



**Resilient Organisations
Research Report 2010/03b**

Benchmark Resilience

A study of the resilience of organisations
in the Auckland Region

Amy Stephenson
Erica Seville
John Vargo
Derek Roger

This research was conducted through the Resilient Organisations Research Programme with support from the Auckland Civil Defence Emergency Management Group and the Foundation of Research Science and Technology.

About the Resilient Organisations Research Programme

“Building more resilient organisations, able to survive and thrive in a world of uncertainty, through research and practice”

We live in an increasingly complex world dealing with a broad spectrum of crises arising from both natural and man-made causes. Resilient organisations are those that are able to survive and thrive in this world of uncertainty. Resilience integrates the concepts of Risk, Crisis Management, Business Continuity Planning and Organisational Leadership to provide a platform for developing more robust and agile organisations.

Who we are:

The Resilient Organisations Research Group (ResOrgs) is a multi-disciplinary team of 17 researchers and practitioners that is New Zealand based and with global reach. A collaboration between top New Zealand research Universities and key industry players, including the University of Canterbury and the University of Auckland, ResOrgs is funded by the NZ Foundation for Research, Science and Technology and supported by a diverse group of industry partners and advisors. The research group represents a synthesis of engineering disciplines and business leadership aimed at transforming NZ organisations into those that both survive major events and thrive in the aftermath.

We are committed to making New Zealand organisations more resilient in the face of major hazards in the natural, built and economic environments. Resilient organisations are able to rebound from disaster and find opportunity in times of distress. They are better employers, contribute to community resilience and foster a culture of self reliance and effective collaboration.

What we do:

The ResOrgs programme of public good research is aimed at effective capability building through research activities with significant impacts on policy and practice. The group, in existence since 2004, has hosted an international conference, industry and sector workshops, produced over 30 conference and journal articles and 5 industry reports. These research outputs are already influencing government policy and industry practice. Our growing reputation has already resulted in many collaborations in Australia, the US, Canada and the UK, with a number of requests for the group to participate in a wide range of international projects.

Activities and outputs of the group include informing and focusing debate in areas such as Civil Defence Emergency Management, post-disaster recovery, and the resilience of critical infrastructure sectors, in addition to core activities in relation to organisation resilience capability building and benchmarking. We have produced practical frameworks and guides and helped organisations to develop and implement practical resilience strategies suitable to their environment.

Why we do it:

In an increasingly volatile and uncertain world, one of the greatest assets an organisation can have is the agility to survive unexpected crisis and to find opportunity to thrive in the face of potentially terminal events. We believe such resilience makes the most of the human capital that characterises the modern organisation and offers one of the greatest prospects for differentiating the successful organisation on the world stage. This resilience is typified by 20/20 situation awareness, effective vulnerability management, agile adaptive capacity and world class organisational culture and leadership. More resilient organisations lead to more resilient communities and provide the honed human capital to address some of our most intractable societal challenges.

For more information see our website: www.resorgs.org.nz

Executive Summary

The purpose of this report is to provide an interim summary of the results of the Benchmark Resilience research project for the Auckland region. A more detailed analysis of the results will be included in Amy Stephenson's final Ph.D. thesis which is due for completion in August 2010. This thesis will be made available on our website once it has been examined.

Organisational and community resilience are two sides of the same coin; without resilient organisations a community will be less resilient. Organisational resilience is the ability of an organisation to survive, and potentially even thrive in an environment of change and uncertainty. Resilient organisations are able to monitor their internal and external environment for changes which helps them to continuously adapt before the case for change becomes critical to their survival and continuity.

Despite the benefits of being resilient, organisations often struggle to prioritise resilience and to link resilience to disaster with resilience during business as usual. The purpose of this research is to develop a web-based organisational resilience measurement and benchmarking tool which can provide organisations with information to help make a business case for resilience. Initial results from this research indicate a positive relationship between organisational resilience and indicators of business performance.

In total 249 individuals from 68 Auckland organisations took part in this research. Encouraging organisations to take part was a significant challenge, particularly given that a random selection of organisations from throughout the region were invited to participate. Targeting organisations with an existing interest in resilience, or only sampling larger organisations likely to have a dedicated risk manager, would have probably generated a higher response rate. However, it would not have been a representative sample of the organisational community that exists within the Auckland region, as was sought for this study.

The most common reasons for not taking part in the research included not having enough time or resources, already struggling to survive, and a feeling that their organisation was too small or unimportant to invest in its resilience. This suggests that many of the organisations that were contacted struggle to address long term issues and have little redundancy or capacity to absorb extra workloads.

Through this research, a new model of organisational resilience has been developed, consisting of 13 indicators grouped into 2 dimensions; planning and adaptive capacity. Descriptors for each of the resilience indicators are given in the appendix of this report. The Benchmark Resilience tool provides organisations with a tool for evaluating their resilience strengths and weaknesses for each of these indicators, and for benchmarking how they compare to other organisations of a similar size or in a similar sector.

A new model of Organisational Resilience

Planning Dimension	Adaptive Capacity Dimension
Planning Strategies	Leadership
Participation in Exercises	Staff Involvement
External Resources	Situation Monitoring and Reporting
Recovery Priorities	Minimisation of Silos
Proactive Posture	Internal Resources
	Decision Making
	Innovation and Creativity
	Information and Knowledge

This report provides an overall summary of organisational resilience in the Auckland region and addresses the resilience of industry sectors, as well as individual organisations.

The most common strengths in the Auckland region were internal and external situation monitoring and reporting (77%), and devolved and responsive decision making (75%). This means that organisations in Auckland are able to assess their business environment and share that information to enable their crisis decision making. The most common weaknesses were planning strategies (46%) and capability and capacity of external resources (52%). This means that organisations struggle to focus on formalised planning such as creating an emergency or continuity plan and participating in exercises.

Of the 68 organisations that took part in the study, staff from 17% of organisations said that their organisation had an emergency plan. Of those organisations that had an emergency plan, 3% were happy with the quality of their plan. Staff within organisations often disagreed about the suitability of their planning, indicating that where plans do exist, they are poorly shared or communicated across the organisation.

Overall, organisations in Auckland achieved higher scores for adaptive capacity indicators than they did for planning indicators. This shows that the majority of organisations in this study, with the exception of the health and community sector, rely on their ability to adapt during times of crisis. This emphasises how organisations use the creativity, innovation, leadership, situation monitoring and responsive decision making skills of their staff to provide their organisations' resilience.

This research provides information for individual organisations on their resilience strengths and weaknesses, and what they can do to improve. Based on the criteria outlined in this report, 46 of the organisations achieved a fair level of resilience. Only one organisation achieved an excellent level of resilience; however a number of organisations did achieve excellent scores for some of the indicators. In addition 7 organisations scored poorly and 3 organisations scored very poorly; a table showing these figures is included in the report.

Of the 68 organisations that took part, staff from 16% of organisations said that their organisation had experienced a crisis within the last 5 years. The majority of these crises were loss of critical services including power cuts, but interestingly many organisations also reported major accidents or fires.

To increase resilience in Auckland it is important to help organisations demonstrate a link between resilience and business performance as well as enable them to leverage their resilience strengths and address their weaknesses. It is also important to promote a balance between increasing an organisation's adaptive capacity and encouraging formalised planning. For many organisations, lack of resources is a significant barrier to more formalised planning approaches. This is especially true for small to medium sized enterprises and sole traders. Instead these organisations would benefit from focusing on their adaptive capacity which can be improved through collaboration, improving staff induction processes, prioritising resilience, and raising awareness of resilience issues among staff.

Table of Contents

1. THE BENCHMARK RESILIENCE RESEARCH PROJECT	7
1.1 WHY MEASURE ORGANISATIONAL RESILIENCE?	7
1.2 WHY BENCHMARK ORGANISATIONAL RESILIENCE?.....	7
1.2.1 <i>What is benchmarking?</i>	7
1.2.2 <i>How can the resilience measurement tool be used to benchmark resilience?</i>	8
1.2.3 <i>What does a resilience benchmark look like and how can organisations use it?</i>	8
2. DEVELOPMENT OF THE RESILIENCE MEASUREMENT TOOL.....	10
2.1 CRITERIA FOR A RESILIENCE MEASUREMENT TOOL.....	10
2.2 THE DEVELOPMENT PROCESS.....	11
2.2.1 <i>Identifying indicators of organisational resilience</i>	12
2.2.2 <i>Creating metrics for organisational resilience</i>	13
2.2.3 <i>Pilot study</i>	14
2.3 THE AUCKLAND STUDY	15
2.3.1 <i>Sampling</i>	15
2.3.2 <i>Approaching organisations</i>	16
2.3.3 <i>Participation</i>	16
2.4 REVIEWING AND UPDATING THE RESILIENCE MEASUREMENT TOOL.....	19
3. RESULTS	20
3.1 AUCKLAND AS A WHOLE.....	20
3.1.1 <i>Approaches to resilience</i>	20
3.1.2 <i>Overall resilience in Auckland</i>	23
3.1.3 <i>Resilience strengths in Auckland</i>	23
3.1.4 <i>Resilience weaknesses in Auckland</i>	24
3.2 SECTOR ANALYSIS.....	24
3.2.1 <i>The Most Resilient Sector – Health and Community</i>	25
3.2.2 <i>The Least Resilient Sector – Wholesale Trade</i>	26
3.2.3 <i>The Communications Sector</i>	26
3.3 CRISES IN AUCKLAND IN THE LAST 5 YEARS.....	27
4. ANECDOTAL EVIDENCE	28
5. IMPROVING RESILIENCE IN AUCKLAND.....	29
5.1 LEVERAGING STRENGTHS IN AUCKLAND ORGANISATIONS.....	30
5.1.1 <i>Internal and External Situation Monitoring and Reporting</i>	30
5.1.2 <i>Devolved and Responsive Decision Making</i>	31
5.2 ADDRESSING WEAKNESSES IN AUCKLAND ORGANISATIONS.....	32
5.2.1 <i>Planning Strategies</i>	32
5.2.2 <i>Capability and Capacity of External Resources</i>	32
6. CONCLUSION	33
7. REFERENCES	34
APPENDIX A	35
APPENDIX B	38
APPENDIX C	39

1. The Benchmark Resilience Research Project

The project, initiated in August 2007, aims to develop a tool for benchmarking the resilience of organisations. As part of the project the benchmarking tool has been tested on organisations in the Auckland region.

1.1 Why measure organisational resilience?

In crisis and disaster situations, organisations enable communities to respond and recover. Organisations that provide services such as electricity, telecommunications, transport, water and healthcare are commonly seen as critical. However all organisations contribute to the delivery of services and the provision of employment. The ability of these organisations to operate can determine the success of the community response and recovery.

Organisations, both big and small, are susceptible to natural disasters, power cuts, loss of key staff and public health issues like pandemic influenza. And it's not just the big problems that can cause trouble for organisations; many experience small disruptions on a daily basis. **A resilient organisation is one that not only survives, but is also able to thrive in an environment of change and uncertainty** (Seville, et al., 2008, p. 2).

Initial results from this research indicate a positive relationship between organisational resilience and cash flow, profitability and return on investment. **This provides evidence of a clear link between an organisation's resilience and their business performance.** Despite the business benefits of becoming more resilient, many organisations struggle to prioritise resilience and to link resilience to crisis or disaster, with the ability to operate effectively and efficiently during business as usual. Measuring and benchmarking organisational resilience is about two things, firstly asking 'as an organisation how resilient are we and what do we need to work on?', and secondly remembering that what gets measured gets done!

1.2 Why benchmark organisational resilience?

1.2.1 What is benchmarking?

Benchmarking is the process of measuring and comparing one organisation against another in order to identify and implement improvements (Anderson & Pettersen, 1996). Codling (1996) identifies three types of benchmarking; internal, external and best practice. Internal benchmarking tends to focus on business processes and takes place between departments or locations of the organisation. The purpose of this is to identify efficient practices, cost savings, unnecessary duplications and anomalies within the organisation. The benefit of internal benchmarking is that it provides an easy introduction for organisations new to benchmarking; the process is also often easier as the units involved share the same culture and language. External benchmarking focuses on comparing an organisation and its processes with other organisations with whom the organisation does not share a common management or workforce. The purpose of

external benchmarking is again to identify efficiency, cost savings and unnecessary duplications and anomalies, as well as to examine two or more organisations in light of their differences. Codling (Codling, 1996, p. 10) argues,

“The more externally focused the benchmarking exercise, the greater the potential for removing blinkers, overturning paradigms, and over-coming the ‘not-invented-here’ syndrome”.

Best practise benchmarking focuses on seeking out the world leader in a particular process, and then benchmarking against them in order to identify what makes that organisation the world leader, and how your organisation can learn from their example. Out of the three types of benchmarking Codling (1996) argues that best practise benchmarking offers the highest potential gains including paradigm shifts, breakthroughs, and the most significant improvement.

Anderson and Pettersen (1996) also discuss what organisations compare when they benchmark. They identify three types of comparison; performance, processes and strategy. They go on to note that early benchmarking focused too much on comparing performance gives little information about how an organisation can improve. Comparing process and strategy on the other hand can provide organisations with information on their strengths and weaknesses in these areas, and what other organisations do that puts them ahead.

1.2.2 How can the resilience measurement tool be used to benchmark resilience?

This research focuses on external benchmarking and compares processes and strategies. Organisations from across Auckland off all different sizes and industries are measured and compared. In the context of resilience this is particularly important because a community’s resilience relies on organisations not only as the agents of social action (e.g. reduction, readiness, response and recovery) but also as providers and employers, and this is not restricted to a single industry sector.

The resilience measurement tool has not been designed as an audit tool for organisations. Its purpose is to provide information on an organisation’s resilience which can feed directly into work programs a business case for resilience. This information could be used within an existing resilience program to evaluate resource allocation or progress, or it could be used during the initiation of a resilience program to guide strategy and objectives.

1.2.3 What does a resilience benchmark look like and how can organisations use it?

The resilience measurement tool produces resilience scores for each of the dimensions and indicators of organisational resilience as well as an overall score. The overall resilience scores for organisations are then compared and ranked and a percentile is produced. A resilience benchmark of 60% means that an organisation is in the 60th percentile and that 59% of participating organisations scored below them, and 40% of participating organisations score above them.

