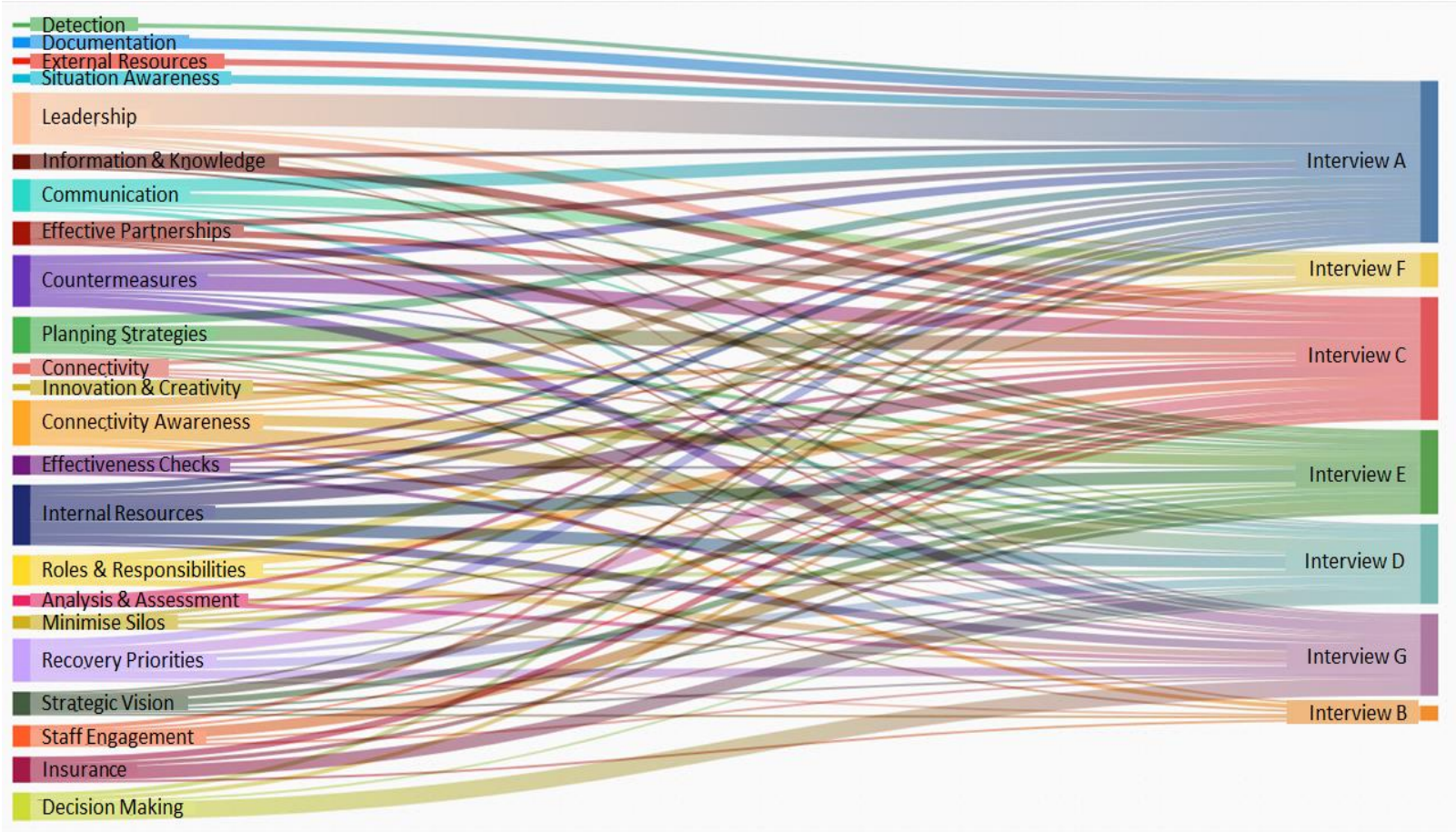


Fig 11: Sankey chart of resilience indicators for each study participant

Results

- Semi-structured interviews
  - 30 indicators reduced to 23
- Delphi study round 1
  - 23 indicators reduced to 21
- Delphi study round 2
  - 21 indicators remained
- Final round
  - Consensus reached. Some indicators were merged and a final set of 18 indicators are presented.

