

Figure 34 - Scree Plot: Eigenvalues for Factor Analysis

Table 24 - Risks During Change Initiative - Statements Loading in Factor 1

#	Statement	Loading
7.6	Implement solution without proper testing	0.6785
7.9	Use an inappropriate implementation method	0.7792
7.10	Use inappropriate tools	0.7443
7.12	Do not take the financial implications of the initiative into account up-front	0.4777* ¹
7.14	Activities/initiatives are mis-aligned with strategy	0.5154
7.16	Not using experienced specialists	0.5542
7.18	Failure to appreciate the risks	0.7535
7.19	Failure to anticipate the energy and the resources required by the initiative	0.4499*
7.22	Insufficient change management attention	0.4365*

¹ * - Loading of between |0.4| and |0.5|.

Table 25 - Risks During Change Initiative - Statements Loading in Factor 2

#	Statement	Loading
7.7	Undertake the initiative too slowly	0.6715
7.8	Limit the scope of the change initiative without taking the holistic consequences into account	0.4138*
7.11	Ignore the concerns of the employees	0.4167*
7.21	No or poor communication	0.5187
7.23	No sense of urgency	0.8618
7.24	Not planning for short term success	0.6053

Table 26 - Risks During Change Initiative - Statements Loading in Factor 3

#	Statement	Loading
7.3	No or inadequate top management commitment and action	0.6827
7.12	Do not take the financial implications of the initiative into account up-front	0.4059*
7.13	No, lack or unsuitable vision	0.7075
7.22	Insufficient change management attention	0.5316
7.26	Not anchoring changes in corporate culture	0.6962

Table 27 - Risks During Change Initiative - Statements Loading in Factor 4

#	Statement	Loading
7.2	Too much time is spent on understanding the current system	0.5881
7.8	Limit the scope of the change initiative without taking the holistic consequences into account	0.4919*
7.11	Ignore the concerns of the employees	0.4273*
7.15	Not focusing on the needs of the customer	0.6377
7.19	Failure to anticipate the energy and the resources required by the initiative	0.4044*
7.25	Declaring success too soon	0.5152

(d) Organisation's approach to risk management findings

(i) Practice of risk management (Question 8)

Of the questionnaires returned, 60% of the respondents indicated that they do practice a form of risk management when embarking on or executing a business change initiative. It is however unclear how sophisticated individual practices are. A general indication of sample profile is however provided in the remainder of paragraph (d). The 40% who answered no, answered the following question (question 9) and question 16 and subsequent questions.

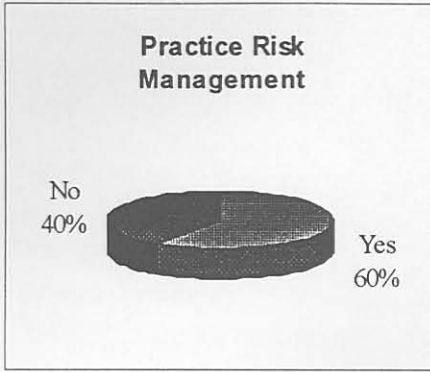


Figure 35 - Practice of Risk Management

(ii) Intention with risk management (Question 9)

Of the respondents who indicated that they did not practice risk management (40% in Figure 35), 53% of them indicated they would consider implementing a risk management practice in the foreseeable future, as shown in Figure 36. The union of organisations who would be practising risk management in business change in the foreseeable future would therefore be 81%¹.

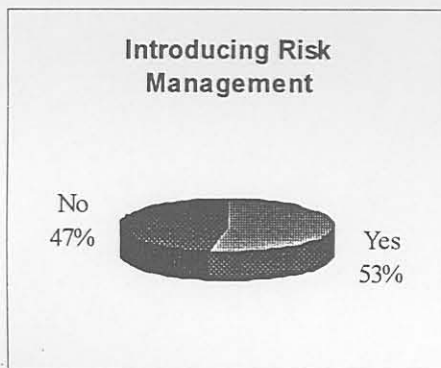


Figure 36 - Intention of Introducing Risk Management

(iii) Risk management responsibility (Question 10)

Organisations that indicated they did indeed practice a form of risk management responded as shown in Figure 37 regarding the allocation of responsibility to an individual. Of the total, 56% indicated that specific individuals had been made responsible for risk management activities during business change, while the remainder indicated that no individual was responsible for this.

¹ This is calculated by (current organisations practising risk management + (current organisations not practising x current organisations who intend to be practising)). Numerically, this translates to $100 \times (0.6 + (0.4 \times 0.53)) = 81.2\%$.

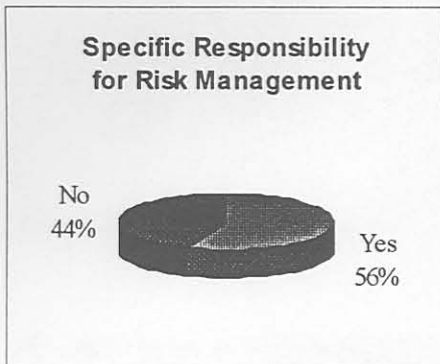


Figure 37 - Nominated Responsibility for Risk Management

(iv) Risk management application to business change life-cycles (Question 11)

This question divided a business solution up into a life cycle, taking it through the various phases, from problem identification, through to the phasing out of the solution. The objective was to determine the importance that respondents placed on managing risks during each phase of the life cycle. The respondents answered as follows - if they currently focused on risk management during the phase, they indicated “Yes”, if they indicated “No”, then they further had to qualify whether they “*Should*” however be placing an emphasis on this.

The results of this question are shown in Figure 38. Most of the respondents indicated that they did look at risk management during the traditional risk analysis phases namely, assess alternatives, select solution and develop solution. Areas where they felt they should be providing attention, included need for improvement, provide contingencies, implement the solution, operate the solution and most significantly, phase-out.

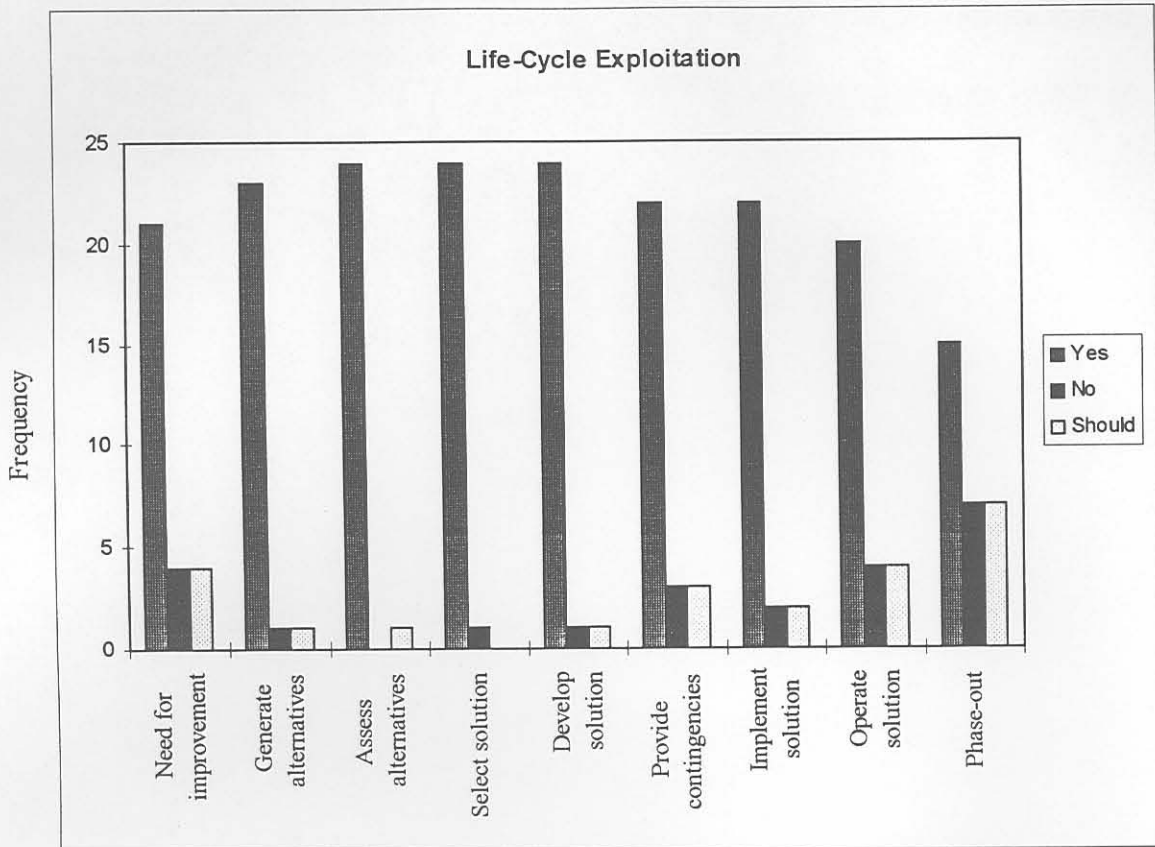


Figure 38 - Life-cycle Exploitation

(v) Importance of risk management factors (Question 12)

This question aimed to draw the respondents opinion on various statements regarding risk management that had been drawn from literature and/or inferred in practice. The task of the respondent was firstly to indicate whether they were currently heeding attention to this factor, or, if this was not the case, whether they believed they should be considering doing so. The results of the current focus is shown in Figure 39 and the required focus in Figure 40. The combined view is included as Figure 41.

There was no significant distinction between allocation of importance between the statements from a current perspective, as shown in Figure 39. The two factors receiving most support are:

- Use is made of carefully selected qualitative and quantitative techniques.
- Sufficient resources for implementation and contingencies exist.

while the following enjoyed the least current attention:

- Benefits and risks are known and quantified before the change solution is selected and implementation commences.

The reply in respect of where the respondents believed the focus should be placed (whether it was currently placed here or not) is more significant between highest and lowest as illustrated

in the bar chart shown in Figure 40. The most significant statements perceived by the respondents included:

- Use is made of carefully selected qualitative and quantitative techniques, to manage the risks of business change.
- Sufficient resources for implementation and contingencies exist.
- Implementation of the change is managed, with the benefits and risks being reviewed regularly.
- Formal clear implementation plans exist and are accepted.
- Risk analysis is done in parallel with business change analysis.
- Post implementation risk management plans are drawn up.

The following three factors were perceived to be less significant (Figure 40):

- A contingency plan clearly mapped to the implementation plan exists and is accepted.
- Benefits and risks are known and quantified before the change solution is selected and implementation commences.
- Benefits and risks are made known to all being affected indirectly or directly by the execution of the change.