With this information, organisations can gain a better picture of how resilient they are in comparison to other organisations. Organisations can then review their scores for each of the indicators of organisational resilience and address their weaknesses and plan how to leverage off of their strengths in a crisis. The benchmark also provides organisations with an opportunity to address weaknesses which other organisations score highly in. This is achieved by reviewing the benchmark in conjunction with the Auckland average score for the indicators.

With a larger sample, a wider analysis of organisations by industry sector would be possible. This would mean that organisations could also have an industry sector benchmark which tells them where they sit in comparison to other organisations in their industry. Analyses based on organisation size, location or type could also be produced.

2. Development of the Resilience Measurement Tool

The benchmark resilience tool is a web-based self assessment survey. The survey can be used by any organisation at any time to provide a snapshot of their resilience and can also be used over time to provide evidence of progress.

2.1 Criteria for a resilience measurement tool

The following list includes the criteria adopted for the resilience measurement tool developed through this research:

- **Parsimony – does the tool represent the simplest possible explanation without unnecessary complexity?**
 - Factor analysis enabled researchers to simplify the resilience measurement tool and increase its accuracy by excluding questions that did not significantly contribute to resilience measurement and combining indicators to provide the simplest possible explanation.
- **Validity – does the tool measure what it's supposed to measure?**
 - The validity of the resilience measurement tool was assessed during the creation of the tool and the pilot study. Survey and subject matter experts were asked to review the survey as well as the definitions of the indicators to make sure that it 'made sense'. This is similar to the validity checks suggested by Hinkin (1998).
 - Validity was again measured during the pilot study when participants were interviewed and asked whether they thought that there were any questions that did not seem to belong, or whether they could think of anything that was missing.
- **Reliability – can the tool produce reliable results?**
 - A statistic called Cronbach's Alpha was used to measure reliability, the alpha scale runs from 0-1 and an alpha of 0.7 or above is considered reliable (Hinkin, 1998). The resilience measurement tool achieves an alpha of 0.95.
- **Usability – is the tool easy to use?**
 - Issues around usability including technical issues, language problems and access to the survey were investigated and resolved during the pilot study. For organisations whose staff were unable to access the internet, paper copies of the survey were provided.
- **Applicability – is the tool applicable to all organisations of different sizes and from different industry sectors?**
 - The survey was designed so that any organisation would be able to use it.

2.2 The development process

The process for developing the resilience measurement tool is outlined in Figure 1.

Figure 1: The Resilience Measurement Tool Development Process

<p>Plan:</p> <ul style="list-style-type: none">• Propose initial indicators<ul style="list-style-type: none">○ Review the literature, generate a list of possible indicators and define each one• Indicators workshop<ul style="list-style-type: none">○ Review the proposed indicators and highlight any gaps or potential conflicts• Create metrics for each of the indicators of organisational resilience<ul style="list-style-type: none">○ Review literature, further define the indicators, create questions to measure each of the indicators• Ethics approval<ul style="list-style-type: none">○ Submit proposed questions and accompanying literature to the University of Canterbury Human Ethics Committee for approval and make any required changes• Construct the resilience measurement tool<ul style="list-style-type: none">○ Create the survey and pre-test the survey hosting web site• Pre-test the resilience measurement tool<ul style="list-style-type: none">○ Test the tool for usability and validity in a pilot study involving a small sample of organisations and make any necessary changes
<p>Search:</p> <ul style="list-style-type: none">• Sampling<ul style="list-style-type: none">○ Identify a sample of organisations to invite to take part in the study, collect the necessary contact information and contact them to introduce the research
<p>Observe:</p> <ul style="list-style-type: none">• Data collection<ul style="list-style-type: none">○ Administer the survey, send invitations to take part, produce and distribute information about the research to the sample, complete follow-up phone calls and reminders
<p>Analyse:</p> <ul style="list-style-type: none">• Data analysis<ul style="list-style-type: none">○ Test the model of organisational resilience, drop unnecessary questions and refine the indicators, calculate organisation's resilience scores, and analyse overall trends in the data
<p>Adapt:</p> <ul style="list-style-type: none">• Results<ul style="list-style-type: none">○ Communicate results to organisations and the Auckland CDEM group and suggest ways to increase resilience

2.2.1 Identifying indicators of organisational resilience

The resilience measurement tool is based on work done by McManus (2007) which used qualitative methods such as interviews to assess the resilience of ten New Zealand case study organisations. From this study McManus developed a definition of organisational resilience as,

“...a function of an organisation’s situation awareness, management of keystone vulnerabilities and adaptive capacity in a complex, dynamic, and interconnected environment”.

(McManus, 2007, p. 4)

Within this definition McManus identifies three dimensions of organisational resilience; situation awareness, management of keystone vulnerabilities and adaptive capacity. From this model McManus proposed fifteen indicators of organisational resilience – five for each dimension; these can be seen in Table 1.

Table 1: McManus's Indicators of Organisational Resilience

Situation Awareness		Management of Keystone Vulnerabilities		Adaptive Capacity	
SA ₁	Roles & Responsibilities	KV ₁	Planning Strategies	AC ₁	Silo Mentality
SA ₂	Understanding & Analysis of Hazards & Consequences	KV ₂	Participation in Exercises	AC ₂	Communications & Relationships
SA ₃	Connectivity Awareness	KV ₃	Capability & Capacity of Internal Resources	AC ₃	Strategic Vision & Outcome Expectancy
SA ₄	Insurance Awareness	KV ₄	Capability & Capacity of External Resources	AC ₄	Information & Knowledge
SA ₅	Recovery Priorities	KV ₅	Organisational Connectivity	AC ₅	Leadership, Management & Governance Structures

(McManus, 2007, p. 18)

The dimensions and indicators then formed the starting point for the resilience measurement tool developed through this research. A literature review was conducted to investigate the indicators and to provide more information on how each of them might be related to resilience. A workshop was held in January 2008 to review and update the indicators. As a result a further dimension and eight indicators were added to the model to take forward into the research; these can be seen as the shaded areas in Table 2.

Table 2: Updated Indicators of Organisational Resilience

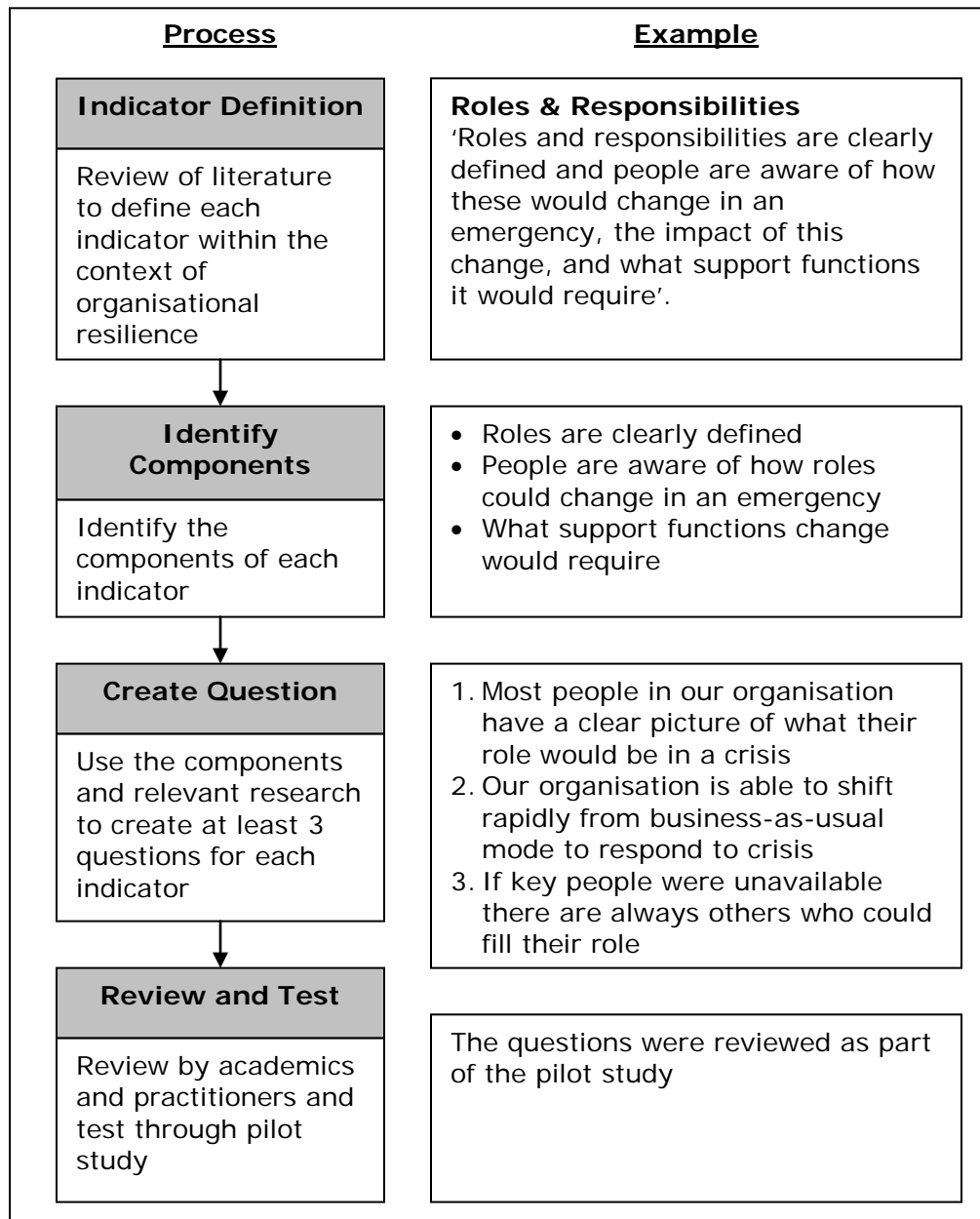
Resilience Ethos					
RE ₁	Commitment to Resilience				
RE ₂	Network Perspective				
Situation Awareness		Management of Keystone Vulnerabilities		Adaptive Capacity	
SA ₁	Roles & Responsibilities	KV ₁	Planning Strategies	AC ₁	Silo Mentality
SA ₂	Understanding & Analysis of Hazards & Consequences	KV ₂	Participation in Exercises	AC ₂	Communications & Relationships
SA ₃	Connectivity Awareness	KV ₃	Capability & Capacity of Internal Resources	AC ₃	Strategic Vision & Outcome Expectancy
SA ₄	Insurance Awareness	KV ₄	Capability & Capacity of External Resources	AC ₄	Information & Knowledge
SA ₅	Recovery Priorities	KV ₅	Organisational Connectivity	AC ₅	Leadership, Management & Governance Structures
SA ₆	Internal & External Situation Monitoring & Reporting	KV ₆	Robust Processes for Identifying & Analysing Vulnerabilities	AC ₆	Innovation & Creativity
SA ₇	Informed Decision Making	KV ₇	Staff Engagement & Involvement	AC ₇	Devolved & Responsive Decision Making

(Adapted from McManus, 2007, p. 18)

2.2.2 Creating metrics for organisational resilience

Questions were created for each of the proposed twenty three indicators of organisational resilience shown in Table 2 using a four step process. This involved defining each indicator, identifying the components of each definition, creating a question to measure each component, and reviewing and testing the questions. This process, including an example based on the Roles and Responsibilities indicator is shown in Figure 2. In total eighty one questions directly measuring the proposed indicators were created. In addition to these questions a further eight questions covering demographics were included.

Figure 2: Process for Developing Questions to Measure the Indicators of Organisational Resilience



2.2.3 Pilot study

The questions were built into a web-based survey using Survey Monkey which is a web-based survey host and building tool. The initial version of the resilience measurement tool was tested using four of McManus’s (2007) original case study organisations. The purpose of the pilot study was to identify issues around usability, language and technical faults, as well as to provide an initial check on the questions and their usefulness. Each

member of staff participating in the pilot study was asked to complete the survey and was then interviewed to get feedback. As a result of the pilot study a number changes were made to the instructions on how to complete the survey as well as to the language of the questions themselves.

2.3 The Auckland study

The purpose of the Auckland study was to test the proposed resilience measurement tool against a sample of organisations, and to explore the resilience of the organisational community in the Auckland region.

2.3.1 Sampling

A company called Veda Advantage provided a sample of 1009 randomly selected Auckland organisations; the characteristics of this sample can be seen in Table 3 and Table 4. The Veda Advantage is a business intelligence agency and their databases include information on organisations across New Zealand and Australia. They were chosen to provide sampling information for this research because of their ability to complete search queries and provide accurate detailed information in a short space of time.

Table 3: Auckland Sample by Industry Sector

Sector Grouping	Number of Organisations
Accommodation, Cafes and Restaurants	20
Agriculture, Forestry and Fishing	7
Communication	9
Construction	32
Cultural and Recreational Services	12
Education	54
Electricity, Gas and Water Supply	2
Finance and Insurance	47
Government Administration and Defence	10
Health and Community Services	10
Manufacturing	245
Personal and Other Services	23
Property and Business Services	314
Retail Trade	66
Transport and Storage	41
Wholesale Trade	117
	1009

Table 4: Auckland Sample by Organisation Size

Organisation Size (Number of People)	Number of Organisations
1-19	643
20-39	152
40-59	55
60-79	22
80-99	17
100-299	50
300-499	4
500+	12
	1009

2.3.2 Approaching organisations

Invitation letters were sent to 1009 Auckland organisations in March 2009 to invite them to take part in the study. Alongside this a press release was made by the Auckland CDEM Group to introduce the research and a television interview was given. A further two letters were sent and a series of follow-up phone calls was also completed. The web-based Benchmark Resilience survey was launched on 18th March 2009 and closed on 1st November 2010. Initial results were delivered to organisations between October-December 2009 and final results reports are currently being created.

2.3.3 Participation

In total 249 individuals from 68 organisations took part in the study. A summary of this sample is shown in Table 5. Table 6 shows a breakdown of participating organisations by organisation size, this is taken as the number of employees.

Encouraging organisations to take part was a significant challenge, particularly given that a random selection of organisations from throughout the region were invited to participate. Targeting organisations with an existing interest in resilience, or only sampling larger organisations likely to have a dedicated risk manager, would have probably generated a higher response rate. However, it would not have been a representative sample of the organisational community that exists within the Auckland region, as was sought for this study.