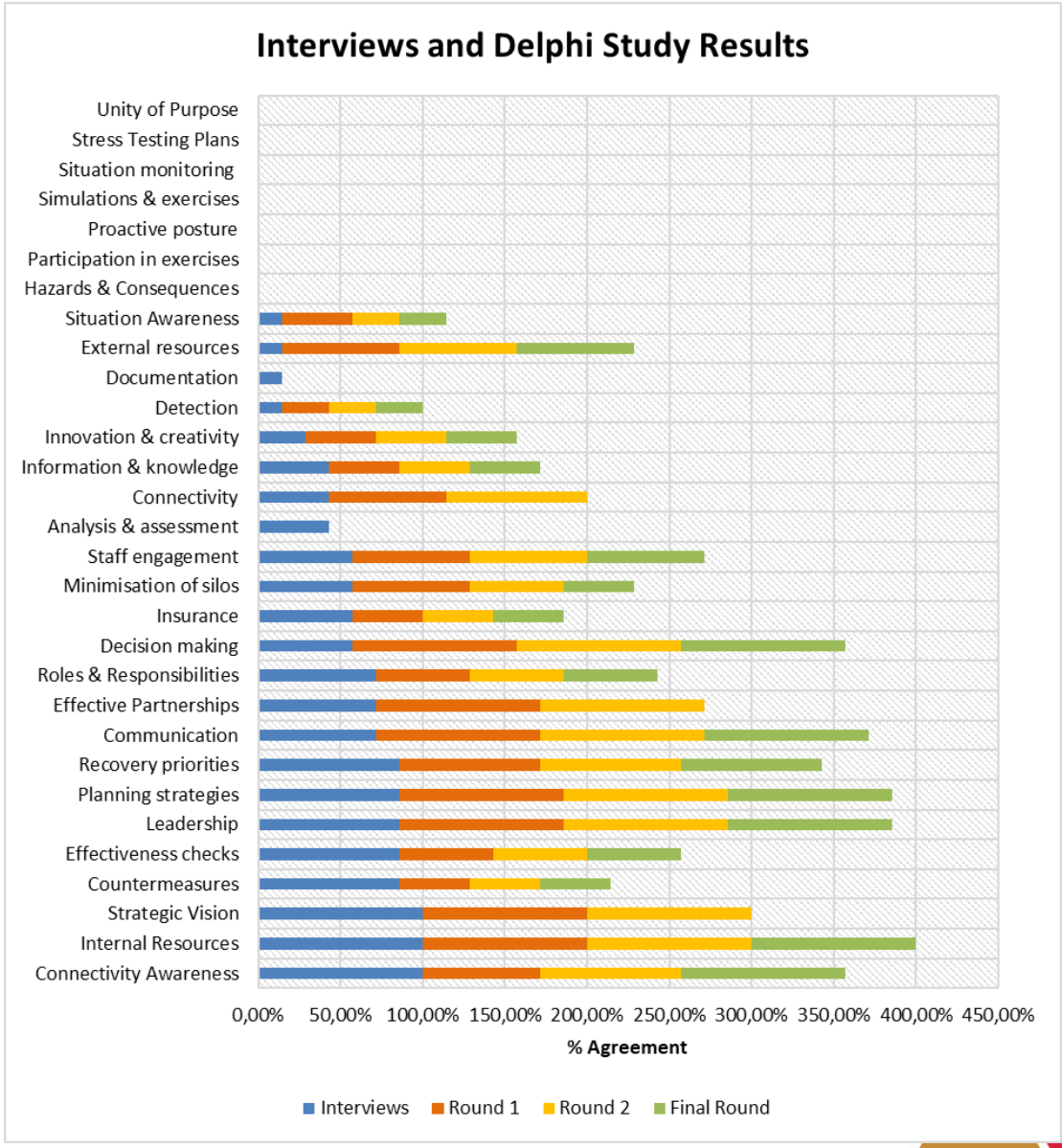
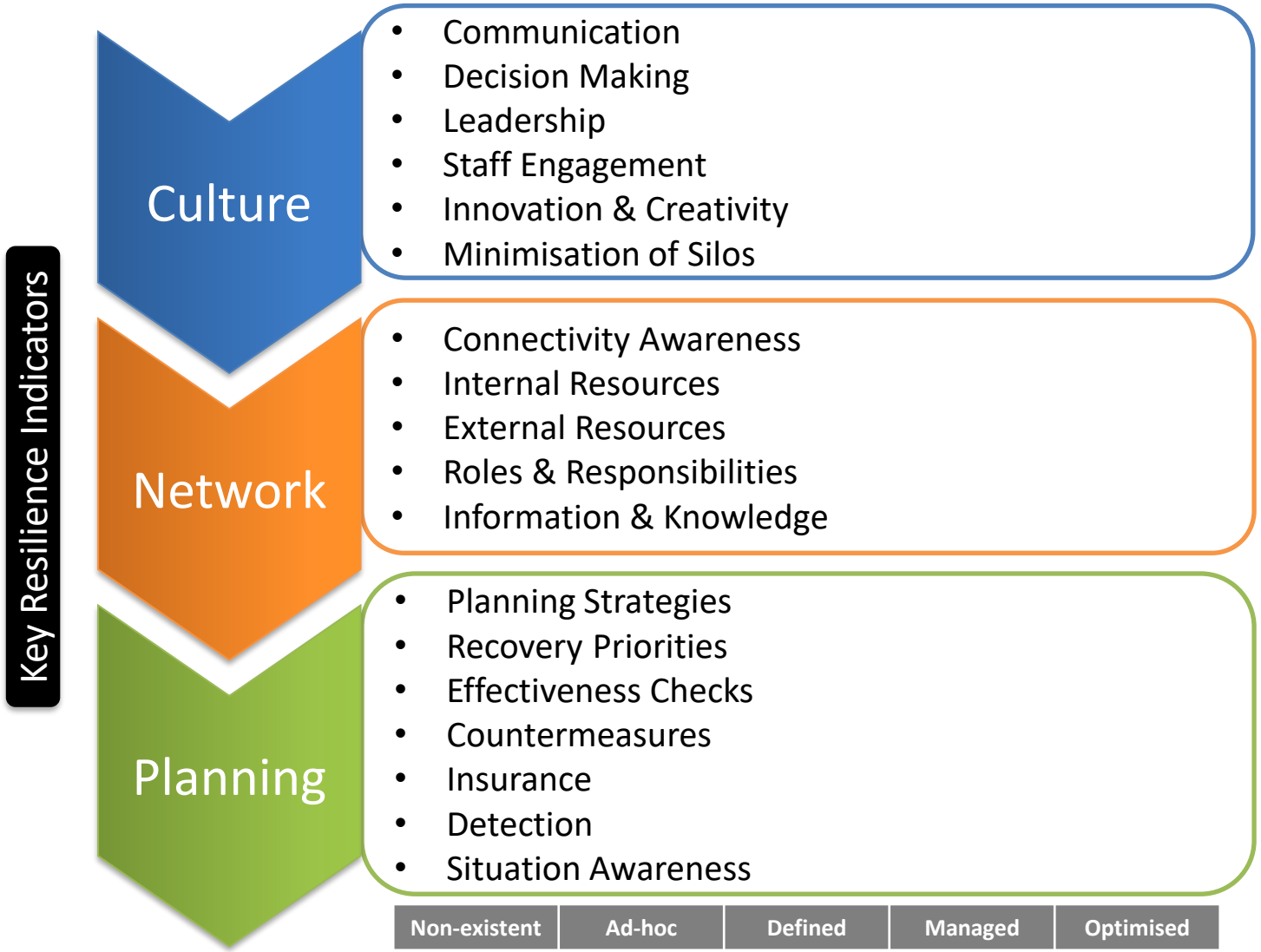