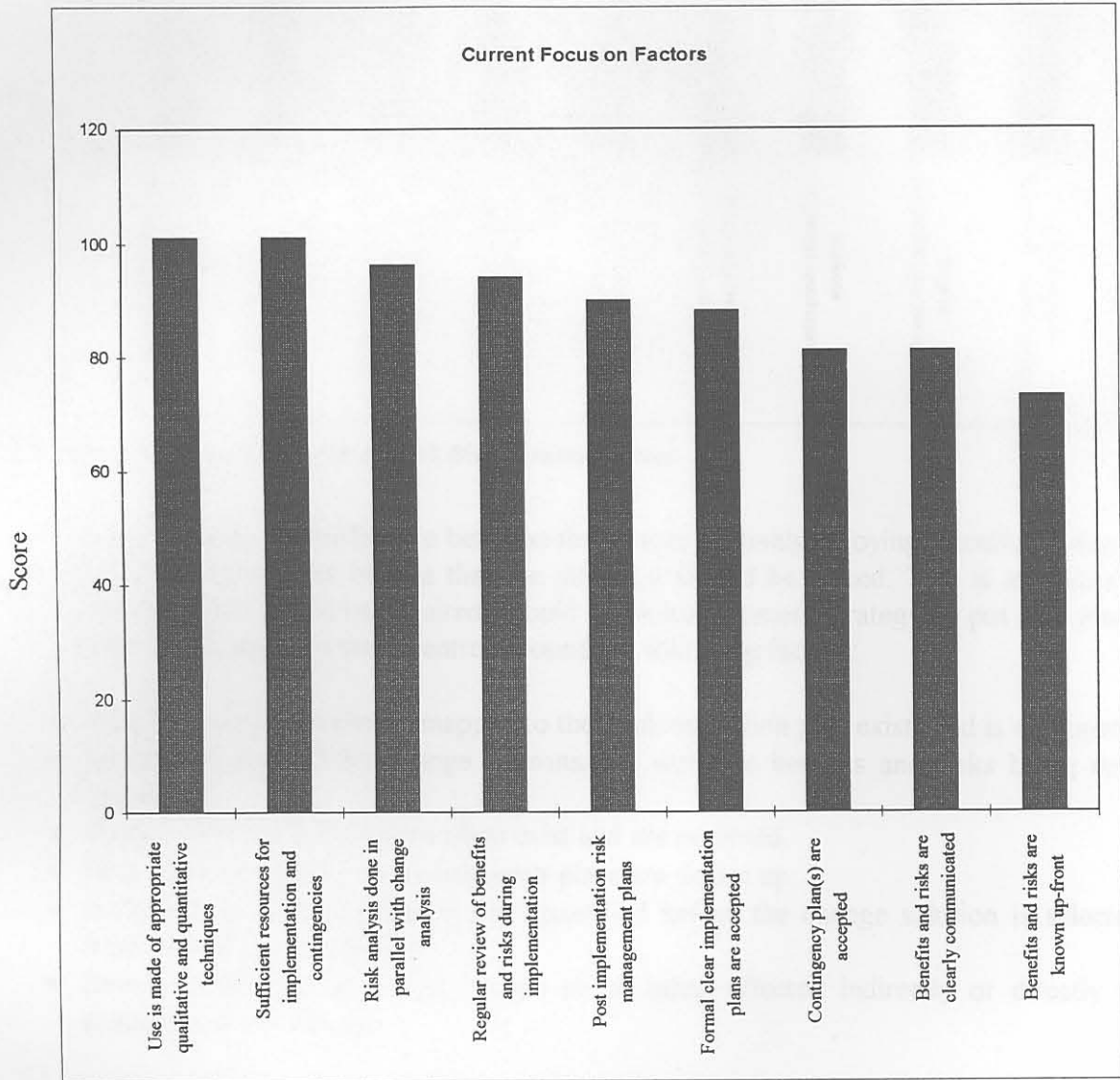


Figure 39 - Current Focus on Risk Management Factors

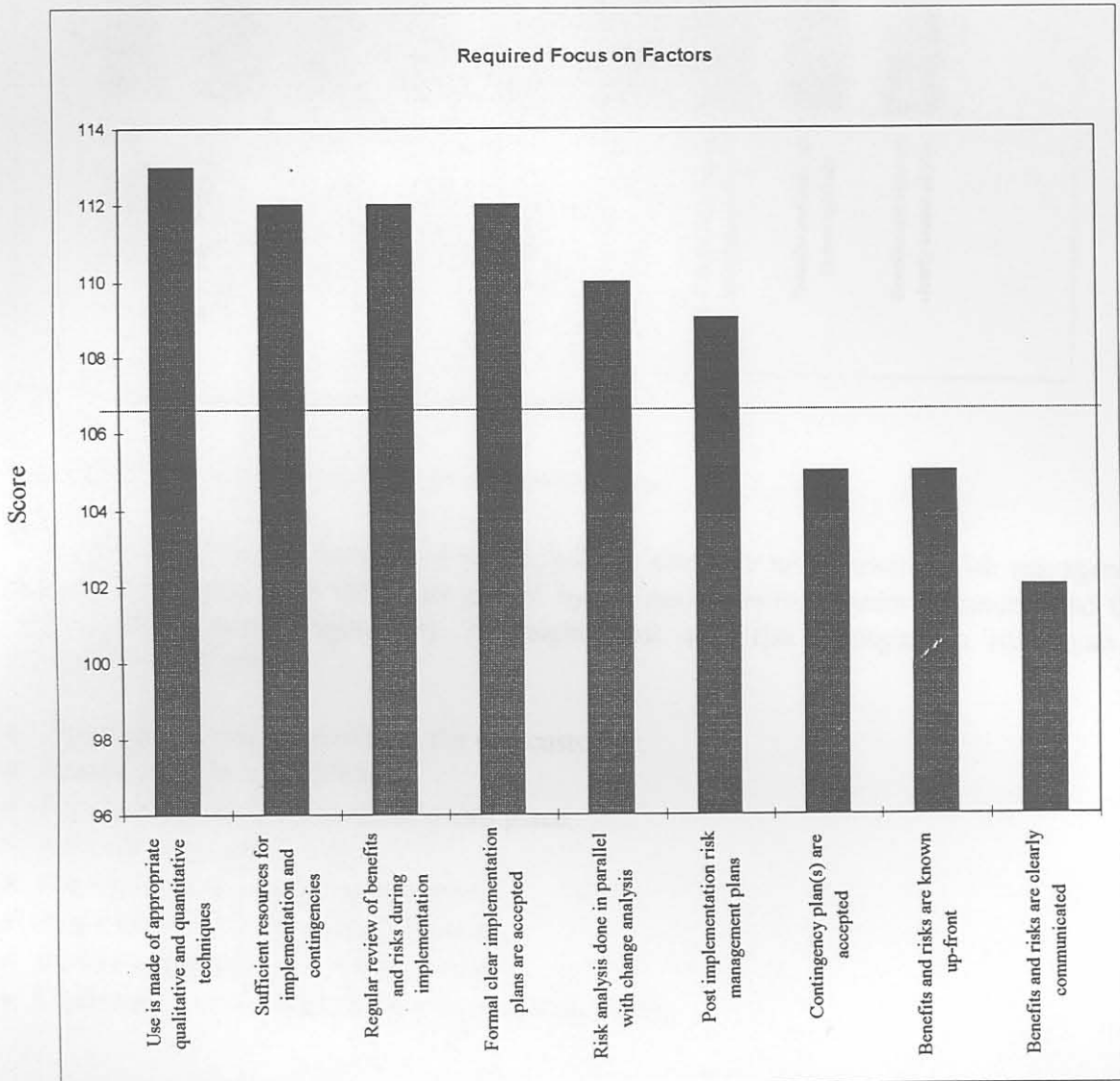


Figure 40 - Required Focus on Risk Management Factors

Figure 41 shows the difference between the factors currently enjoying attention compared to where the respondents believe that the attention should be placed. This is an indication of where the effort would be required, should a risk management strategy be put into place. The 6 most significant gaps were centred around the following factors:

- A contingency plan clearly mapped to the implementation plan exists and is accepted.
- Implementation of the change is managed, with the benefits and risks being reviewed regularly.
- Formal clear implementation plans exist and are accepted.
- Post implementation risk management plans are drawn up.
- Benefits and risks are known and quantified before the change solution is selected and implementation commences.
- Benefits and risks are made known to all being affected indirectly or directly by the execution of the change.