The sample information from Veda Advantage included the name and contact details of a senior decision maker within each organisation. This made it easier to target our information within organisations however it was still very difficult to get organisations to agree to take part. Based on the number of organisations that took part (68) the Auckland study achieved a response rate of 7%. This is a low response rate which must be taken into account when analysing the data. While the response rate means that the trends identified cannot be generalised to other Auckland organisations, the number of responses achieved was enough to statistically validate the resilience measurement and benchmarking tool which was the main purpose of this research.

Table 5: Participation by Industry Sector

Sector Grouping	Number of Organisations	Number of Individual Responses
Agriculture, Forestry and Fishing	1	3
Communication	2	10
Construction	1	1
Cultural and Recreational Services	1	2
Education	3	9
Finance and Insurance	2	2
Government Administration and Defence	1	1
Health and Community Services	2	24
Manufacturing	14	40
Personal and Other Services	4	14
Property and Business Services	25	82
Retail Trade	3	6
Wholesale Trade	9	55
	68	249

Table 6: Participation by Organisation Size

Organisation Size (Number of People)	Number of Organisations
1-19	46
20-39	10
40-59	4
60-79	4
80-99	1
100-299	3
	68

In addition to the 68 organisations that took part, a further 45 organisations agreed to take part but then did not complete the survey. Organisations were asked to give their reasons for not taking part, these included:

- Not enough time
- No resources
- Resilience is not a priority
- Our organisation's large size protects us
- Our organisation is too small to take part in research
- We don't like to do surveys
- Our organisation is already resilient
- Our head office is overseas and they handle all of that stuff

Many of these reasons and others provided by organisations are similar to faulty organisational assumptions and beliefs outlined by Mitroff et al. (1989); these are shown in Figure 3. Mitroff et al. argue that organisations use these faulty assumptions and beliefs to justify their lack of investment and action in crisis management.

Figure 3: Faulty Organisational Assumptions and Beliefs

- 1 The fallacy of size: our size will protect us
- 2 The fallacy of protection/resource abundance: another entity will come to our rescue or absorb our losses
- 3 The fallacy of excellence: excellent/well managed organisations do not have crises
- 4 The fallacy of location/geography: we don't have to worry about crises here
- 5 The fallacy of immunity/limited vulnerability: certain crises only happen to others
- 6 The fallacy of misplaced social responsibility: crisis management is someone else's responsibility
- 7 The fallacy of unpredictability: it's not possible to prepare for crises because they are unpredictable
- 8 The fallacy of cost: crisis management is not warranted because it costs too much
- 9 The fallacy of negativism: crises are solely negative in their impacts on an organisation
- 10 The fallacy of "the ends justify the means": business ends justify the taking of high risk means or actions
- 11 The fallacy of discouraging bad news: employees who bring bad news deserve to be punished
- 12 The fallacy of luxury: crisis management is a luxury
- 13 The fallacy of quality: quality is achieved through control not assurance
- 14 The fallacy of fragmentation: crises are isolated
- 15 The fallacy of reactivity: it is enough to react to crises once they have happened
- 16 The fallacy of experience and over confidence: the best prepared organisations are those that have experienced and survived a large number of crises or who have dealt with crises over their history
- 17 The fallacy of financial/technical quick fixes: it is enough to throw financial and technical quick fixes at crisis management

(Adapted from Mitroff, et al., 1989, p. 275)

Figure 4 shows some quotes from senior decision makers in Auckland organisations about their reasons for not taking part in the research. These reasons provide some insight to why the organisations in this study may struggle to prioritise resilience. One reason for this is a lack of resources, both financial and human, which means that many organisations are already struggling to cope with the day-to-day pressures of business and are not able to invest in 'extras' or 'luxuries'. This mentality is also referred to as 'fighting fires'. The majority of organisations who decided not to take part in the research expressed that they were struggling to operate under current conditions. However they did not relate this to being unable to absorb further disruption if a crisis were to happen.

Figure 4: Senior Managers Reasons for Not Taking Part

CEO of a manufacturing organisation: <i>"We already have a good philosophy - we can all do each others jobs and we don't hire anyone that can only do one job"</i> .
Principal of a primary school: <i>"Reviewing our organisation's resilience is not a priority at this time"</i> .
Manager of a medical laboratory: <i>"We have ISO accreditation etc. so we're satisfied with our resilience"</i> .
Managing Director of a manufacturing organisation: <i>"We're not very resilient at moment – we're fighting the Chinese empire"</i> .
General Manager of a telecommunications provider: <i>"We will not be able to get buy-in from staff to complete the surveys"</i> .
Managing Director of a construction company: <i>"We're already resilient, we just deal with problems as they arise, we don't think about the 'future'. We're doing ok after 29 years"</i> .

2.4 Reviewing and Updating the Resilience Measurement Tool

The data from the Auckland study was used to further refine the resilience measurement tool and to review and validate the organisational resilience theory and model. Factor analysis was used to determine which questions were significantly adding to the tool and which were not. As a result of this, twenty questions were dropped from the measurement tool. In the updated model shown as Figure 5, organisational resilience is comprised of two dimensions and thirteen indicators of organisational resilience; a definition of each indicator can be found in Appendix A.

Figure 5: A new model of Organisational Resilience

Planning Dimension	Adaptive Capacity Dimension
Planning Strategies	Leadership
Participation in Exercises	Staff Involvement
External Resources	Situation Monitoring and Reporting
Recovery Priorities	Minimisation of Silos
Proactive Posture	Internal Resources
	Decision Making
	Innovation and Creativity
	Information and Knowledge

In some cases the analysis indicated a question should be dropped, even though the literature suggests a very strong link with resilience. In this situation it may be that the

original question was poorly worded, rather than the indicator not contributing towards resilience. For these questions we suggest how they may be reworded and tested again through future research.

3. Results

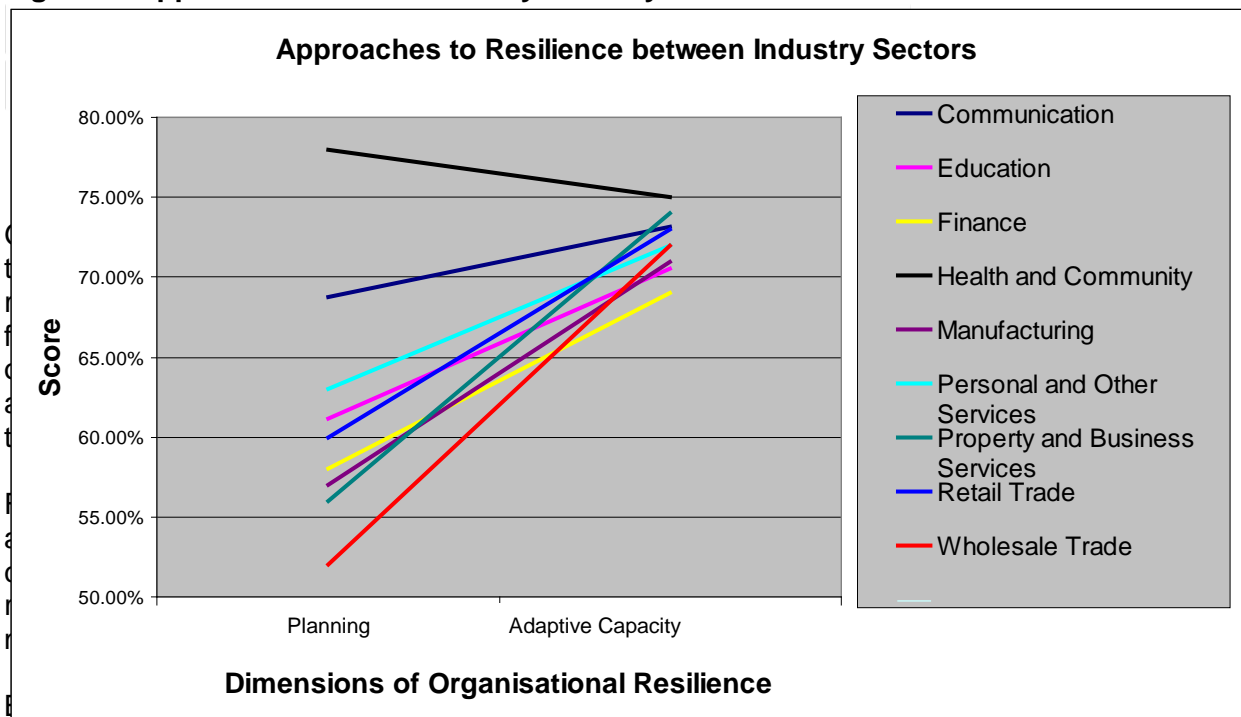
This report provides a summary of the final results for the 68 organisations that took part in the study in 2009. The results represent the first test of the resilience measurement and benchmarking tool and provide a good indication of resilience issues; however more research is necessary before these conclusions can be confirmed.

3.1 Auckland as a whole

3.1.1 Approaches to resilience

Organisational resilience is comprised of two dimensions; planning and adaptive capacity. The indicators for each of these dimensions can be seen in Figure 5 and are defined in Appendix A. An organisation scoring highly in the planning dimension need not necessarily score as highly in the adaptive capacity dimension to be resilient; also the reverse is true. Figure 6 shows a comparison of the two dimensions of organisational resilience for each industry sector. It shows that organisations in eight of the nine sectors draw more heavily on their adaptive capacity for their resilience. One of the sectors, the health and community sector has a very different approach to resilience.

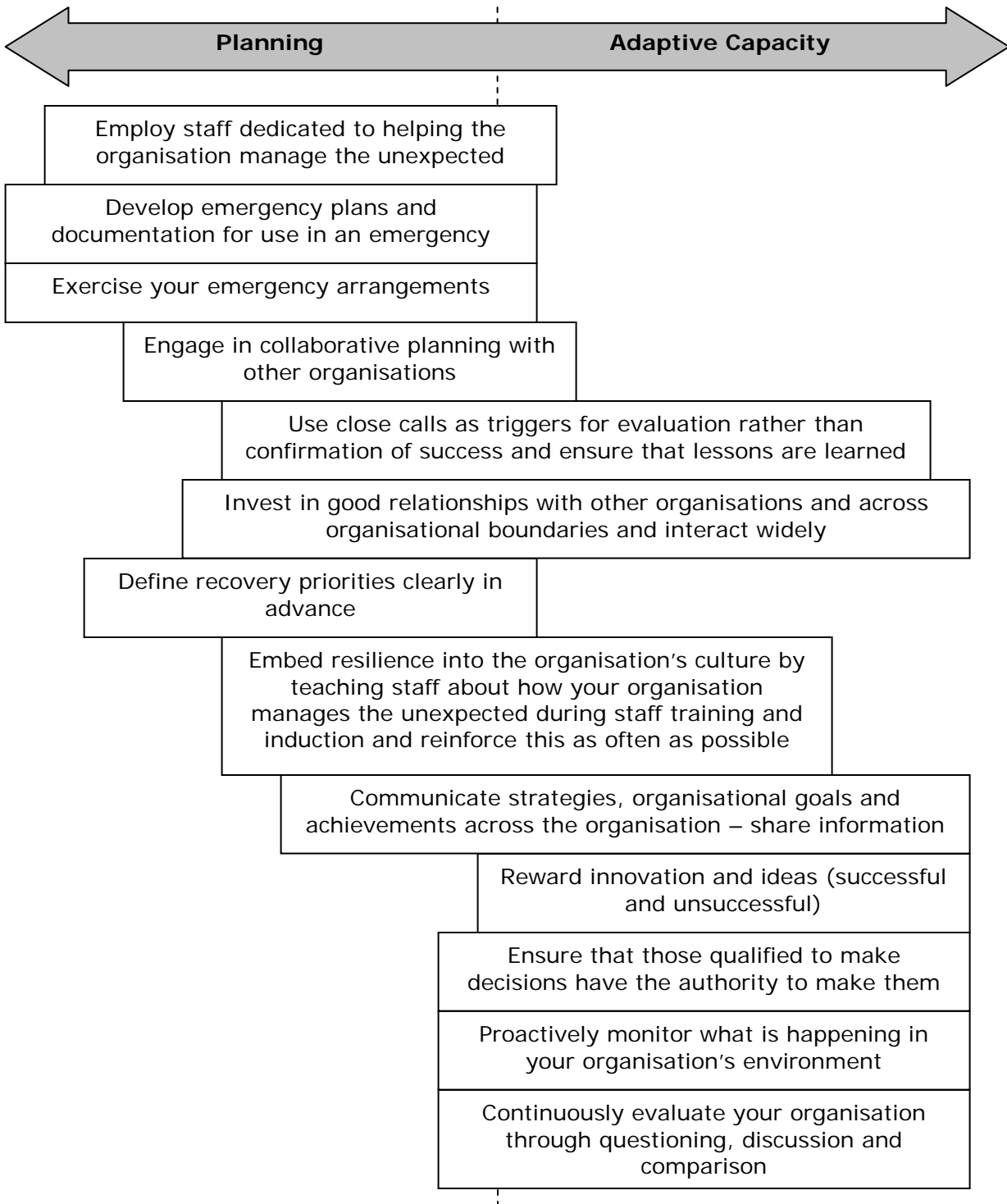
Figure 6: Approaches to Resilience by Industry Sector



and those offering advice to organisations, should consider the following points:

- It is likely that an organisation whose strongest dimension is its adaptive capacity, but whose actual scores for the adaptive capacity dimension are low, would benefit from focusing on improving their adaptive strategies as these are more likely to fit within the organisation's culture.
- An adaptive organisation whose resilience scores for the adaptive capacity dimension are high would benefit from focusing on planning based strategies to stretch its capabilities. Not only will this formalise the organisations planning arrangements but it will also help to emphasise key points which, up until now have been part of the organisations unwritten norms and values.
- All planning organisations will likely benefit from pursuing increased adaptive capacity although they may need to incorporate strategies for maintaining them into the planning based programs. This is because adaptive capacity is usually maintained through an organisations culture and leadership. However success in the early stages can fall away if the organisation slips back into a planning dominated approach. This will also ensure that strategies for increased adaptive capacity compliment, rather than compete against, the existing planning arrangements.