Fig 12: Results of interviews and Delphi study

Resilience Maturity Framework



Conclusions

- The objective of this study was to create a resilience maturity framework for project-based organisations.
- The list of key indicators generated from the literature scoping review was refined to a final set of 18 indicators.
- The first two research questions were answered through the development of the framework presented.
  - This framework lists the key indicators that contribute to the resilience of project-based organisations as developed through this research study.
  - The associated maturity levels were developed through the literature study and conceptual model development.
- The third question regarding the effectiveness of resilience maturity models was addressed during the semi-structured interviews.
  - Participants noted that leadership and communication are two of the most important factors that contribute to the effectiveness of a resilience maturity model.

Conclusions

- This research investigation has shown that certain key indicators can be used to determine the resilience maturity of project-based organisations

- The organisations that participated in this study agreed that the business environment they operate in today is increasingly complex and that black swan events are occurring more often
  - All participants referred to COVID-19 as the recent crisis that caused significant disruption.

- **Recommendations**
  - Before project management organisations can use this model to determine their resilience maturity level, it needs to be validated in the industry, and the measurement scale for each level of maturity should be determined.
  - It is recommended that this framework be tested with project management organisations of different sizes, geographical locations, and client bases.
  - Obtaining inputs from organisations operating in different geographic areas could provide valuable insights into the perceived cultural and economic differences in resilience indicators

QUESTIONS?