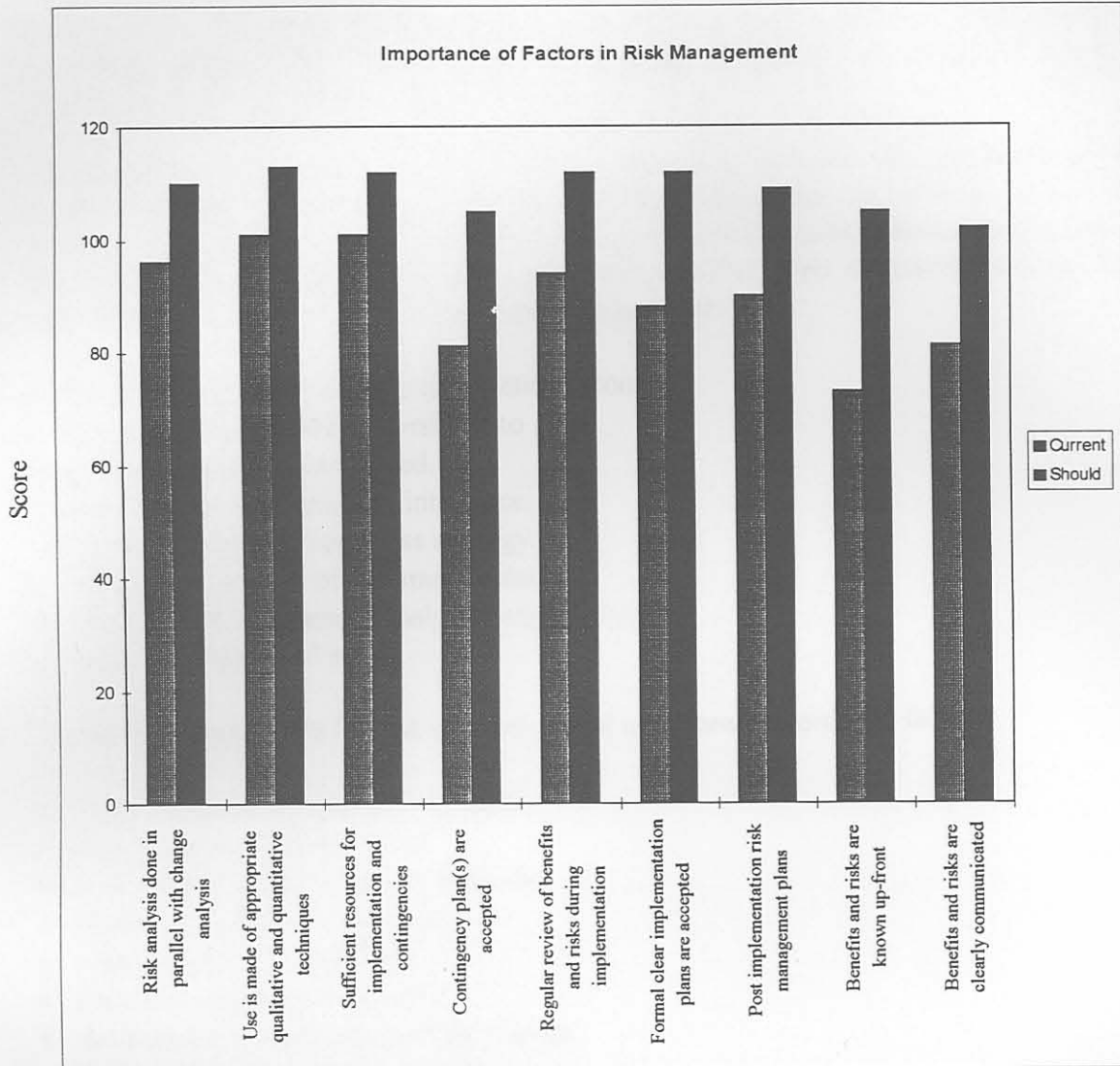


Figure 41 - Importance of Factors in Risk Management

(vi) Techniques used in risk management (Question 13)

This question aimed to understand the techniques currently being used in risk management (Figure 42). These were then also graded by the respondents in order to understand their relative effectiveness (Figure 43). The eight most used risk management techniques, in descending order are:

- Focus on delivering benefits to the end customer.
- Ensure a vision is established.
- Put strong committed leadership into place.
- Address employees' needs.
- Put performance measures into place.
- Align initiative with business strategy.
- Ensure a high level of communication.
- Undertake a cost benefit analysis exercise up-front.

There is not a significant difference between the techniques ranked 8th and 9th. The 12 criteria following the 8th are however grouped closely together. These are:

- Train resources in the required skills.
- Empower employees.
- Plan for change management.
- Ensure the technique/approach is fully understood by all.
- Use suitable implementation methods.
- Change management paradigms.
- Understand risks and develop contingencies.
- Focus on changing behaviour.
- Nurture and use leadership.
- Use experienced consultants.
- Articulate a compelling need for change.
- Encourage creativity.

The two groupings described above indicate the top 20 techniques used by organisations in the management of risk. The following nine techniques enjoyed increasingly less use, with “preventing scope creep” ranking significantly last.

The evaluation of the effectiveness provides an interesting picture in that although a technique may be used more frequently, it does not necessarily indicate that the technique is more useful as shown in Figure 43. The first significant grouping of techniques does however comprise of the first 8 frequently used techniques as described above. Their effectiveness does however rank differently, as described below in descending order:

- Focus on delivering benefits to the end customer.
- Put strong committed leadership into place.
- Ensure a vision is established.
- Put performance measures into place.
- Align initiative with business strategy.
- Ensure a high level of communication.
- Undertake a cost benefit analysis exercise up-front.
- Address employees’ needs.

The next 13 techniques formed a cluster, listed in descending order as follows:

- Train resources in the required skills.
- Plan for change management.
- Use suitable implementation methods.
- Change management paradigms.
- Nurture and use leadership.
- Focus on changing behaviour.
- Articulate a compelling need for change.
- Empower employees.
- Understand risks and develop contingencies.
- Ensure the technique/approach is fully understood by all.

- Use experienced consultants.
- Encourage creativity.
- Test solutions before implementation.

Although their effectiveness ranked in different order when compared to their use, the top 20 techniques comprised of the same 20 techniques. “Prevent scope creep” also ranked significantly last in terms of risk management technique effectiveness.

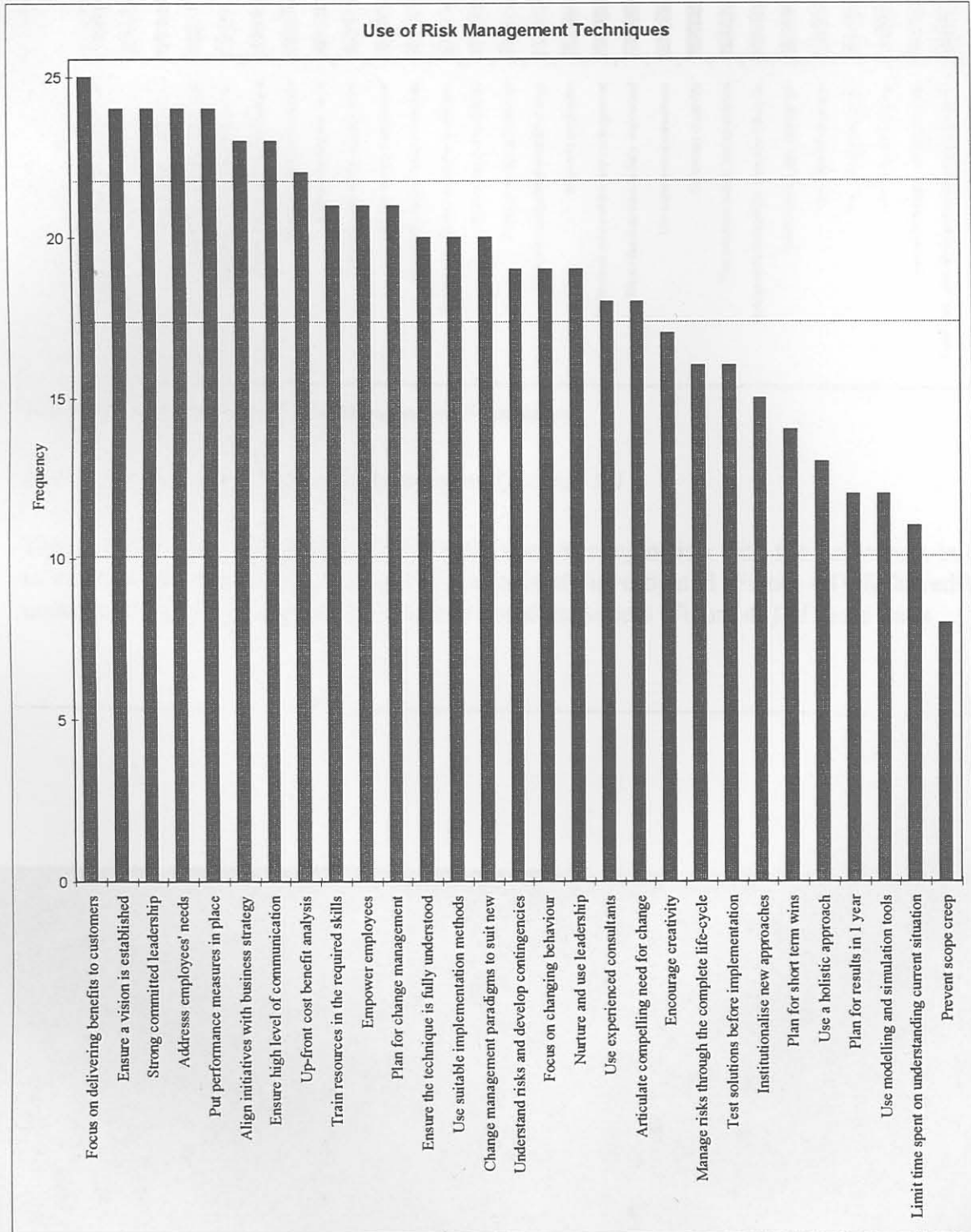


Figure 42 - Use of Risk Management Techniques

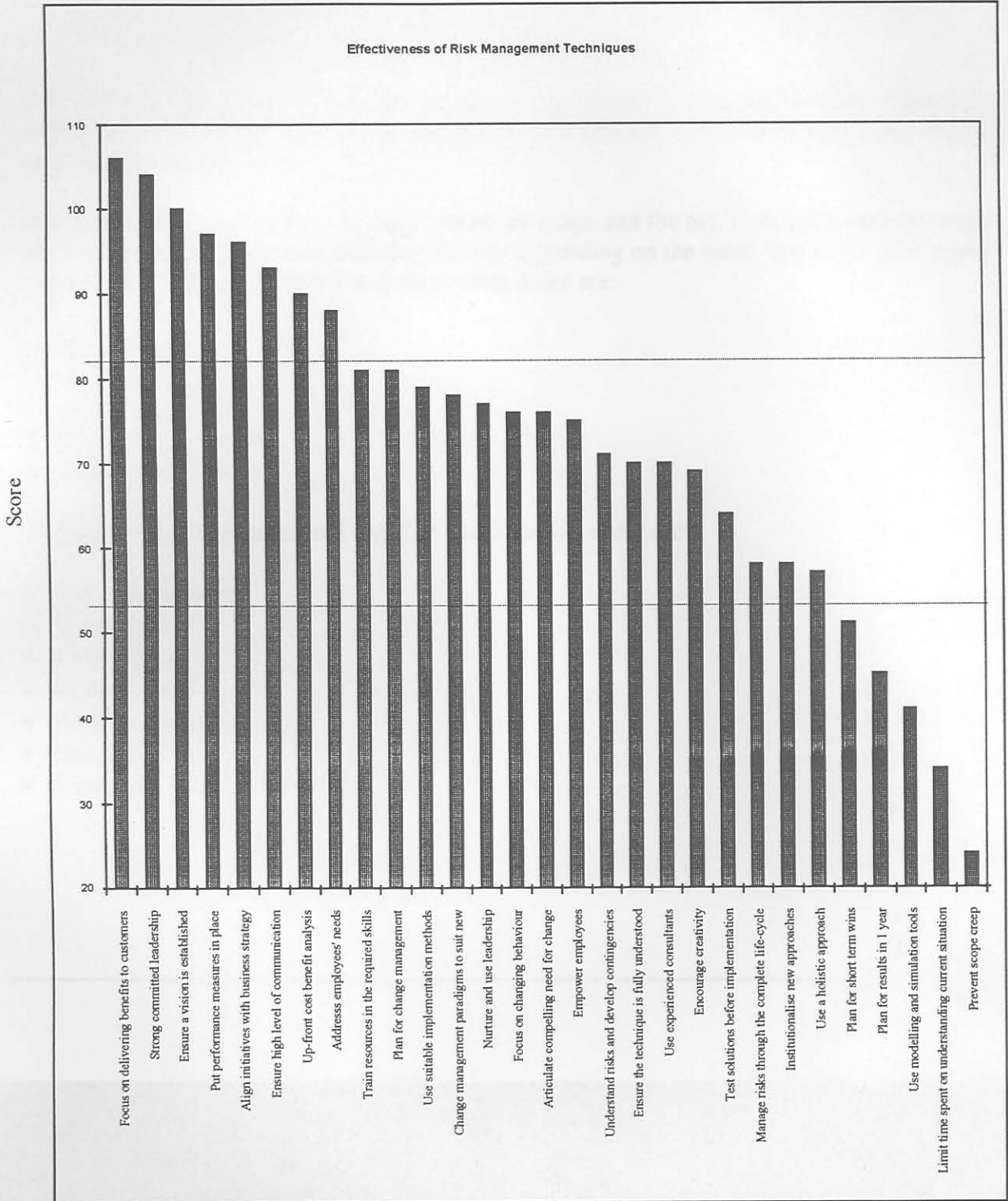


Figure 43 - Effectiveness of Risk Management Techniques

(vii) Tools used to facilitate risk management (Question 14)

This question aimed to understand the tools used in conjunction with the techniques in order to manage this risks. Firstly, the use of the tools are investigated (Figure 44), followed by an understanding of the respondents rating of the effectiveness (Figure 45) of these tools.