Figure 7: Approaches to Resilience and their Associated Strategies



NB: The strategies shown as planning orientated or adaptive orientated have been developed from the indicators and model of organisational resilience. This does not mean, for example, that an adaptive organisation does all adaptive strategies well.

3.1.2 Overall resilience in Auckland

The average Auckland scores for the dimensions of organisational resilience and overall resilience are shown in Figure 11 in Appendix C; this again shows the adaptive capacity is the dominant approach. The average Auckland scores for each of the indicators of organisational resilience are shown in Figure 12 and will be discussed in more detail in sections 3.1.3 and 3.1.4. Table 7 shows a summary of how many organisations scored within each score boundary as defined in Figure 10 in Appendix B.

Table 7: Summary of Organisations Resilience Results

Organisational Resilience Score Boundaries	Number of Organisations
Excellent (81-100%)	1
Good (73-80%)	11
Fair (57-72%)	46
Poor (49-56%)	7
Very Poor (0-48%)	3
Total	68

This shows that the majority of organisations achieved a *fair* level of resilience and that only one organisation achieved *excellent* resilience. This is based on organisations overall scores and many organisations did achieve *excellent* scores in individual indicators.

3.1.3 Resilience strengths in Auckland

Two particular strengths which came out in the overall Auckland results were internal and external situation monitoring and reporting (77%), and devolved and responsive decision making (75%).

The **internal and external situation monitoring and reporting** indicator is designed to measure how an organisation learns about the world around it. This could include market research, evaluation of competitors, political and regulatory awareness, and financial trends. Through monitoring internal and external environments, organisations can pick up on weak signals. Weak signals are the early warning signals that occur as a crisis begins to evolve. The signals are referred to as weak because they can often be misinterpreted or overlooked. These signals are often picked up by ‘front line’ staff but are rarely reported and this can lead to a crisis developing undetected. Mitroff (2001, p. 102) describes this and notes,

“...in many cases, the signals are weak and filled with noise. Nonetheless, it usually turns out that there is at least one person in every organisation who knows about an impending crisis. The problem is that those who often know most about it are the ones who have the least power to bring it to the attention of the organisation”.

Here Mitroff emphasises not only the importance of detecting the signals but also of importance of enabling the organisation to distribute and share that information. Within Auckland organisations taking part in this study, the ability to monitor the business

environment and report critical information is a particular strength. To maintain this strength it is important that organisations prioritise environmental and business landscape scanning and that all staff are encouraged (and rewarded) to report potential critical information.

The **devolved and responsive decision making** indicator is designed to measure how flexible the decision making structure and process is within an organisation. This flexibility and responsiveness plays a key role in the organisations adaptive capacity. Weick and Sutcliffe (2007) refer to this as deference to expertise and argue that the person most qualified to make a decision should make it regardless of seniority. Bigley and Roberts (2001) discuss a fire department and describe how an incident command structure enables firemen to oscillate between pre-planned and improvised responses during crisis situations. Devolved and responsive decision making that is applicable to both crisis and business as usual situations works in the same way. During business as usual, controls on decision making may be more centralised and hierarchical. However once the organisation moves into 'crisis mode' the decision making structure should morph into one which clarifies which 'experts' (this could include front line staff) should be involved in that decision making based on expertise and knowledge rather than rank. This flexible decision making structure is then a tool which the organisation can use under a variety of different circumstances such as responding to rapid market changes, or addressing systemic problems in organisations' customer relations.

3.1.4 Resilience weaknesses in Auckland

Two particular weaknesses which came out in the overall Auckland results were the planning strategies (46%) and capability and capacity of external resources (52%).

Of the 68 organisations that took part in this study, 53 scored poorly or very poorly on **planning strategies**; the Auckland average for this indicator is 46% (very poor). The planning strategies indicator is designed to measure how an organisation plans for crises and the approach taken to this planning. Questions relating to this indicator focus on whether or not organisations have an emergency plan and the quality of plans.

Organisations also scored poorly on **capability and capacity of external resources** with only 3 organisations scoring good or excellent. This indicator is designed to measure organisations ability to access and mobilise resources from outside of their organisation in the event of a crisis. Questions relating to this indicator focus on the ability of staff to access external resources, whether or not the organisation has agreements in place which will facilitate access or sharing of resources between organisations, and whether or not an organisation sees itself as a source of resources for the community during and immediately after a crisis.

3.2 Sector Analysis

This section presents an analysis of the final results within each industry sector represented where more than 1 organisation has taken part; these are identified in Table 3. The organisational resilience scores discussed in this report should be interpreted using the Benchmark Resilience Score Boundaries shown in Appendix B as Figure 10.

This research has been conducted using a relatively small sample of organisations and some of the sectors analysed here only include results from two organisations. Further research, using a larger sample, will provide a more robust analysis. Table 8 shows a summary of average scores for each dimension of organisational resilience as well as overall resilience. Graphs showing the overall average resilience scores for each of the industry sectors are shown in Figures 14 to 22 in Appendix C.

Table 8: Summary of Industry Sector Scores

Industry Sector	Planning (%)	Adaptive Capacity (%)	Overall Resilience (%)
Communications	69	78	73
Education	61	71	66
Finance and insurance	58	69	63
Health and community	78	75	76
Manufacturing	57	71	64
Personal and other services	63	72	68
Property and business services	56	74	65
Retail trade	60	73	66
Wholesale trade	52	72	62

3.2.1 The Most Resilient Sector – Health and Community

The health and community sector can include organisations such as hospitals, doctors' surgeries, clinics, aftercare services and community care providers. This sector achieved the highest overall average resilience score (76%); however organisation scores for individual indicators within this sector ranged from 59-96%. The health and community sector provides a good example of a set of organisations that draw more equally from the planning (78%) and adaptive capacity (75%) dimensions. However the strongest indicators within this sector are planning strategies (86%) and proactive posture (80%) which are both planning indicators. This reflects earlier discussion of how this sector focuses more heavily on a planning orientated approach to resilience. This sector has a strong ability to develop formalised emergency plans and arrangements as well as a commitment to resilience and an awareness of resilience issues.

The weakest indicators for the health and community sector are capability and capacity of external resources (69%) and innovation and creativity (72%). Despite these being the lowest scores for this sector they are still rated as *fair*. The capability and capacity of external resources indicator is designed to measure how well an organisation can access external resources during a crisis. One of the characteristics of an organisational crisis is being overwhelmed and having a lack of resources; this makes the ability to access external resources critical for response and recovery. Innovation and creativity is also an important factor in navigating challenges during the response. This could include developing new ways of working at short notice to achieve objectives such as cutting through red tape to access resources, thinking of new solutions to existing problems, and developing ways to apply existing processes to new situations.

3.2.2 *The Least Resilient Sector – Wholesale Trade*

The wholesale trade sector can include organisations such as wholesale commercial premises and warehouses. This sector achieved the lowest overall resilience score (62%); however organisations scores for individual indicators within this sector ranged from 8-100%. The wholesale trade sector provides a good example of a set of organisations that show a very sharp contrast between their planning (52%) and adaptive capacity (72%) indicators. The strongest indicators within this sector are internal and external situation monitoring and reporting (78%) and devolved and responsive decision making (77%) which are both indicators of adaptive capacity. This means that they are relatively good at scanning their business environment for signals of potential crises and distributing this knowledge across the organisation. This is a significant strength as it should help to ensure that organisations are able to deal with problems before they escalate into crises.

The weakest indicators within this sector are planning strategies (43%) and capability and capacity of external resources (46%) which are both indicators of planning. Overall the planning dimension represents a significant weakness for the wholesale trade sector and they should be encouraged to engage in collaborative planning and to assess their supply chain resilience and interdependencies.

3.2.3 *The Communications Sector*

The communications sector can include organisations such as media organisations, couriers, telecommunications providers and postal services. Although it was not the most resilient sector, the communications sector did achieve significantly higher scores than other sectors; this can be seen on Figure 6. The strongest indicators within this sector are minimisation of silo mentality (82%) and internal and external situation monitoring and reporting (81%). Silos within and between organisations are physical, social and cultural boundaries which get in the way of effective information sharing, collaboration and communication. This is especially problematic inside larger organisations or those where staff are highly specialised or isolated. Where silos exist, they stop people from sharing information and experiences which could help prevent crisis and they make a crisis response fragmented and cumbersome. The communication sector's ability to work across these boundaries without silos forming is a significant strength. Without these barriers, organisations can better share information, manage the unexpected and respond when necessary. This strength does however rely on the skills and knowledge of staff, so continuous training and knowledge transfer is essential to avoid overdependence on senior staff that may leave the organisation. This ability to work across boundaries is also related to the communication sectors ability to monitor their business environment. This could include watching for regulatory changes, competitive information and looking out for the early signs of crisis.

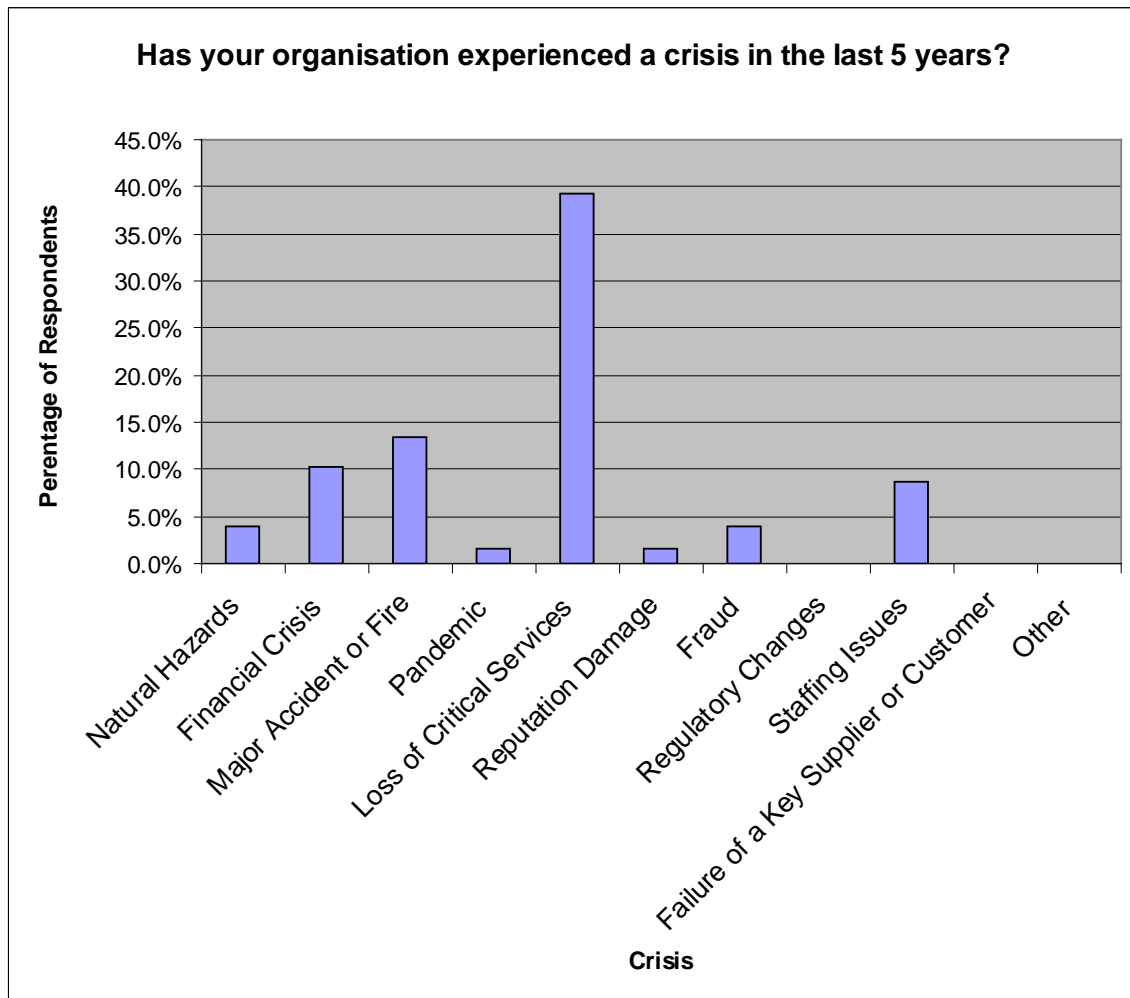
The weakest indicators within this sector are capability and capacity of external resources (62%) and planning strategies (63%). These indicators measure how well organisations engage in formalised planning such as developing emergency plans and whether or not they could access external resources in a crisis. The communications

sector is highly adaptive; however formalised planning still contributes toward their resilience. It is important that the sector engages in collaborative planning in order to manage interdependencies and to create pre-planned workarounds for possible problems. This is especially true due to the complexity of communications sector operations where roles and responsibilities are distributed (e.g. lots of organisations play a part in providing communications networks) whilst controls are centralised (e.g. only a few organisations control the overall process).

3.3 Crises in Auckland in the Last 5 Years

The resilience measurement tool also asks individuals whether their organisation has experienced a crisis within the last 5 years. Employees from 23 (16%) of the organisations included in this report said that their organisation had experienced a crisis within the last 5 years. The types of crisis experienced are shown in Figure 8 which shows that most crises experienced were critical infrastructure failures such as power cuts. Perhaps more surprisingly, major accidents and fires were also identified.

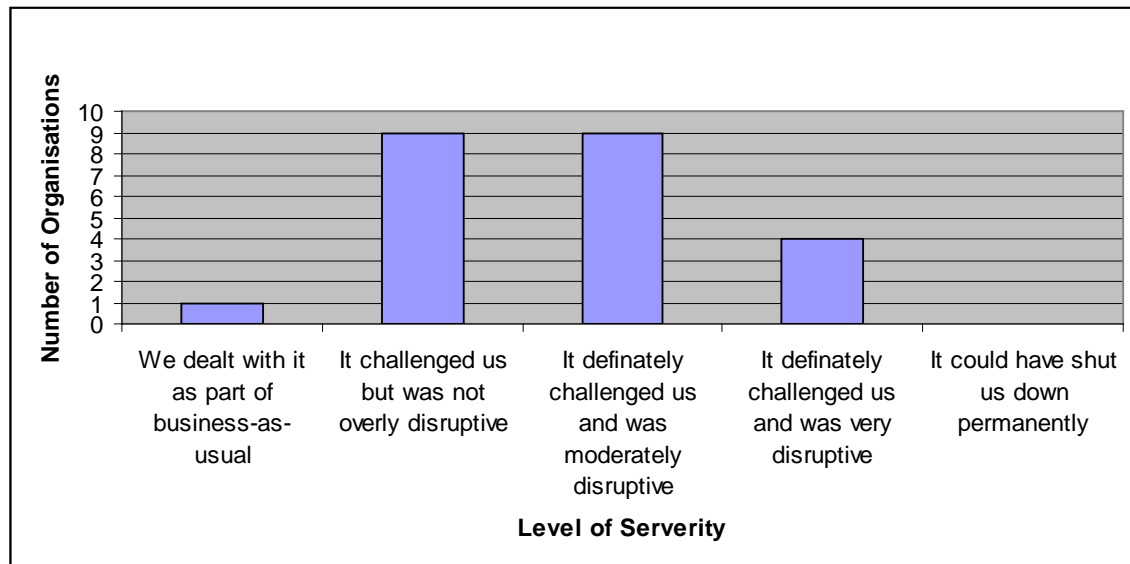
Figure 8: Crises Experienced



NB: Some organisations have experienced more than 1 crisis over the last 5 years – this is included in this figure.

Participants were then asked about the severity of the crises they experienced; Figure 9 shows these results. The majority of organisations were challenged but not significantly disrupted by the crises they experienced.

Figure 9: The Severity of Crises Experienced by Organisations in the Last 5 Years



NB: Where an organisation experienced more than one crisis the average severity rating is shown.

4. Anecdotal Evidence

Further to the results discussed above, which were identified using the resilience benchmarking questions, a number of other interesting insights have been gained.

The last question in the Benchmark Resilience tool gives individuals the opportunity to pose a question they felt was not addressed in the survey and then answer it. Many participants used this feature to voice their concerns about the way their organisation plans for and manages uncertainty; these are summarised in the list below.

- A lack of succession planning
- A lack of discussion and knowledge of emergency roles and responsibilities
- A lack of training in emergency roles and responsibilities
- A lack of understanding of the organisation's strategic and tactical emergency management, planning and structures
- A lack of information sharing about emergency management activities across the

- organisation
- How the organisation will communicate with their staff during emergencies
- How the organisation will communicate with other organisations (e.g. customers, suppliers, Government) during emergencies
- Job security during and after crisis
- Lack of consultation on emergency management issues – a top down approach
- What would happen in our community in an emergency – what would they want from us?
- If we had to relocate, where would we go?
- Role conflict in an emergency
- Lack of access, for general staff members, to emergency plans and arrangements – we've been told they exist but nobody has shown them to us

5. Improving Resilience in Auckland

Organisations play a critical role in communities planning for, responding to and recovering from disasters. Without resilient organisations, communities are less resilient.

The differences in approaches to resilience between organisations should be considered when developing resilience advice. The results of this research indicate that the majority of organisations draw more heavily on adaptive capacity for their resilience. This is important because the majority of organisations approached through this research had difficulty prioritising resilience or allocating resources to addressing resilience issues. Given these different approaches, organisations' motivation for addressing resilience is also likely to be driven by these different orientations.

For organisations that do not have a legal duty to plan for emergencies, making a business case for resilience and understanding how resilience issues relate to business as usual is critical. Communicating with organisations about resilience should focus on what resilience is, why it is important, and what organisations of all types and sizes can do to address their resilience. This information should be tailored according to whether an organisation is likely to be planning orientated or adaptive capacity orientated.

While a focus on formalised planning and exercising should be maintained, the Auckland CDEM Group should also encourage organisations to leverage their adaptive capacity strengths. There are eight indicators of adaptive capacity, as shown in Figure 5 which are defined in Appendix A. Although adaptive capacity often goes unnoticed within an organisation, it is not necessarily effortless, easy or natural. It is therefore important that organisations address their adaptive capacity proactively.

When identifying whether or not their organisation had an emergency plan, participants in this study often disagreed. This indicates silo mentality which means that many staff and managers are not aware that their organisation has plans, or that staff believe that their organisation has plans when it does not. Silo mentality is a social phenomenon that can affect individuals, communities, business units, teams or functions within any group or organisation. It can be created by geographical proximity, by being spatially far away from something or someone, but it can also occur between people or groups that

share the same office space. Silos are created when physical, cultural, social, or communication barriers isolate or separate people, processes or information in a way that prohibits effective working. In a disaster or crisis situation these barriers rarely disappear as we might hope, but are more often magnified and can cause significant problems. Silos cause organisations to lose control and awareness, and they can make organisations slower to respond to information. It is important for organisations to address silos because they significantly impact an organisation's adaptive capacity. While many organisations may have experienced the effect of silos, they may not understand how these could become part of the generation of crises within their organisation.

Many organisations taking part in this study rely on a small group of people with very specific knowledge to 'get the job done'. This is especially true in smaller organisations. This is significant when thinking about devolved and responsive decision making which was identified as a particular strength in Auckland organisations. Many organisations rely on arrangements developed to manage small disruptions for also managing larger scale problems and crises. They often assume that their arrangements will scale up and will be applicable to any problem; however this is not necessarily true. Organisations should be encouraged to think about how their business as usual coping methods would work during a large scale emergency, or during a crisis that lasted longer than expected. The financial crisis is a good example of this situation for many organisations.

Organisations in Auckland should also be encouraged to recognise their place as part of a network of organisations. No organisation can operate in isolation; each will need suppliers, customers, consumers, service users etc. This includes not only investigating their interdependencies but also increasing and improving their level of collaborative planning. In particular each industry sector needs to be aware of the role it could play in helping communities and the economy to recover in local, regional and national emergencies. This is not only limited to those organisations traditionally seen as contributing to the response such as emergency services, transport and governance, but includes all organisations as employers and providers of goods and services which is what will really enable communities to recover.

5.1 Leveraging Strengths in Auckland Organisations

The Auckland organisations taking part in this study scored particularly well in the internal and external situation monitoring and reporting, and devolved and responsive decision making indicators. It is important that organisations not only focus on addressing their weaknesses but also leverage off of their strengths in order to maintain and increase their resilience.

5.1.1 Internal and External Situation Monitoring and Reporting

As the economic and population centre of New Zealand, organisations in Auckland are well placed to be proactive about managing emergencies and crises. However organisations' experience of crises in the last 5 years indicates that the majority of organisations have little recent experience of anything other than financial turmoil, and power cuts. While this bodes well for organisations' ability to avoid crises where possible,

it does mean that organisations in this area do not have much experience of what a large scale disaster or crisis, such as a natural disaster, would mean for them.

The ability of organisations in Auckland to monitor their internal and external environment for signals of opportunities and potential threats is critical given this lack of experience. Although a volcanic eruption or earthquake, for example, may be difficult to miss, there are a host of secondary consequences for organisations from any crisis. One example is how an organisation could significantly grow their market share if they were positioned correctly to provide their product or service quicker and more effectively than anyone else following a disaster. A resilient organisation would also be able to see when they are able to transform their organisation to better suit a new environment.

To make the most of this strength Auckland organisations need to make sure that they monitor the internal and external environment and that their reporting and information sharing practises are continuously reviewed. It is also critical that organisations recognise that 'near misses', (where an organisation either succeeds or gets by, but only just) is not confirmation of their abilities or of success, but is a signal for them to review their practices. Organisations should always aim to learn lessons, not only from crises, but near misses as well (Weick & Sutcliffe, 2007).

5.1.2 Devolved and Responsive Decision Making

Devolved and responsive decision making, how flexible organisations' decision making structures and processes are, is critical for adaptive capacity. This often involves a culture where autonomy and authority to make decisions, including allocation of resources, adjusts depending on the situation. This is important for situations where top management may be unavailable or where middle managers may need to purchase extra equipment or authorise overtime to enable continuity of operations and minimise disruption.

Many organisations may have these arrangements in place on an informal basis however it is essential that everyone in the organisation understands these procedures, what triggers them and exactly what they can and cannot do. This scaling of authority and processes also extends to other duties such as communicating with the media, opening or closing sites, locations or facilities, and how and when to communicate sensitive information.

For some organisations, for example those operating in hazardous environments, some processes such as health and safety checks may be changed during periods of stress or crises in order to prevent accidents. This too needs to be addressed in advance of a crisis so that proper training and information can be provided. Far from only relying on predetermined arrangements, discussion of these problems will not only enable creativity and innovation during the response but will also highlight existing problems and contradictions.

5.2 Addressing Weaknesses in Auckland Organisations

5.2.1 Planning Strategies

The Auckland organisations taking part in this study scored poorly on the planning strategies indicator. This is in part due to the silo mentality discussed earlier, where not every member of the organisation is aware of the organisation's emergency arrangements. However this in itself is not necessarily an indication of poor resilience. It is not always necessary for every member of the organisation to know the emergency arrangements in depth, however it should be recommended that every member of staff is introduced to the arrangements and involved in arrangements which directly link with either their role or something on which their role directly relies or reports to. It should be emphasised that this is applicable to all organisations regardless of their industry sector or size.

Despite the different approaches to resilience previously discussed, it is important for organisations to engage in formal planning. The production of an emergency plan does not necessarily increase an organisations' resilience however the lessons learned from the planning process should feed into the culture of the organisation. Formal planning also increases the organisations awareness of the risks in its business environment, including interdependencies. Collaborative planning, planning done in conjunction with other organisations, can also be very useful in enabling organisations to increase their resilience.

5.2.2 Capability and Capacity of External Resources

Auckland organisations scored poorly on capability and capacity of external resources. This indicator measures how well organisations can access resources from outside of their organisation during a crisis. This could include existing contracts for rented vehicles, plant and equipment as well as temporary or contract staff.

To address this, organisations should complete an analysis of existing contracts to identify dependencies e.g. suppliers, temporary contract staff, rented vehicles and plant etc. They can then use memorandums of understanding (MOUs) to make arrangement to ensure continuity of supply. Multi-agency exercises would help organisations to familiarise themselves with the needs of their sector. They should also identify maximum tolerable periods of disruption given current resources.

6. Conclusion

Organisational and community resilience are like two sides of the same coin. Community resilience can only be achieved if the resilience of organisations providing communities with employment, essential services and economic activity is addressed. Organisations such as emergency services, transport, governance, communications and utilities are commonly seen as critical to a response. However all organisations have a role to play in resilience through providing employment, and goods and services. A resilient organisation is one that not only survives, but is also able to thrive in an environment of change and uncertainty (Seville, et al., 2008, p. 2).

This report presents research which has developed a web-based survey tool to measure and benchmark organisational resilience. The tool has been tested on 68 organisations of all types, sectors and sizes in Auckland and a model of resilience consisting of 13 indicators has been developed. The research provides indications of the level of resilience in Auckland organisations as a whole and by sector. However researchers had considerable difficulty in getting organisations to take part; reasons for this are discussed within the report.

The majority of private organisations which took part in this study scored more highly in adaptive capacity indicators than in planning indicators. Particular strengths of Auckland organisations in adaptive capacity include their ability to monitor and report changes in their internal and external business environment and the way in which their decision making is structured. Weaknesses identified in Auckland organisations include creating, testing and validating emergency plans and arrangements.

The overall highest scoring sectors were the education (66%) and health and community (68%) sectors. The overall lowest scoring sector was the wholesale trade sector which scored an average of 62%. To increase organisational resilience in Auckland the Auckland CDEM group should focus on engaging organisations, especially small organisations, with resilience. This should emphasise the links between resilience and business performance. Further research could help to investigate and establish this link in more detail and would provide the Auckland group with more information on exactly how planning for emergencies and crises can contribute towards an organisations bottom line over time. The Auckland CDEM group could also address the particular strengths and weaknesses identified through this research by encouraging organisations to engage in collaborative planning to share their processes for internal and external situation monitoring and reporting and devolved and responsive decision making. If done in industry groups this could also provide a springboard for increasing organisations level of formalised collaborative planning and could lead to improvements in planning strategies.

7. References

- Anderson, B., & Pettersen, P.-G. (1996). *The Benchmarking Handbook: Step-by-step Instructions*. London: Chapman and Hall.
- Bigley, G. A., & Roberts, K. H. (2001). The Incident Command System: High Reliability Organizing for Complex and Volatile Task Environments. *Academy of Management Journal*, 44(6), 1281-1299.
- Codling, S. (1996). *Best Practise Benchmarking an International Perspective*: Gulf Publishing.
- Hinkin, T. (1998). A Brief Tutorial on the Development of Measures for Use in Survey Questionnaires. *Organizational Research Methods*, 1(1), 104-121.
- McManus, S. (2007). *Organisational Resilience in New Zealand*. Unpublished Doctor of Philosophy, University of Canterbury, Christchurch.
- Mitroff, I. I. (2001). *Managing Crises Before they Happen: What Every Executive and Manager Needs to Know About Crisis Management*. New York: ANACOM.
- Mitroff, I. I., Pauchant, T. C., Finney, M., & Pearson, C. (1989). Do (Some) Organisations Cause their Own Crises? The Cultural Profiles of Crisis-prone vs. Crisis-prepared Organisations. *Industrial Crisis Quarterly*, 3(4), 269-283.
- Seville, E., Brunson, D., Dantas, A., Le Masurier, J., Wilkinson, S., & Vargo, J. (2008). Organisational Resilience: Researching the Reality of New Zealand Organisations. *Journal of Business Continuity and Emergency Management*, 2(2), 258-266.
- Weick, K. E., & Sutcliffe, K. M. (2007). *Managing the Unexpected: Resilient Performance in an Age of Uncertainty* (2nd ed.). San Francisco, CA: Jossey-Bass.

Appendix A

Dimension 1 – Planning

An organisations' planning is evidenced through five indicators:

- Planning strategies
- Participation in exercises
- Proactive posture
- Capability and capacity of external resources
- Recovery priorities

Planning Strategies can be defined as:

The identification and evaluation of organisational planning strategies designed to identify, assess and manage vulnerabilities in relation to the business environment and its stakeholders.

Participation in Exercises can be defined as:

The participation of organisational members in simulations or scenarios designed to enable the organisation to rehearse plans and arrangements that would be instituted during a response to an emergency or crisis.

Proactive Posture can be defined as:

The ability of an organisation to respond to the unexpected and to use 'close calls' or 'near misses' as triggers for evaluation rather than confirmation of success.