From Figure 44, two thirds of the respondents (who practise risk management) indicated that they used the following four tools:

- Forecasting.
- Market research.
- Scenario planning.
- Return on investment (in its various forms).

The next category of between one third and two thirds of the respondents, indicated the following group of tools as ranked in descending order:

- Return on net assets.
- Net present value.
- Outsourcing.
- Internal rate of return.
- Simulation.
- Contracting.
- Insurance.
- Portfolio management.

These two groups of tools account for the top 12 tools used by organisations who responded to the market research. None of the respondents indicated that they made use of utility theory as a risk management tool.

It is worth noting that again, the top 12 based on usage and the top 12 based on effectiveness were unity, even though they ranked differently depending on the basis. The top 5 tools based on their effectiveness (Figure 45) in descending order are:

- Market research.
- Forecasting.
- Scenario planning.
- Return on investment.
- Return on net assets.

The following 7 tools clustered together in descending order are:

- Net present value.
- Outsourcing.
- Contracting.
- Internal rate of return.
- Portfolio management.
- Simulation.
- Insurance.

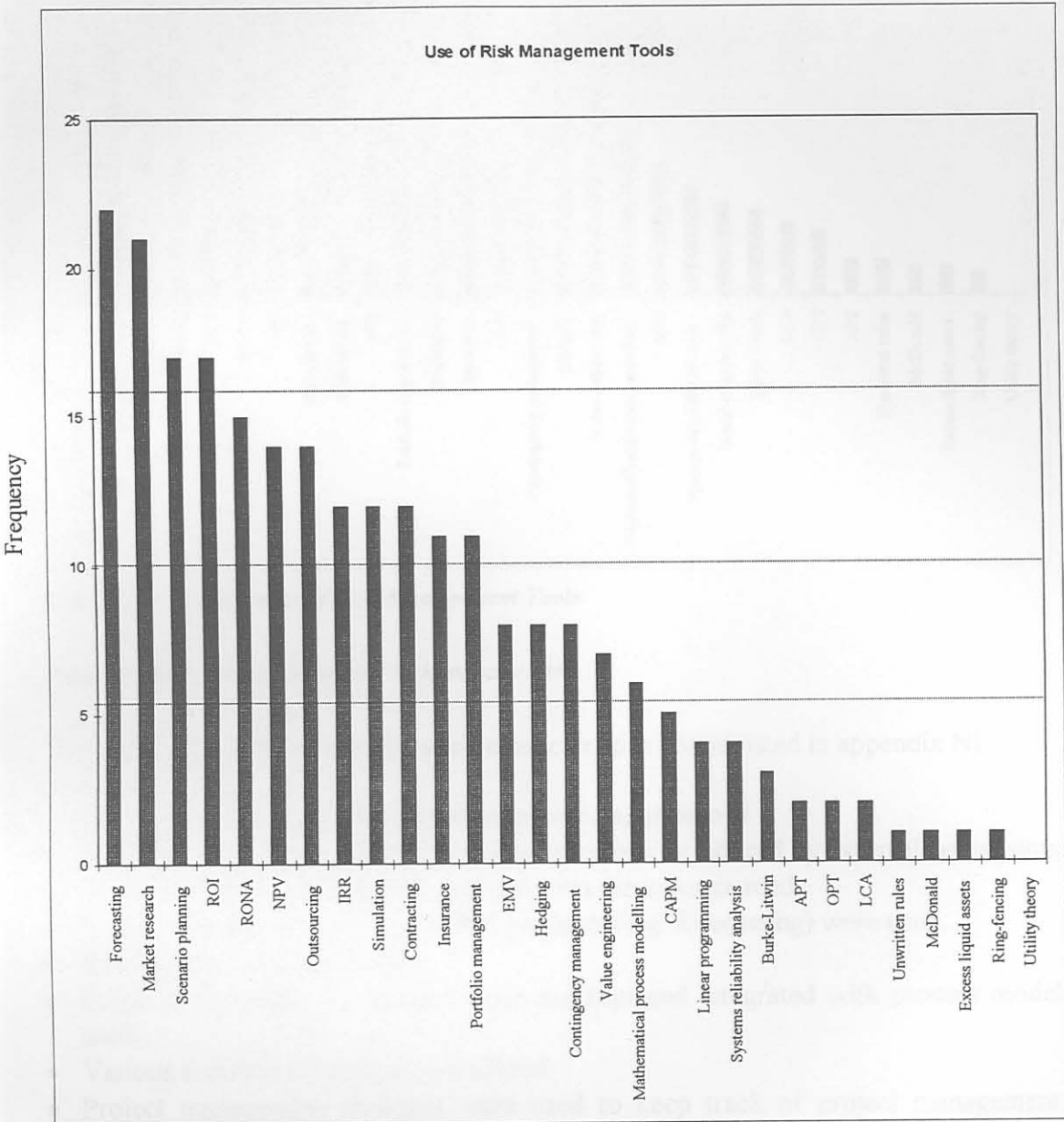


Figure 44 - Use of Risk Management Tools

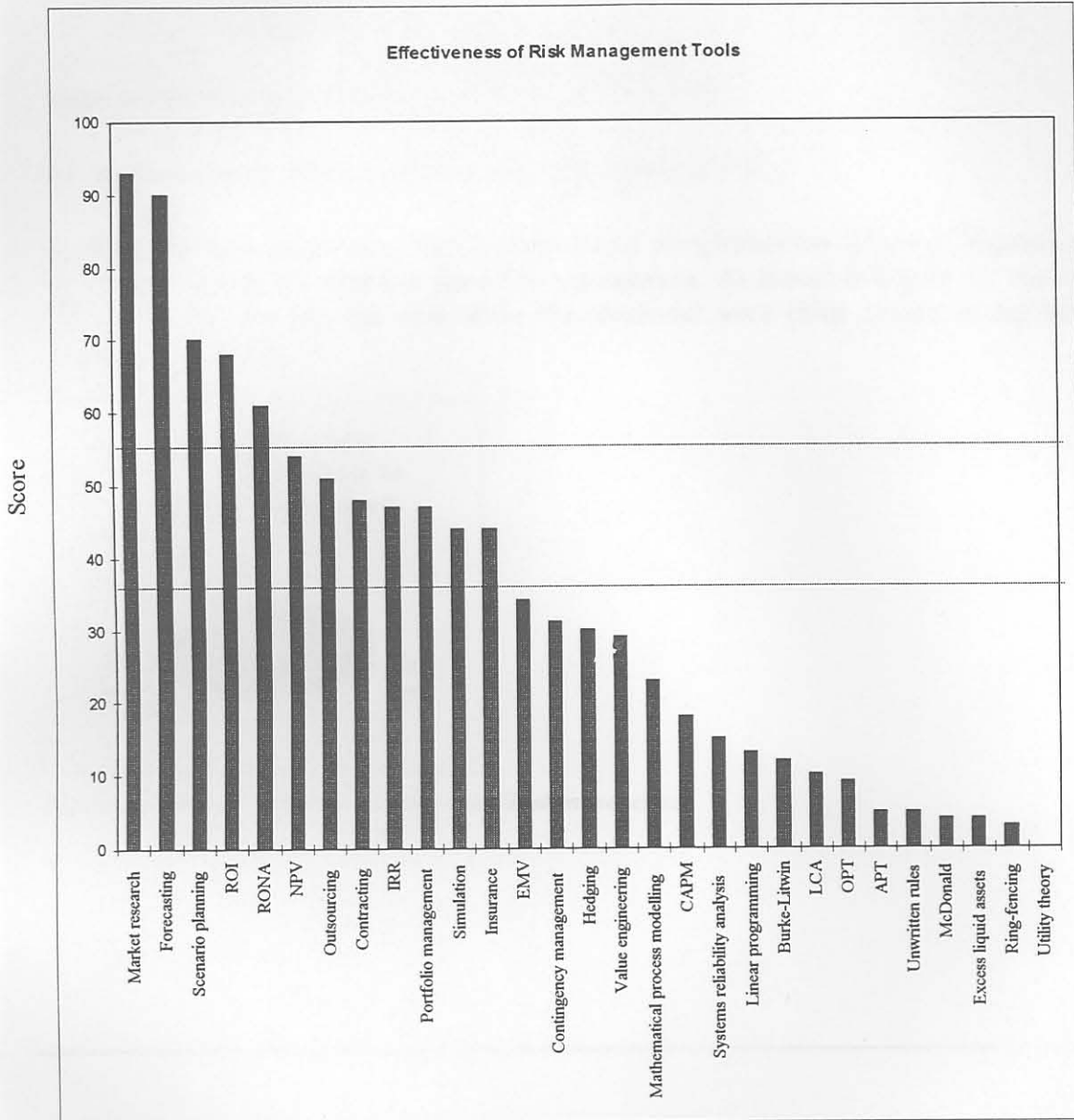


Figure 45 - Effectiveness of Risk Management Tools

(viii) Products used to support risk management

The products listed had the following characteristics (detail listed in appendix N):

- Mostly were internally developed for specific applications.
- Various tools were based on or used for methods introduced by external consultants.
- Some services and hence tools and products were outsourced.
- Some of the functionality from ERP products (e.g. forecasting) were used.
- Spreadsheets were used often.
- CASE tools where the business rules are kept and integrated with process models were used.
- Various simulation packages were listed.
- Project management packages were used to keep track of project management issues where necessary.

(e) Respondent's opinion of risk management in business change findings

(i) Modern-day change initiatives and behaviour (Question 16)

This question aimed to understand the respondents opinions on whether modern change initiatives were predominantly focused on inducing a change in behaviour of people. Of the total, the majority or 54% indicated that they felt this was indeed the case, 29% felt this was not the case, while a reasonable proportion (17%) were unsure. This is shown in Figure 46.

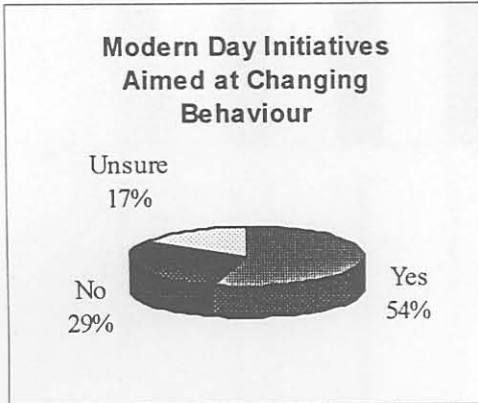


Figure 46 - Modern Day Initiatives Aimed at Changing Behaviour

(ii) Business change failure and risk management (Question 17)

Respondents were asked what their opinions were on whether the failure of business change initiatives could be attributed to poor risk management. As shown in Figure 47, the majority (62%) felt that this was the case, while the remainder were either unsure or replied in the negative (19% each).

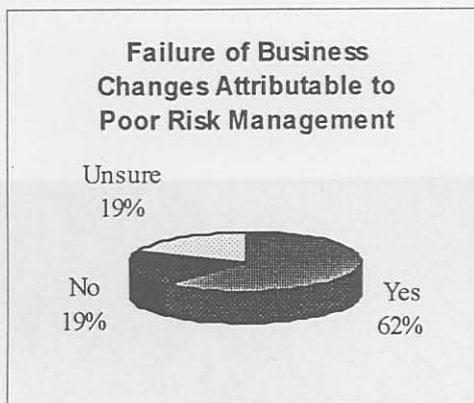


Figure 47 - Failure of Business Change and Risk management

(iii) *Benefits of risk management (Question 18)*

Respondents were questioned on their opinions regarding the benefits of institutionalising a formal risk management approach as part of their business change initiatives. These benefits are ranked in order as shown in Figure 48.

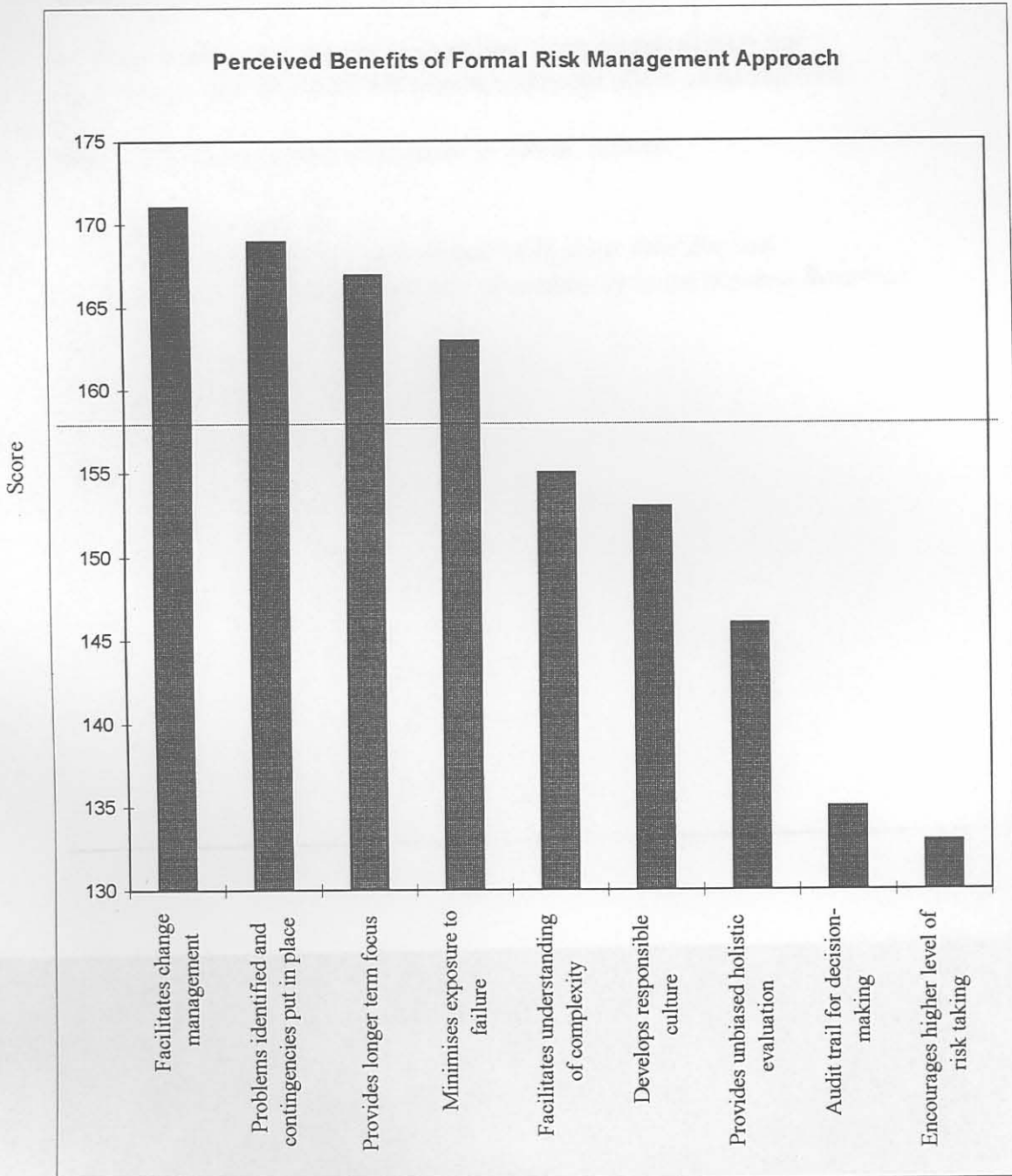


Figure 48 - Perceived Benefits of a Formal Risk Management Approach

From Figure 48 three groupings of benefits are evident. These are listed below.

Biggest benefits:

- Facilitates change management.
- Problems identified and contingencies put in place.
- Provides longer term focus.
- Minimises exposure to failure.

Medium benefits:

- Facilitates understanding of complexity.
- Develops responsible culture.
- Provides unbiased holistic evaluation.

Minimal benefits:

- Audit trail for decision-making.
- Encourages higher level of risk taking.

(iv) Disadvantages of risk management (Question 19)

Similarly, respondents were asked what they felt the disadvantages of institutionalising a formal risk management approach would be. As shown in Figure 49, there are two distinct groupings regarding the disadvantages. The two largest disadvantages are (in descending order):

- Some useful solutions may be lost due to the perceived high risk.
- A new formal approach will require additional effort, skills and time.

Disadvantages perceived to be lesser in nature, include:

- It may limit creativity.
- No suitable integrated methods and tools are at their disposal.
- It provides for another dimension of complexity in the business dynamics.

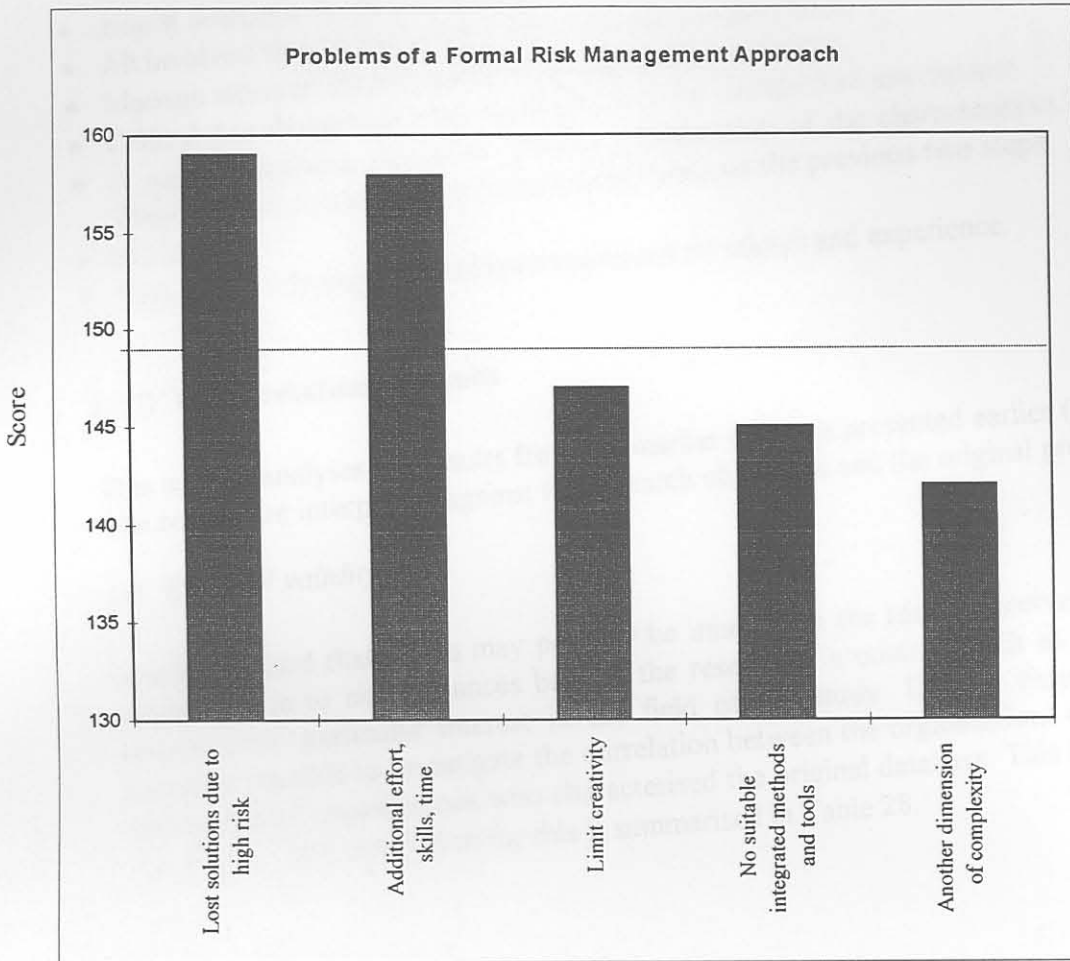


Figure 49 - Perceived Disadvantages of a Formal Risk Management Approach

(v) Opinion of generic approach to risk management (Question 20)

Respondents were questioned on whether they felt that a generic approach for managing the various types of risk in business change could be employed. The majority (50%) felt that this was possible, 31% felt that it was not, while 19% indicated that they were unsure regarding this.