Capability & Capacity of External Resources can be defined as:

Systems and protocols designed to manage and mobilise external resources as part of an interdependent network to ensure that the organisation has the ability to respond to crisis.

Recovery Priorities can be defined as:

An organisation wide awareness of what the organisations priorities would be following a crisis, clearly defined at the organisation level, as well as an understanding of the organisation's minimum operating requirements.

Dimension 2 – Adaptive Capacity

An organisations' adaptive capacity is evidenced through seven indicators:

- Free from silo mentality
- Capability and capacity of internal resources
- Staff engagement and involvement
- Information and knowledge
- Leadership, management and governance structures
- Innovation and creativity
- Devolved and responsive decision making
- Internal and external situation monitoring and reporting

Free from Silo Mentality can be defined as:

An organisation free from cultural and behavioral barriers which can be divisive within and between organisations which are most often manifested as communication barriers creating disjointed, disconnected and detrimental ways of working.

Capability & Capacity of Internal Resources can be defined as:

The management and mobilisation of the organisations physical, human, and process resources to ensure its ability to effectively address the organisations operating environment.

Staff Engagement & Involvement can be defined as:

The engagement and involvement of organisational staff so that they are responsible, accountable and occupied with developing the organisations resilience through their work because they understand the links between the organisations resilience and its long term success.

Information & Knowledge can be defined as:

The management and sharing of information and knowledge throughout the organisation to ensure that those making decisions or managing uncertainty have as much useful information as possible.

Leadership, Management & Governance Structures can be defined as:

Organisational leadership which successfully balances the needs of internal and external stakeholders and business priorities, and which would be able to provide good management and decision making during times of crisis.

Innovation & Creativity can be defined as:

An organisational system where innovation and creativity are consistently encouraged and rewarded, and where the generation and evaluation of new ideas is recognised as key to the organisations future performance.

Devolved & Responsive Decision Making can be defined as:

An organisational structure, formal or informal, where people have the authority to make decisions directly linked to their work and where, when higher authority is required, this can be obtained quickly and without excessive bureaucracy.

Internal & External Situation Monitoring & Reporting can be defined as:

The creation, management and monitoring of human and mechanical sensors that continuously identify and characterise the organisations internal and external environment, and the proactive reporting of this situation awareness throughout the organisation.

Appendix B

Figure 10: Interpretation of the Benchmark Resilience Scores

Score	What Does It Mean?
81-100% Excellent	An organisation which scores 81-100% has an excellent level of resilience. Your organisation's culture is a key asset and you should focus on maintaining this as your organisation and its environment change over time.
73-80% Good	An organisation which scores 73-80% has a good level of resilience. It is likely that your organisation's culture is a significant asset and you should focus on building this as your organisation and its environment change over time. In particular you should focus on fostering relationships and awareness across organisational boundaries.
57-72% Fair	An organisation which scores between 57-72% has an overall fair level of resilience. It is likely that your organisation's particular strengths vary between departments or business units resulting in lower scores than you could achieve. You should focus on expanding your strengths across organisational boundaries including hierarchical levels and departments or business units. If your organisation scored poorly on planning indicators it is likely that your organisation has done some planning, but that awareness and understanding of this planning and how it can help your organisation, among your staff is limited. Focus on increasing staff awareness and involvement.
49-56% Poor	An organisation which scores 49-56% has a poor level of resilience. In particular you should focus on the Proactive Posture and Staff Engagement and Involvement indicators.
0-48% Very Poor	An organisation which scores 0-48% has a very poor level of resilience. In particular you should focus on the Proactive Posture indicator as well as those resilience indicators which represent your organisation's particular strengths.

Appendix C

Figure 11: The Average Auckland Scores for the Dimensions of Organisational Resilience and Overall Resilience

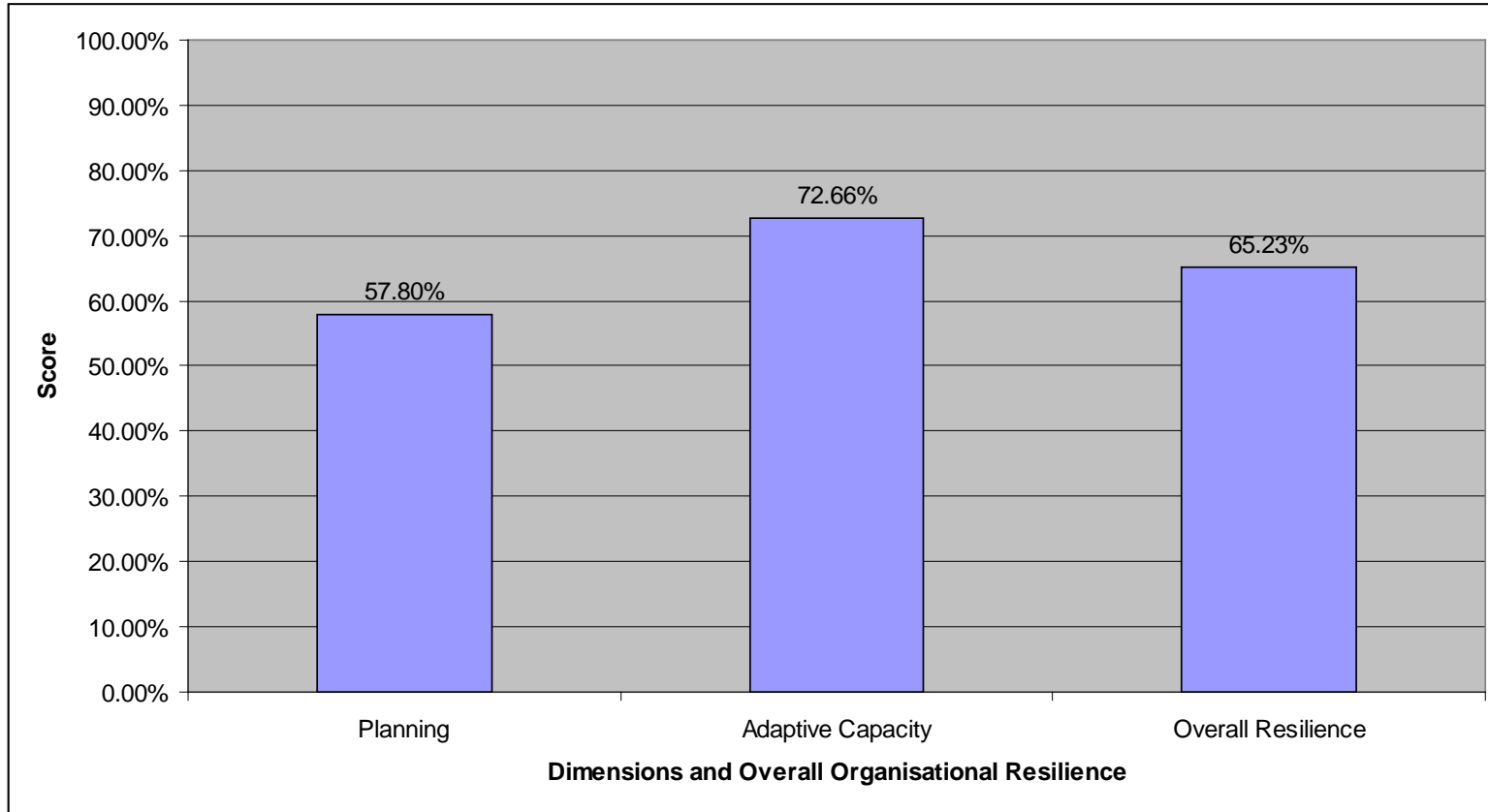


Figure 12: The Average Auckland Scores for the Indicators of Organisational Resilience