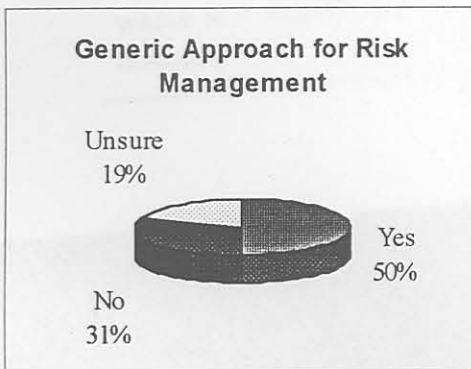


Figure 50 - Generic Approach to Risk Management

(vi) Other important factors (Question 21)

Respondents were able to provide any other comments they felt were pertinent or would add value to the research. The following comments were provided:

- Differences in business in terms of local versus international.
- Expectations.
- Political influences.
- Establishment of a change steering committee under chairmanship of CEO.
- Involvement of HR function in change process.
- Commitment to on-going communication to all levels in the organisation.
- Understanding behaviour.
- Adjust solutions to enterprise culture.
- All involved should understand and contribute to the vision.
- Manage stress of change agents and targets of the change.
- Critical that the sponsors are more active in the change than anyone else.
- A generic business algorithm. Then a classification of the characteristics on importance. Then a failure mode and criticality model based on the previous two steps.
- Flexibility.
- Selection of the right people involved based on talents and experience.

3.3.3 Interpretation of results

This section analyses the results from the market research presented earlier (paragraph 3.3.2). The results are interpreted against the research objectives and the original propositions.

(a) *External validity*

It is recognised that a bias may possibly be inherent in the results received from the market research, due to circumstances beyond the researcher's control, such as a particular set of respondents' particular interest in the field of the study. Despite these constraints, it is however possible to investigate the correlation between the organisations who replied and the percentage of organisations who characterised the original database. This is done by means of the χ^2 test¹. The calculation for this is summarised in Table 28.

¹ This is given by

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(fo_{ij} - fe_{ij})^2}{fe_{ij}}$$

where fe = expected, fo = observed, $(r-1)(c-1)$ = degrees of freedom and r = rows and c = columns.

Table 28 - External Validity Calculation

Sector	fo	fe	χ^2
Manufacturing	40.5	36.1	0.52
Distribution	4.8	8.4	1.59
Retail	7.1	10.6	1.15
Mining	4.8	9.7	2.48
Financial Services	14.3	13.4	0.06
Computer & Associated Services	4.8	5.7	0.15
Engineering & Construction	7.1	6.2	0.15
Other	16.7	9.9	4.62
TOTAL	100	100	10.72

For 7 degrees of freedom χ^2 at 90% significance is 12.02. In this case $10.72 < 12.02$, so the null hypothesis is accepted as the responses can be considered representative of the sample.

The analysis of the results of the questionnaire follows. This is done against the respective objectives.

(b) Objective 1

(i) Proposition 1

There are 6 types of changes that can be undertaken by a business to improve performance. These changes are common to all industries.

(ii) Analyses of responses

This analysis is based on the responses to question 2, 3, 5 and 6. The two largest homogenous sectors that responded represent the manufacturing and mining sectors, in descending order. While the analysis can be applied to the population targeted, the financial and particularly manufacturing sectors would be well characterised due to their relative loading (54% of total respondents).

The majority of business have been through a business change of sorts recently as shown in Figure 51.

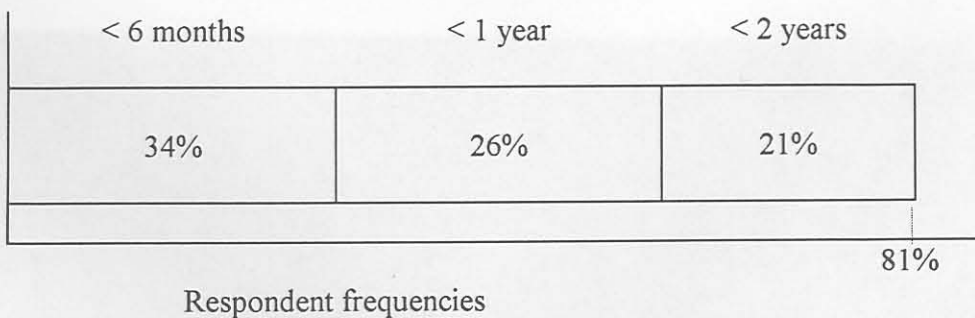


Figure 51 - Most Recent Change Initiatives

These intervals indicate that 81% of all the businesses have been through a change initiative in the last 2 years. This would suggest either that there is a coincidence that these diverse entities changed in the last two years or that business change is a frequent phenomena brought about by internal and external processes. With the likelihood of the former being very low, it appears reasonable that the latter holds true.

The responses to the types of change initiatives recorded by the respondents were similar when viewed against Martin's 5 level hierarchy. Table 29 shows the frequency and percentage distributions of industry respondent type against change type. This is based on the analysis between the results of question 2 and question 5.

Table 29 - Change Types by Industry Sector¹

	Frequency								Percentage							
	Manufacturing	Distribution	Retail	Mining	Financial	Computers	Engineering	Other	Manufacturing	Distribution	Retail	Mining	Financial	Computers	Engineering	Other
CI	6	1	1	2	4	1	2	4	21	14	10	33	14	17	29	31
PR	6	2	1	2	5	1	2	1	21	29	10	33	18	17	29	8
VSR	7	2	2	1	5	2	2	2	24	29	20	17	18	33	29	15
ER	4	1	2	1	6	1	1	2	14	14	20	17	21	17	14	15
SV	4	1	3	0	6	0	0	4	14	14	30	0	21	0	0	31
FO	2	0	1	0	2	1	0	0	7	0	10	0	7	17	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Question 6 relates to specific initiatives currently being undertaken in the respondents' organisations. The purpose of this question is to focus on the use of specific initiatives being executed by organisations as opposed to the types of initiatives. The results of the analysis indicate the existence of three distinct levels of initiative. These initiatives cut across all change types as shown in the matrix presented as Table 30².

Table 30 further indicates the distribution of the use of the initiatives across the various sectors. A test for similarity in use between sectors is not possible as the respondents' sample size in the smaller sectors is too small to make a meaningful percentage-wise comparison between themselves and other sectors. There is however no need for accuracy in this regard. Illustration of commonality in use in general as well as the lack of use across the sectors is sufficient.

¹ CI = continuous improvement, PR = procedure redesign, VSR = value stream reinvention, ER = enterprise redesign, SV = strategic visioning, FO = financial optimisation.

²

Table 30 is achieved by means of a cross tabulation between question 5 and question 6 and question 2 and question 6. This was facilitated by means of NCSS and Excel.

Table 30 - Relationship between Initiatives, Types of Initiative and Sectors

Initiative	Change Type						Sector							
	Continuous improvement	Procedure redesign	Value-stream reinvention	Enterprise redesign	Strategic visioning	Financial optimisation	Manufacturing	Distribution	Retail	Mining	Financial	Computers	Engineering	Other
Reduce overheads	X					X	7	8	8	11	7	8	15	8
BPR		X	X				7	0	8	11	9	17	0	7
Streamlining	X		X				6	8	4	0	7	8	15	8
Empowerment	X						5	8	8	11	9	8	8	7
Strategic Management					X		6	0	0	11	9	17	8	8
Outsourcing				X			7	8	8	0	7	0	0	7
Benchmarking	X	X	X		X		6	8	8	11	9	0	0	5
Rightsizing	X	X	X			X	7	0	8	0	4	0	8	5
Increase sales	X						6	0	8	0	4	8	15	5
Strategic Alliances				X	X		4	0	8	0	4	8	15	7
Teamwork	X	X					4	8	8	0	9	0	0	7
TQM	X	X					5	8	0	11	0	8	0	5
WCM	X	X					7	8	0	0	2	0	0	2
Learning organisation	X	X					4	8	4	0	7	0	0	3
ABC	X					X	3	8	4	0	2	0	0	7
JIT	X	X					5	8	8	0	0	0	0	0
MBWA	X						4	0	4	11	2	0	0	2
Change in business direction				X	X		1	0	0	11	7	8	8	3
Other	X	X	X	X	X	X	0	0	0	0	4	0	8	5
TPM	X	X					3	8	0	0	0	0	0	0
TOC	X	X					1	0	0	11	0	8	0	0
Intrapreneuring	X						1	0	0	0	0	0	0	2
One-minute managing	X						0	0	0	0	0	0	0	0

(iii) Conclusions

It is possible to draw the following conclusions from the data analysis and discussions:

- The conclusions will best fit the manufacturing and financial sectors respectively. They can however also be inferred in other sections.
- Business change is a frequent phenomena, any particular form of which, taking place generally at least less than every 2 years.
- The types of business change initiatives undertaken by an organisation are:
 - Continuous improvement

- Procedure redesign
- Value-stream reinvention
- Enterprise redesign
- Strategic visioning
- Financial optimisation
- There are three classes of change initiatives in use. Initiatives used most often include:
 - Reduce overheads
 - Business process re-engineering
 - Stream-lining
 - Empowerment
 - Strategic management
 - Outsourcing
 - Benchmarking
 - Rightsizing
 - Increase sales
 - Strategic alliances
 - Teamwork

These initiatives inflict change at all 6 business levels and are used by all sectors in general.

(c) Objective 2

(i) Proposition 2

There are firstly, generic risks attributable to business change in general, secondly to the type of change under consideration, and thirdly, risks unique to the particular industry.

(ii) Analyses of responses

This analysis is based on the responses to question 2,4,5 and 7.

Question 4 aimed to understand the degrees of success and failure currently being achieved by the respondents. If we define success as achieving one's goals either fully or beyond expectations, then 59% of respondents felt their initiatives were successful. This indicates that the remaining 41% felt that their organisation's efforts had been unsuccessful. None felt irrecoverable damage had been done however.

In doing a cross tabulation between the success/failure experienced and type of change initiative on the one hand and sectors on the other, the picture shown in Table 31 is achieved¹.

¹ The cross tabulation between success/failure and change type must be clearly understood. In question 2, respondents were asked of their opinion of success of the change initiatives in general. It can therefore be argued that this is their general assessment (weighted average) of the success of the various change types that their organisations have been through. With this argument as basis, the trends shown in Table 31 hold true, given the limitations of sample size.