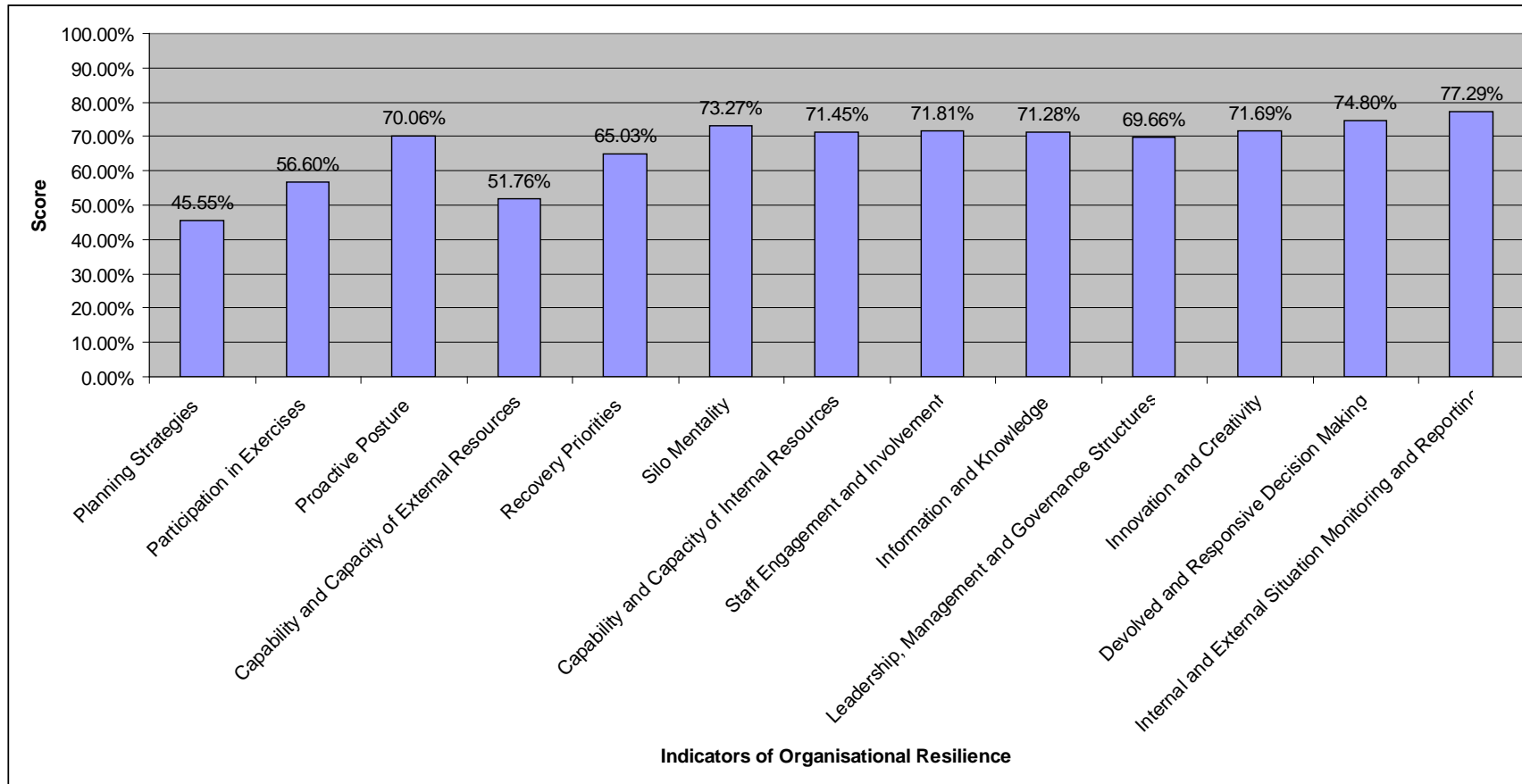


Figure 13: Average Overall Resilience Scores for the Communications Sector

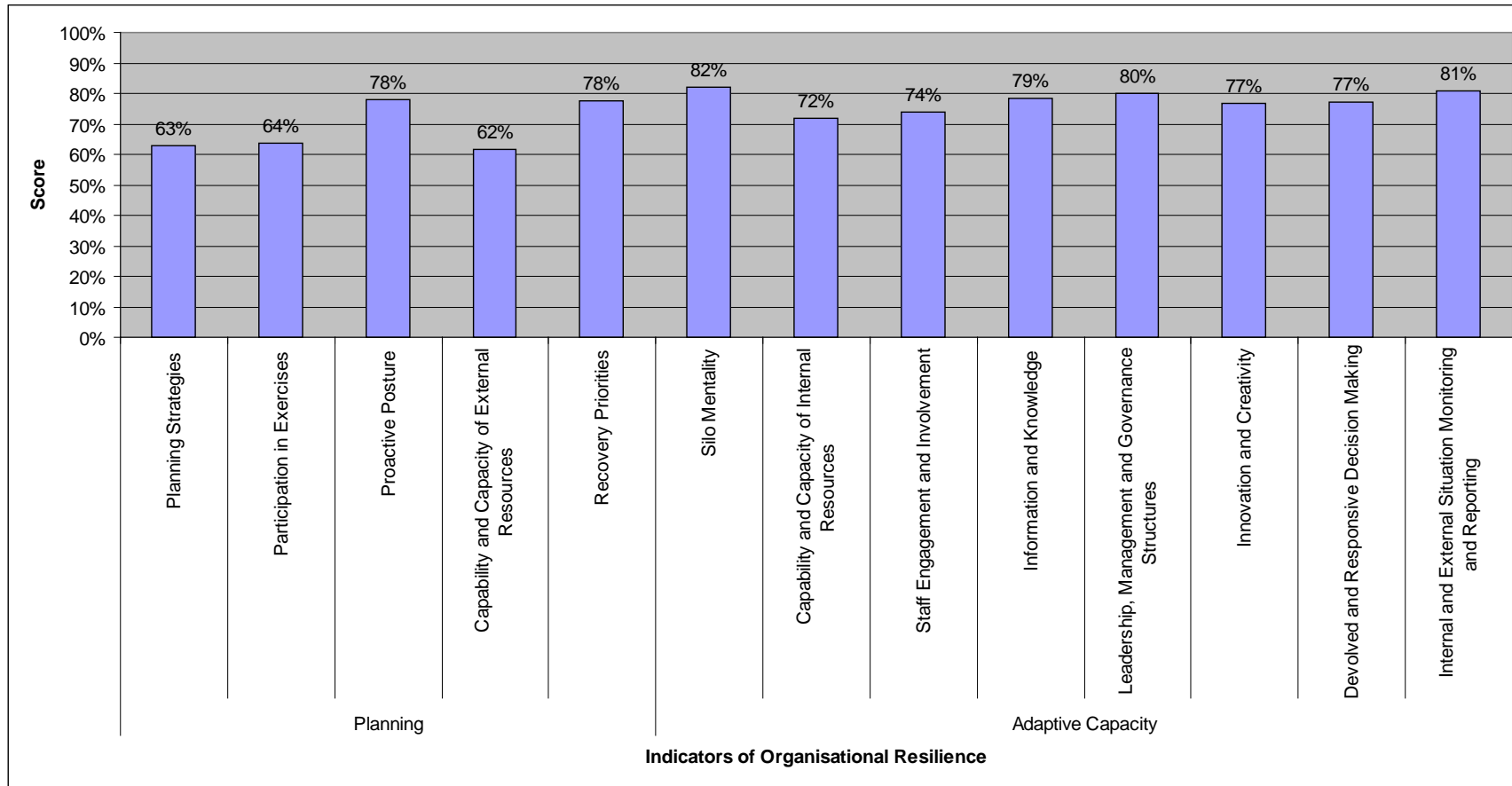


Figure 14: Average Overall Resilience Scores for the Education Sector

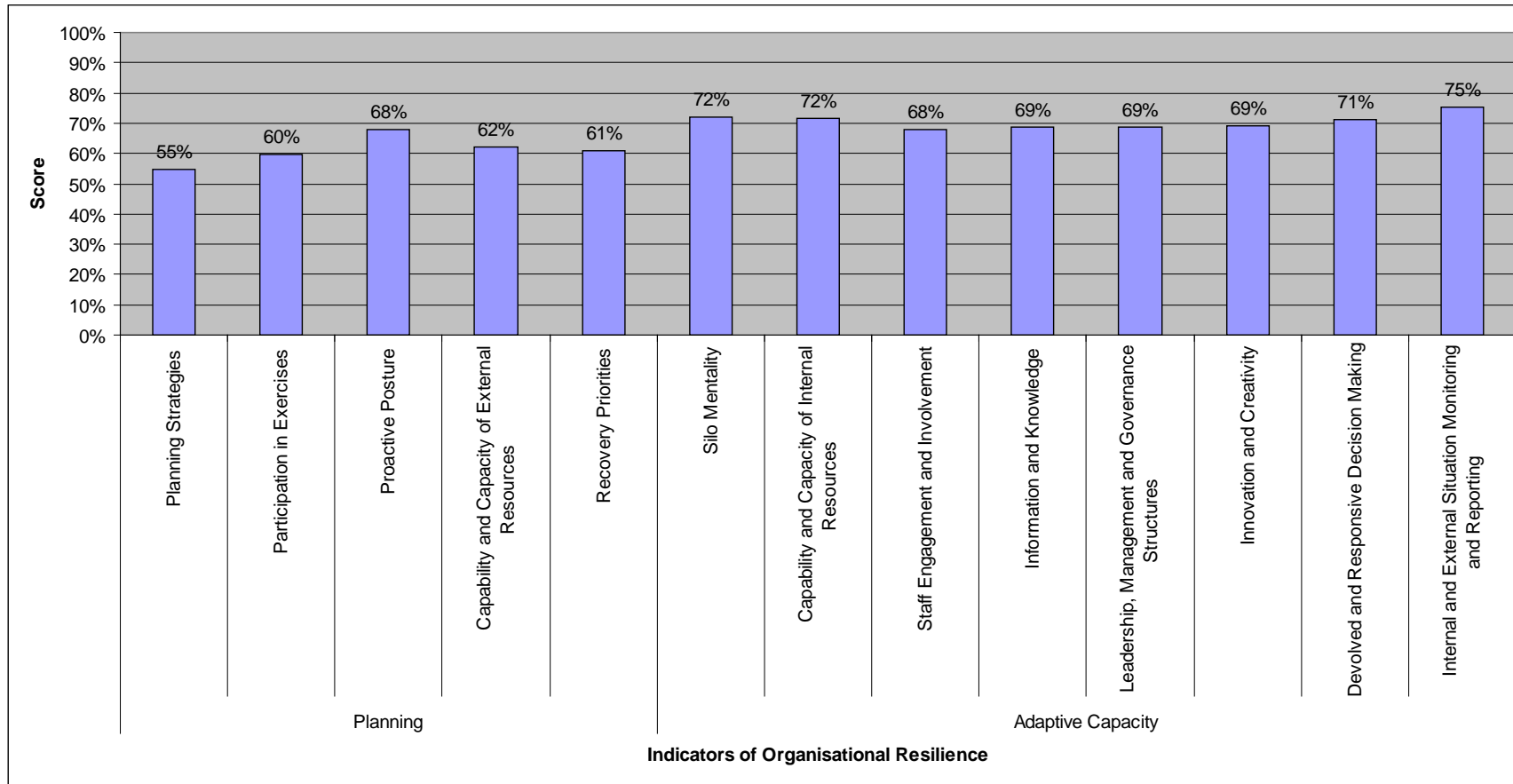


Figure 15: Average Overall Resilience Scores for the Finance and Insurance Sector

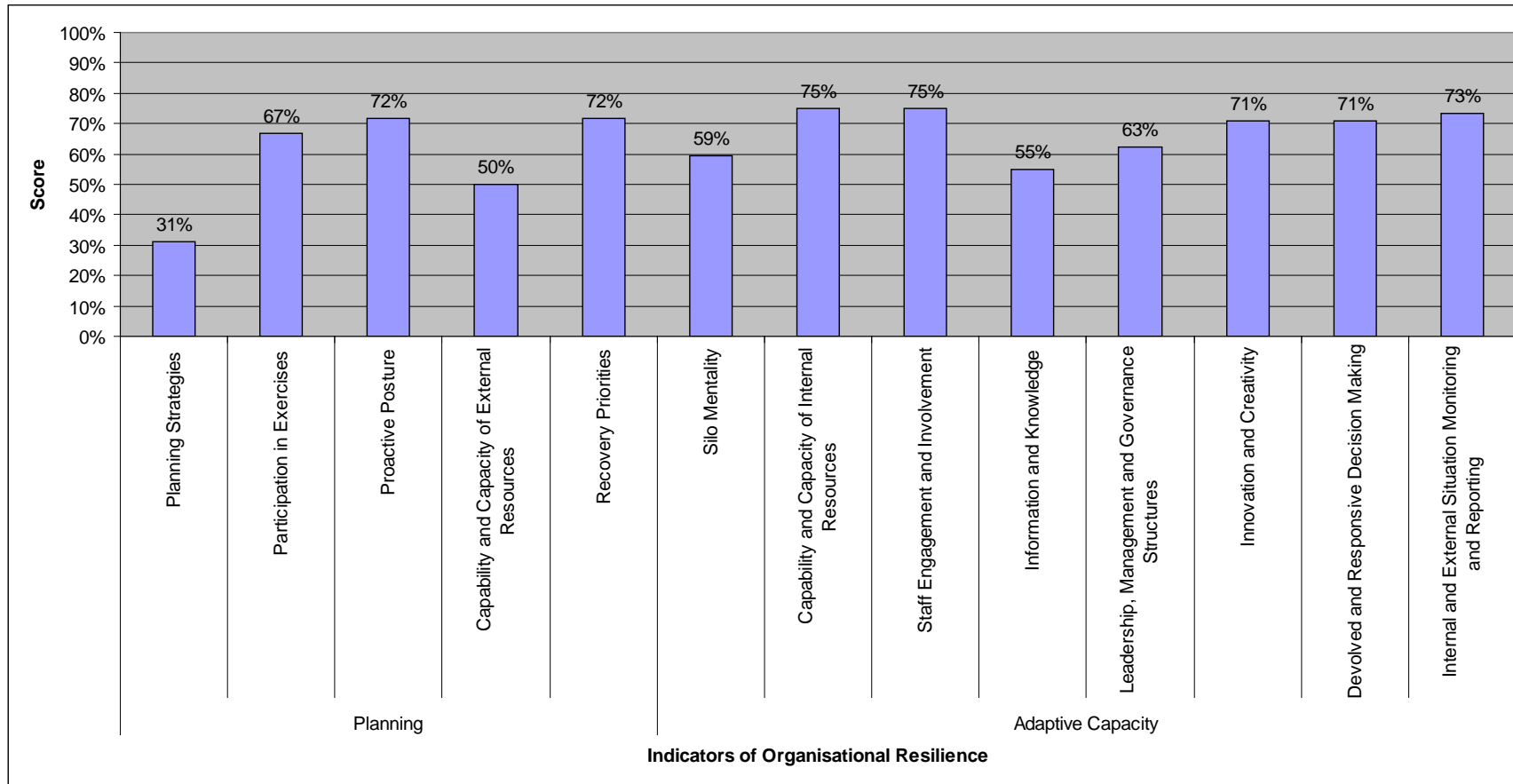


Figure 16: Average Overall Resilience Scores for the Health and Community Sector

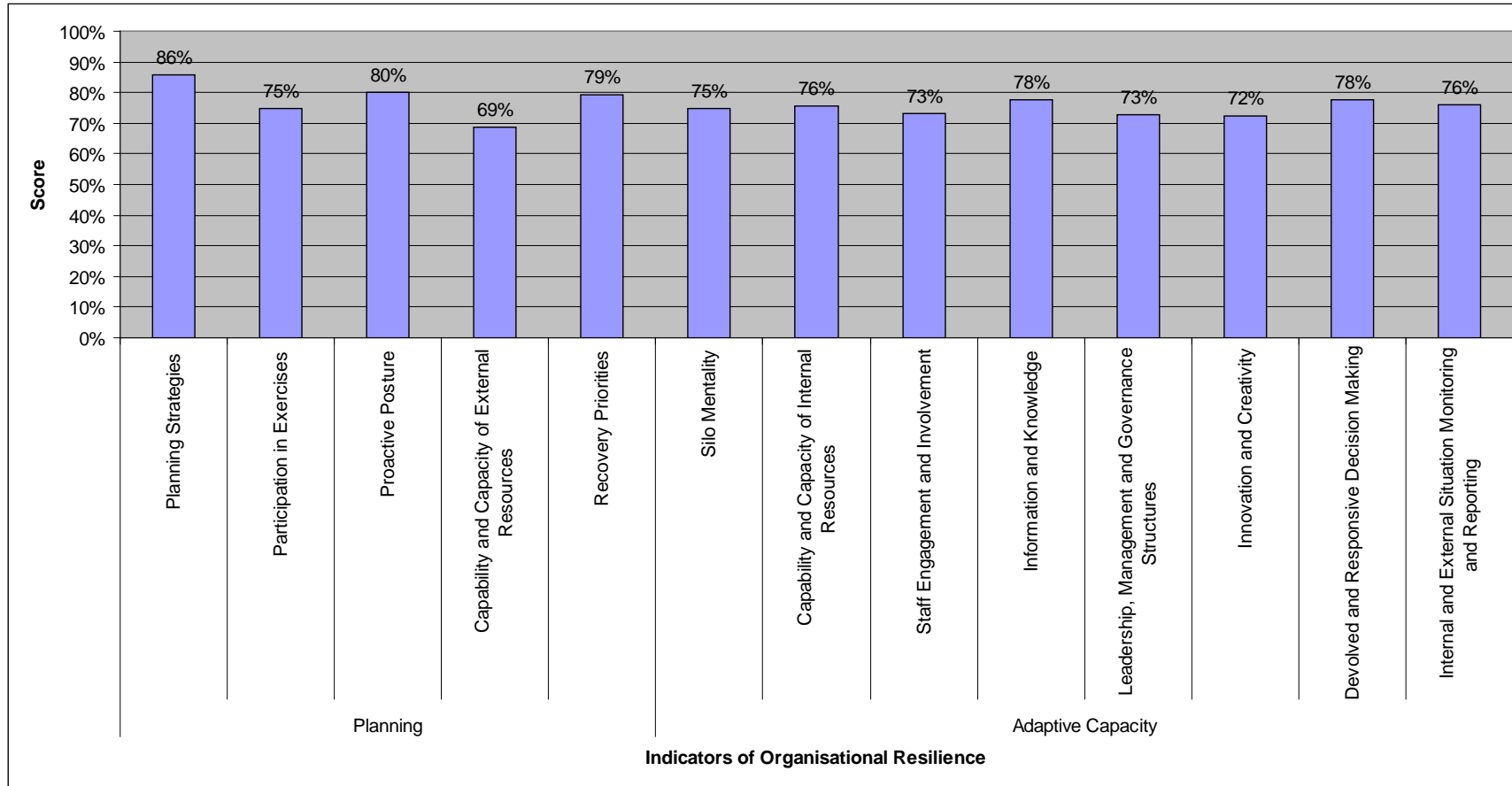


Figure 17: Average Overall Resilience Scores for the Manufacturing Sector

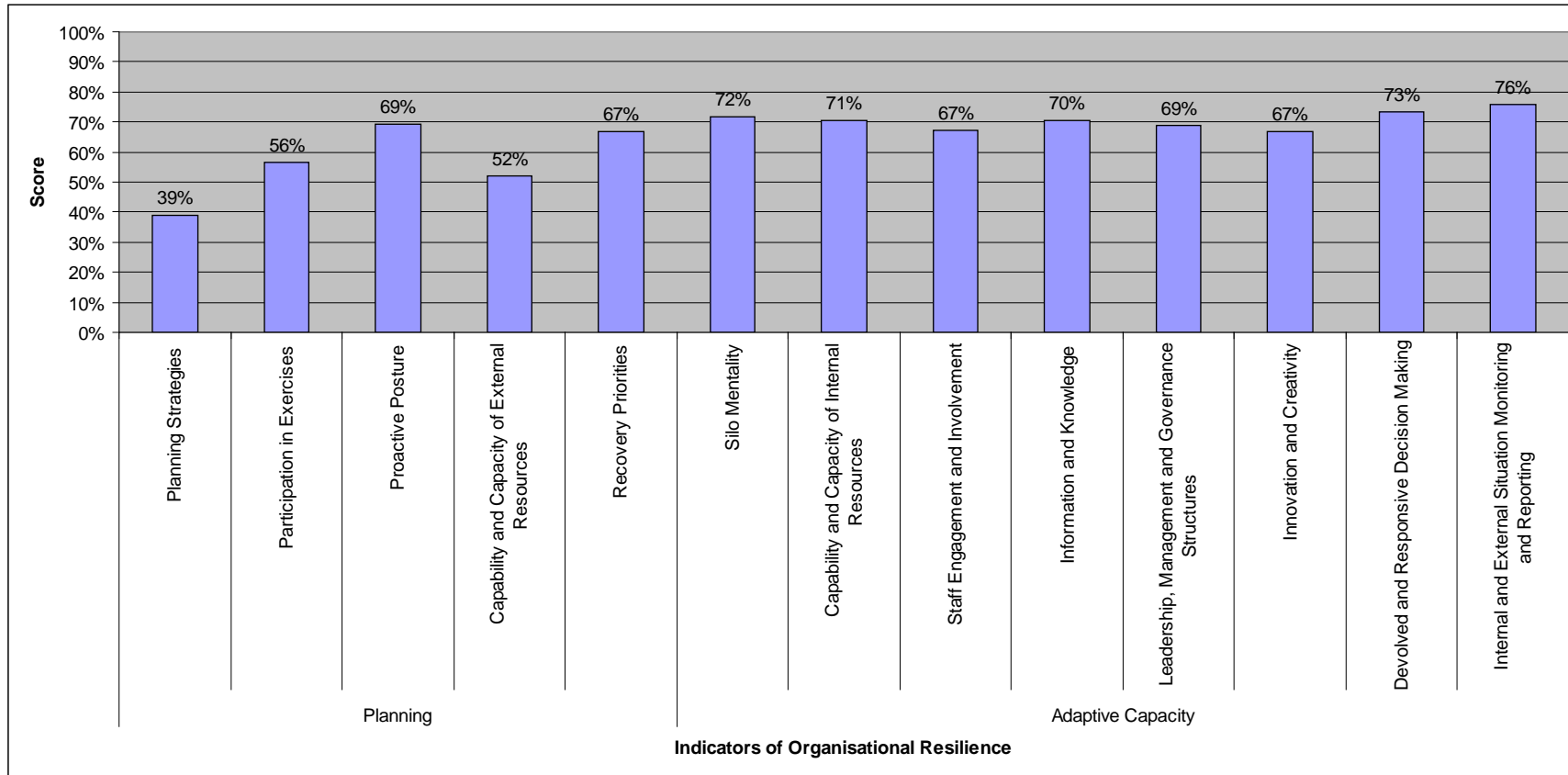


Figure 18: Average Overall Resilience Scores for the Personal and Other Services Sector

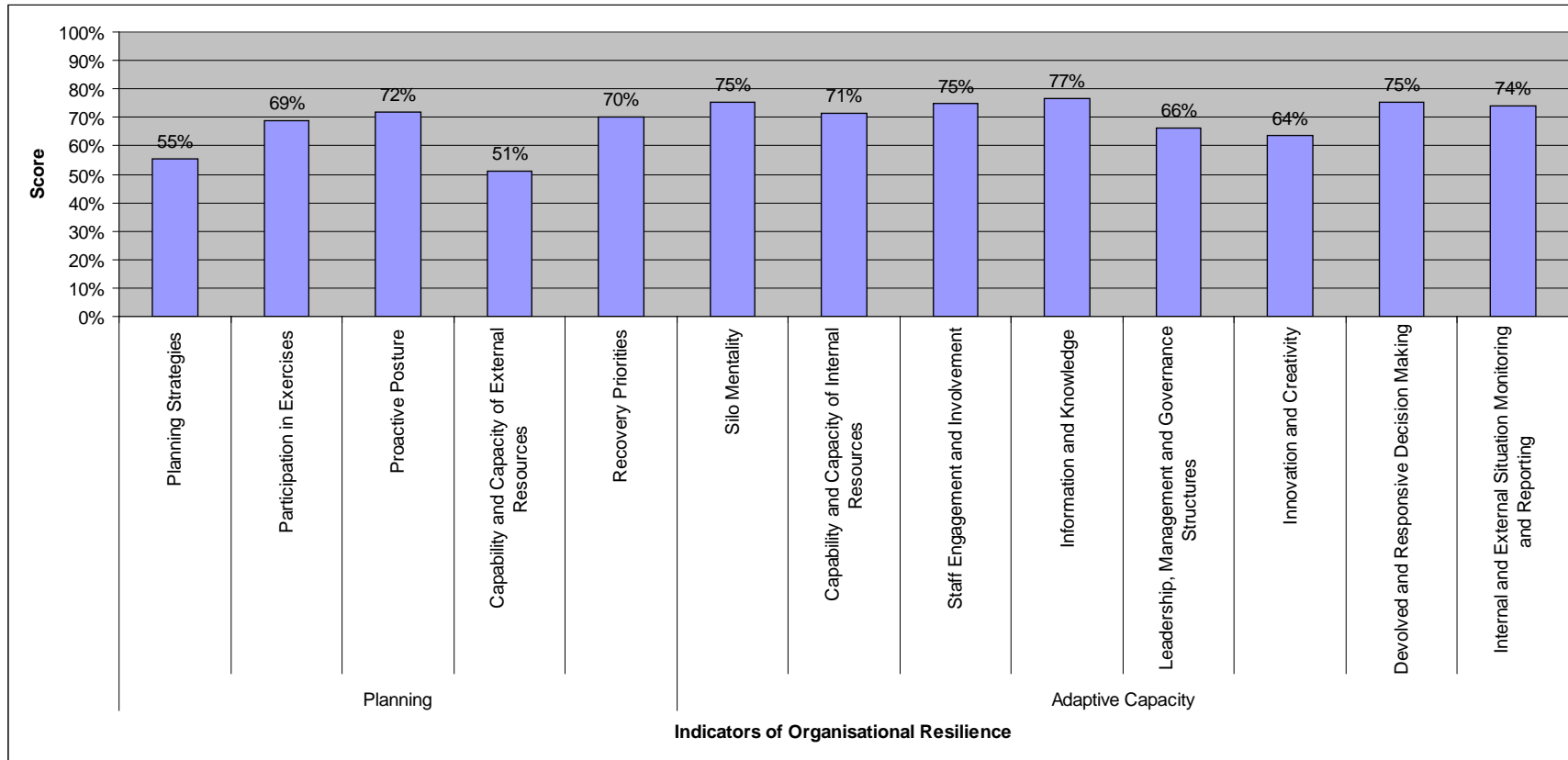


Figure 19: Average Overall Resilience Scores for the Property and Business Services Sector

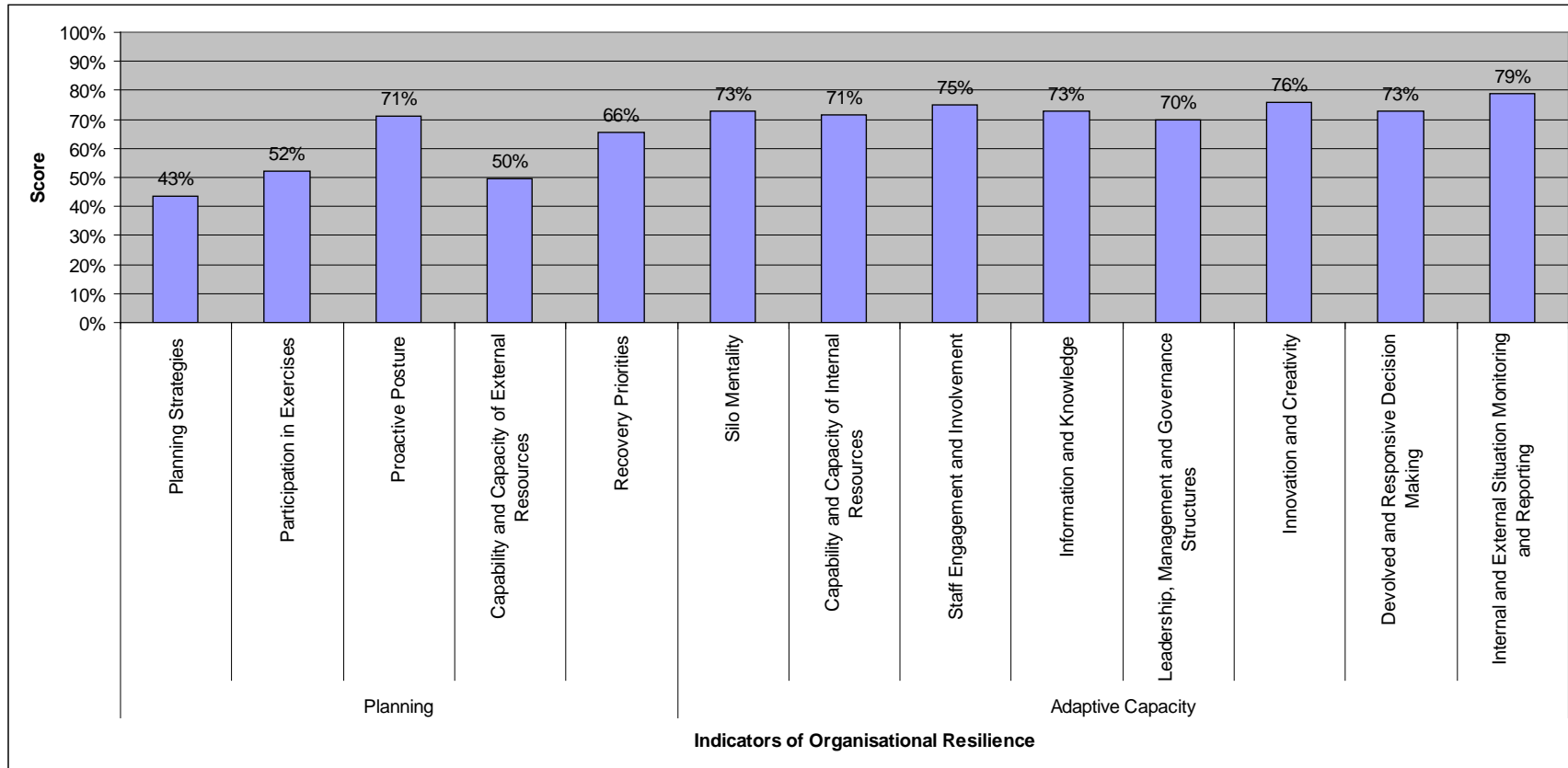


Figure 20: Average Overall Resilience Scores for the Retail Trade Sector

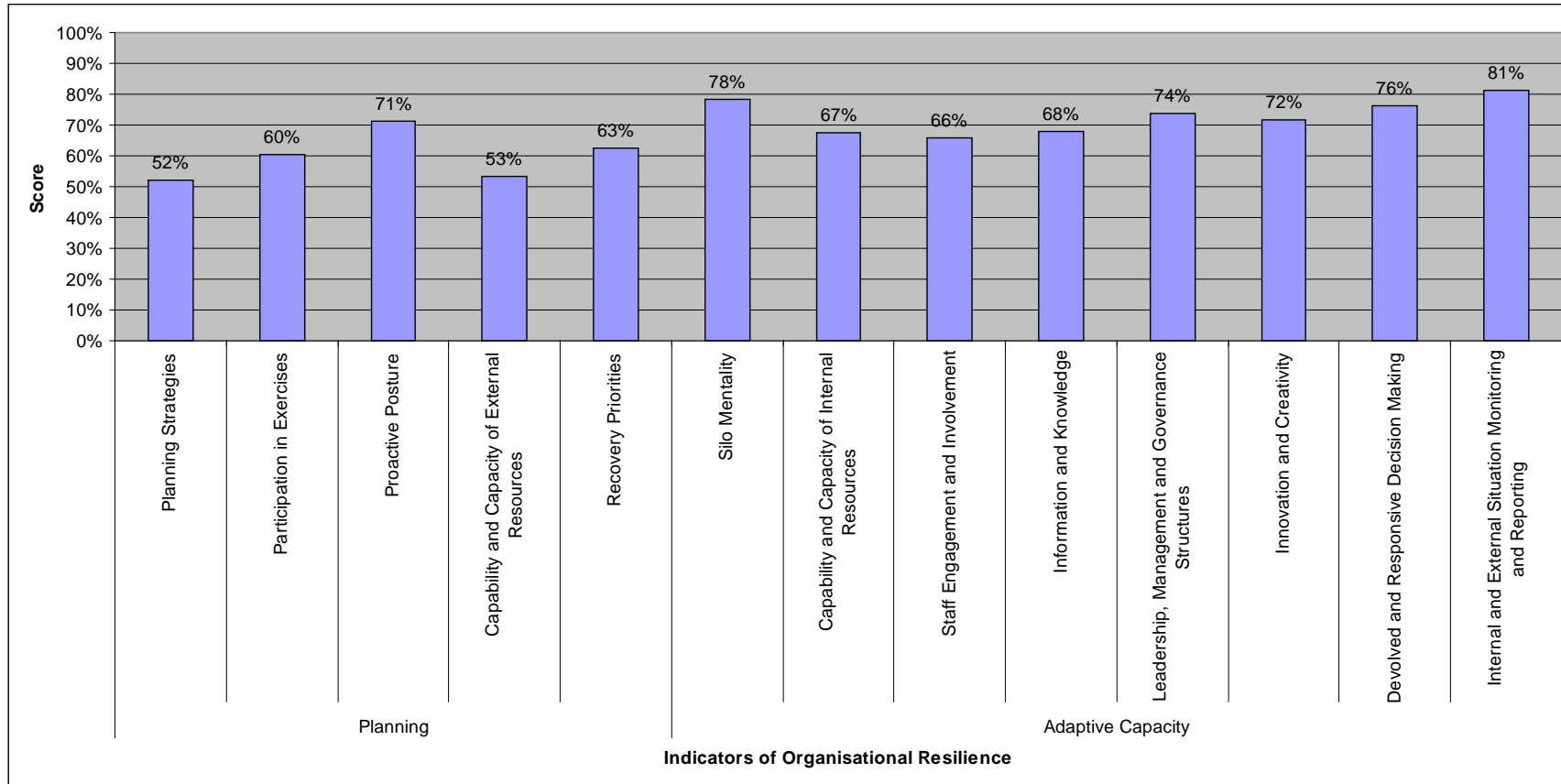


Figure 21: Average Overall Resilience Scores for the Wholesale Trade Sector