Table 31 - Success/Failure of a Change Initiative based on Type and Sector

Degree of Success	Change Type						Sector							
	Continuous improvement	Procedure redesign	Value-stream reinvention	Enterprise redesign	Strategic visioning	Financial optimisation	Manufacturing	Distribution	Retail	Mining	Financial	Computers	Engineering	Other
Disaster	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Failure	5	5	4.5	11	5.3	14	18	0	0	0	0	0	0	0
Inadequate	35	50	45	17	26	29	18	50	0	50	17	100	67	66
Success	55	45	50	56	58	57	59	50	67	50	83	0	0	17
Resounding success	5	0	0	17	11	0	6	0	33	0	0	0	33	17

The individual sample sizes of change types and sectors are too small to do χ^2 comparative tests. It is however possible to derive hypotheses based on the inspection of the trends.

From the inspection, failures and successes are evenly distributed across the 6 business change types. Enterprise redesign and strategic vision do however seem to be more successful (73% and 69% respectively).

A similar distribution is true across the sectors as well. It is worth noting though that the only outright failures occurred in the manufacturing sector.

In order to understand the various types of risks in a business, risks experienced are identified, weighted and factored for common themes. This was provided by the factor analysis of question 7. This analysis provides two views, namely:

- Identification of individual risks deemed to be important.
- Establishment of risk themes or categories that are important.

The value of the former lies in understanding the individual risks with bigger impact. There are 4 distinct groupings as shown in Figure 32 The first group of major risks are:

- Lack of top management commitment.
- Poor communication.
- No focus on financial implications.
- Lack of customer focus.
- Poor vision.
- Ignore employee concerns.
- Poor change management attention.

The next 8 important individual factors are:

- Implement without testing.
- Mis-alignment with strategy.
- Not anchoring changes in culture.
- Failure to appreciate risks.
- Not anticipating effort and energy.
- Inappropriate implementation method.
- No sense of urgency.
- Not consider holistic issues.
- Poor attention to innovation.

In order to provide meaningful framework constructs later however, the risk themes are more important. These provide a more fundamental understanding of the major risk drivers. The factor analysis indicates that 4 major factors are present. The risks that loaded onto these are shown in Table 24, Table 25, Table 26 and Table 27 respectively.

The themes from these factors are synthesised as follows:

The statements on each factor are analysed in terms of their affinity. This is determined by establishing the key underlying themes - generally two. The first is usually due to the heavily loaded statements while the second provides a qualifier due to the supporting statements, i.e. those with loading of between $|0.4|$ and $|0.6|$.

Using this rationale, the following factors are constructed:

- **Factor 1:** (method, impact)
No reliable methods and tools which are accentuated by the lack of understanding regarding the impact of the change on the business.
- **Factor 2:** (results, involvement)
Lack of focus on short term business and people orientated results manifested in poor greater organisational involvement.
- **Factor 3:** (leadership, life cycle)
Poor leadership throughout the complete change life cycle.
- **Factor 4:** (stakeholders, empathy)
Not having empathy for or focusing on the stakeholders' needs.

The rationale behind the factor constructs follows:

- **Factor 1** - The statements with the heaviest loading focus on the use of proper methods, tools and testing. The appreciation of risk is a facet of proper method. The use of experienced specialists ties in with this theme. The supporting statements focus mostly on the organisational impact, including financial implications, alignment with strategy and energy and resource impacts. Change management also focuses on resource impacts.
- **Factor 2** - The statements with heavy loading bring the strong results orientated focus through very clearly. The supporting statements do however bring the strong results driven focus back into the reality of organisational context with the issues of holistic consequences, poor communications and ignoring employee concerns.

- **Factor 3** - The heavily loaded statements clearly indicate a strong leadership theme. The supporting statements qualify this further, indicating that this business guidance is required throughout the business change life cycle.
- **Factor 4** - The last factor can sometimes be difficult to synthesise into common themes. The key factors in this case are inclined towards addressing the stakeholders' needs and having empathy with this. Too much time spent on analysing the current situation is focusing on the past and not the present needs. Declaring success too soon indicates a lack of empathy by creating expectations that cannot be fulfilled yet. Holistic consequences takes on the stakeholder theme again. Failure to anticipate energy and effort has a very low loading. It does however hint towards empathy for impact on stakeholders.

In order to understand the nature per sector and per business change type, a randomised block design [106] is used¹. The following "analysis of variance" table (Table 32) is used.

Table 32 - Analysis of Variance Table

Source of variation	Degrees of freedom	Sum of squares	Mean square	F _{Calc}
<i>Treatments</i>	$a - 1$	$SS(Tr)$	$MS(Tr) = \frac{SS(Tr)}{a - 1}$	$F_{Tr} = \frac{MS(Tr)}{MSE}$
<i>Blocks</i>	$b - 1$	$SS(BI)$	$MS(BI) = \frac{SS(BI)}{b - 1}$	$F_{BI} = \frac{MS(BI)}{MSE}$
<i>Error</i>	$(a - 1)(b - 1)$	SSE	$MSE = \frac{SSE}{(a - 1)(b - 1)}$	
<i>Total</i>	$ab - 1$	SST		

The results of the analysis of variance tables of the risk per sector and the risks per business change are shown in Table 33 and Table 34.

Table 33 - Analysis of Variance Table for Risks per Sector

Source of variation	Degrees of freedom	Sum of squares	Mean square	F _{Calc}	F _{0.01}
<i>Treatments</i>	25	38	1.51	8.19	1.88
<i>Blocks</i>	7	11	1.57	8.47	2.74
<i>Error</i>	175	32	0.18		
<i>Total</i>	207	81			

¹ A table is constructed from a cross tabulation between question 7 and question 2 and question 5 respectively. The results are loaded with the scaled weighting. The results obtained per block are averaged to provide a common basis for evaluating block (column, i.e. sections and change types) on block. This table is then used for analysis. The 2 tables are included as appendix O.

Table 34 - Analysis of Variance Table for Risks per Business Change Type

Source of variation	Degrees of freedom	Sum of squares	Mean square	F _{Calc}	F _{0.01}
Treatments	25	30	1.21	35.06	1.93
Blocks	5	1	0.16	4.52	3.17
Error	125	4	0.03		
Total	155	35			

The tests for significance for differences in risks in the sectors is as follows:

- Null hypothesis:** $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_{26} = 0$
 $\beta_1 = \beta_2 = \beta_3 = \beta_8 = 0$

Alternative hypothesis: The α 's are not equal to zero.
 The β 's are not equal to zero.
- Level of significance:** $\alpha = 0.01$
- Criteria:** Reject null hypothesis: $\alpha \Rightarrow F_{0.01} > 1.88$
 Reject null hypothesis: $\beta \Rightarrow F_{0.01} > 2.74$
- Calculations:** See Table 33.
- Decision:** Since $F_{Tr} > F_{0.01}$ the risks are significantly different which confirms the results of Figure 32.
 Similarly $F_{BI} > F_{0.01}$ which indicates that the sectors are significantly different regarding the experience of risks in these sectors.

The tests for significance for differences in risks in the business change types is as follows:

- Null hypothesis:** $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_{26} = 0$
 $\beta_1 = \beta_2 = \beta_3 = \beta_6 = 0$

Alternative hypothesis: The α 's are not equal to zero.
 The β 's are not equal to zero.
- Level of significance:** $\alpha = 0.01$
- Criteria:** Reject null hypothesis: $\alpha \Rightarrow F_{0.01} > 1.93$
 Reject null hypothesis: $\beta \Rightarrow F_{0.01} > 3.17$
- Calculations:** See
- Table 34.
- Decision:** Since $F_{Tr} > F_{0.01}$ the risks are significantly different again confirming the results of Figure 32.
 Similarly $F_{BI} > F_{0.01}$ which indicates that the business change types do experience the risks in different ways.

(iii) Conclusions

It is possible to draw the following conclusions from the discussions and analysis:

- The successes and failures of business change initiatives follow a similar trend across industry sectors. It can be noted however that the only failures were recorded in the manufacturing sector.
- The success or failures of the types of business change follow similar distributions for each of the 6 business change types. Table 31 does however infer that enterprise redesign and strategic visioning tend to be more successful (73% and 69% respectively).
- In general, the most important individual business risks are:
 - Lack of top management commitment.
 - Poor communication.
 - No focus on financial implications.
 - Lack of customer focus.
 - Poor vision.
 - Ignore employee concerns.
 - Poor change management attention.
- The factor analysis indicated there are 4 general trends that impact negatively on business change, these being:
 - *No reliable methods and tools which are propagated by the lack of understanding regarding the impact of the change on the business.*
 - *Lack of focus on achieving business results manifested in poor greater organisational involvement.*
 - *Poor leadership throughout the complete change life cycle.*
 - *Not having empathy for the stakeholders' needs.*
- The different sectors do experience the risks in varying degrees.
- The different business change types do experience the risks in varying degrees.

*(d) Objective 3**(i) Proposition 3*

Failure of business change initiatives are largely attributable to the lack of appropriate risk management.

(ii) Analyses of responses

The purpose of this analysis is to determine whether the failure of business change initiatives can be attributed to the lack of risk management. This was achieved as follows:

- Determined the impact that the lack of risk management has on the success of change initiatives.
- Evaluated the respondents' thoughts on whether business change initiatives fail due to the lack of risk management.

The former was analysed by means of a cross tabulation of the levels of success or failure against the organisations' application of risk management practice, i.e. question 4 on question 8. The cross tabulation is illustrated in the graph shown as Figure 52.

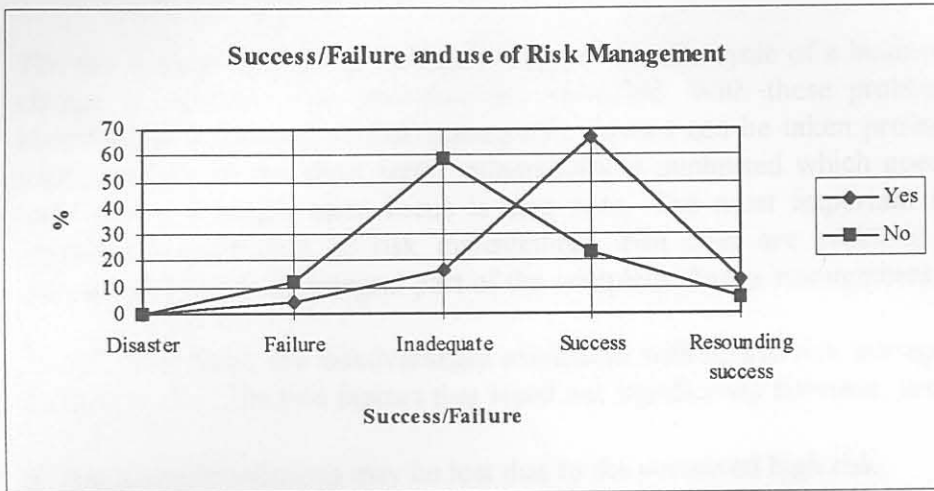


Figure 52 - Success/Failure and Use of Risk Management

Inspection of the graph indicates that there is clearly a significant difference between the success of organisations exploiting formal risk management practices and those who do not¹. Organisations that use formal risk management practice are therefore more inclined to be successful with their business change initiatives.

It may be argued that some organisations who do not currently use risk management practices believe that merit does indeed lie in doing so. This is supported by Figure 36 where 53% of the organisations who do not currently practice risk management intend to do so. It was also previously determined that 81% of all organisations intend using formal risk management practices.

Question 17 aimed to discover whether respondents felt there was a direct relationship between business change success and risk management practice. From the analysis, the majority (62%) felt that this was the case, while the minority groups were equally sure that this was not the case as compared to those who were unsure.

(iii) Conclusions

The following conclusions can be drawn from the preceding analysis and discussion:

- Organisations that use a formal approach to risk management are more successful with business change efforts.
- Most organisations believe they should be using a formal risk management approach to managing business change.
- Business change failures can be largely attributed to poor attention to the risks associated therewith.

¹ Statistical tests are therefore not done.

(e) Objective 4

(i) Proposition 4

The perceived benefits and problems associated with risk management will reflect those described in the literature and experience.

(ii) Analyses of responses

The purpose of this analysis is to understand the benefits and problems associated with the use of risk management methods in business change initiatives. This is analysed with the assistance of questions 12, 18, 19 and 20.

The benefits associated with risk management are described in paragraph (iii). The most important of these are the following:

- Facilitates change management.
- Problems identified and contingencies put in place.
- Provides longer term focus.
- Minimises exposure to failure.

The top 4 facets appear to include a view on the life cycle of a business change. Before the change is instituted, the problems are identified. With these problem areas having been identified, it is recognised that manageable actions can be taken pro-actively in the form of contingencies. In the short term, vulnerability is minimised which goes through to the long term where a longer term focus is also seen. The most important factor recognised the proactive contribution of risk management. Not only are problems identified, but risk management forms an integral part of the complete change management requirements.

On the other hand, the disadvantages associated with formal risk management are described in paragraph (iv). The two factors that stand out significantly however, are:

- Some useful solutions may be lost due to the perceived high risk.
- A new formal approach will require additional effort, skills and time.

The two most significant disadvantages that need to be taken into consideration when devising a risk management framework focus on two different areas. The first major concern deals with the possible limitation on innovation. This ties in with one of the risks identified in business change, where innovation is not sought after. The other concern is understandable, taking the current management load into consideration. Much needed effort and resources, although limited are being poured into inflicting the change. Focus on too formal a process would drain more of the already constrained resources.

Taking these limitations into account, it is clear however that organisations who practice risk management, albeit in its various forms, are generally more successful with their business change initiatives (Figure 52).

In addition to this factor, most respondents (50%) believe that a generic approach to risk management was possible (Figure 50). Conversely 31% felt that this was not possible. It must be noted that it was not possible to question all respondents who replied in the negative as to whether they felt that their opinion was based on the macro level or on the finer techniques. It may be reasonable to assume that more positive replies would be solicited if asked about the macro level in particular.

Question 12 aimed to draw a correlation between important factors described in the literature which have been combined by those factors precipitating from business change practice. While no major differences stood out regarding the current focus on risk management factors, the following 2 ranked the highest:

- Use is made of appropriate qualitative and quantitative techniques.
- Sufficient resources and contingencies for implementation exists.

When contrasted with the respondents' thoughts on where risk management attention should be placed, the following 6 factors clearly emerged:

- Use is made of carefully selected qualitative and quantitative techniques, to manage the risks of business change.
- Sufficient resources for implementation and contingencies exist.
- Implementation of the change is managed, with the benefits and risks being reviewed regularly.
- Formal clear implementation plans exist and are accepted.
- Risk analysis is done in parallel with business change analysis.
- Post implementation risk management plans are drawn up.

The gap analysis between the current and required provides important insights for constructs as it establishes and understanding of where leverage can most be achieved. The areas where the largest gaps are as follows:

- A contingency plan clearly mapped to the implementation plan exists and is accepted.
- Implementation of the change is managed, with the benefits and risks being reviewed regularly.
- Formal clear implementation plans exist and are accepted.
- Post implementation risk management plans are drawn up.
- Benefits and risks are known and quantified before the change solution is selected and implementation commences.
- Benefits and risks are made known to all being affected indirectly or directly by the execution of the change.

(iii) Conclusions

The following conclusions are drawn from the preceding analysis and discussions:

- The questionnaire was constructed from the theory as well as experience. The benefits and disadvantages listed in the questionnaires were supported by the respondents and therefore reflect literature as well as experience.
- The most important factors in the literature as identified by the respondents align with the four themes disseminated and collated from the factor analysis on question 7.
- It is possible to use a generic approach in the management of risks in business change.

(f) Objective 5

(i) Proposition 5

There is a growing use of and demand for risk management in business change initiatives.

(ii) Analyses of responses

The validity of the above mentioned proposition is analysed by means of responses to questions 8, 9, 10 and 11.

The majority of respondents (60%) indicated that they used risk management practices in its various forms to support their business change initiatives. Of those who indicated they did not practice risk management, 53% indicated that they did intend to institute risk management methods in the future.

The majority of the organisations who do practice risk management indicated that a person or function in their organisation had been tasked with the specific responsibility for risk management. This would indicate that in general, responsibility for its management has been well defined and assigned. Where this is not the case, two possibilities exist, namely, either all relevant persons are expected to manage risk on a daily basis, or the possibility exists that some respondents may be the only persons in their respective organisations who believe in the importance of risk management. With the external validity hypothesis test, it would appear that the probability of the latter event is significantly small.

Question 11 aimed to understand the use of risk management practices throughout the complete business change initiative life-cycle. From Figure 38, the following can be seen from organisations who presently undertake risk management practices during their business change initiative:

- The traditional areas where risk management has been practised, do currently receive the most attention. These include (1) assess alternatives, (2) select solution, and develop solution.
- Areas, where risk management have traditionally not been practised, tend to be most supported in terms of where respondents feel focus should be provided in the future. These areas in particular are (1) identification of need for improvement, (2) provide contingencies, (3) implement solution, (4) operate solution and most significantly (5) phase-out.

(iii) *Conclusions*

The following conclusions may be drawn from the preceding discussion:

- There are currently organisations who use risk management practices as part of their business change initiatives.
- There is a growing recognition of the need to institute risk management.
- There is a recognition of the need to apply risk management in areas of the business change life-cycle not traditionally applied.
- Most organisations have assigned risk management responsibility to an individual or function. Those who have not most likely employ it on an as required basis.

(g) *Objective 6*

(i) *Proposition 6*

Local businesses do not institute formal and sophisticated risk management practices.

(ii) *Analyses of responses*

The following analysis is based in the responses to questions 13 through 16.

The use of techniques to manage risk in business change provides an interesting picture as shown in Figure 42 and Figure 43 respectively. The top 8 and top 20 techniques respectively out of 31 in terms of use and effectiveness are identical, just their ranking based on either criteria differs, as shown in Table 35 where only the top 8 are listed. The implication of this is that a strong relationship between use and perceived effectiveness exists.

Table 35 - Ranking of Use and Effectiveness of Techniques

Use Ranking	Effectiveness Ranking	Technique
1	1	Focus on delivering benefits to the end customer.
2	3	Ensure a vision is established.
3	2	Put strong committed leadership into place.
4	8	Address employees' needs.
5	4	Put performance measures into place.
6	5	Align initiative with business strategy.
7	6	Ensure a high level of communication.
8	7	Undertake a cost benefit analysis exercise up-front.

The use and effectiveness of tools use to support the risk management activities follow a similar pattern. The top 4 and 12 tools respectively of 31 are constituent of the same components although the ranking of use and effectiveness differs. The top 4 are shown in Table 36. Similarly it may be argued that a strong relationship exists between the use and effectiveness of risk management tools.

Table 36 - Ranking of Use and Effectiveness of Tools

Use Ranking	Effectiveness Ranking	Tool
1	2	Forecasting
2	1	Market research
3	3	Scenario planning
4	4	Return on investment (in its various forms)

The products used to assist in the management of risk are described in paragraph (viii) and appendix N. The following facets are however outstanding regarding the use of products:

- Most software based products are developed in house.
- Some tools are outsourced.
- No integrated risk management software particularly developed for the risk management of business change was encountered.

Question 16 aimed to understand the respondents' opinions regarding the nature of modern change initiatives. Most business change initiatives encountered in the literature as well as experience indicated the predominance of behavioural change focus. This was confirmed by the respondents' where 54% indicated that this was indeed the case. Of the total, 29% indicated the negative, where the remaining 17% felt unsure.

(iii) Conclusions

The following conclusions can be drawn from the preceding analysis:

- There is a strong relationship between the use and effectiveness of techniques to manage business change initiatives.
- There is a strong relationship between the use and effectiveness of tools to manage business change initiatives.
- There is a clear grouping of the top tools and techniques. These are indicated in Table 35 and Table 36 respectively.
- No formal integrated risk management methods and tools are in place that support the management of risks in business change.
- No integrated software package is being used to support the risk management environment.
- Most modern change initiatives are aimed at changing human behaviour.

3.3.4 Conclusions

This section aims to summarise all the preceding conclusions by means of evaluation of how the research objectives have been met. This is discussed as follows:

- **Proposition 1** - Objective 1 was to investigate the nature of the different change types in the different industries in South Africa. There are 6 levels of business change that can be undertaken by a business to improve business performance. The analysis did indicate that these changes are common to all industry types. Proposition 1 does therefore hold true.

- **Proposition 2** - The purpose of objective 2 was to understand the nature of the risks associated with the different types of business change and the industries in South Africa. It appears that there are generic risks that can be ascribed to business change in general. These risks can be summarised into 4 general risk themes. The various types of change that a business can undergo are prone to varying degrees of risk and therefore have different risk profiles. Similarly, various industries have different risk profiles and experiences. Proposition 2 therefore holds true.
- **Proposition 3** - Objective 3 aimed to understand the impact that risk management has in terms of the success of business change. Proposition 3 is upheld as from the analysis, organisations that use a formal approach to risk management are more successful with their business change efforts.
- **Proposition 4** - The purpose of objective 4 was to investigate the benefits and problems of risk management as an instrument in ensuring success. The benchmark for this is how the research reflects against the literature and practice. The benefits and disadvantages listed in the questionnaires were supported by the respondents and therefore reflect literature as well as experience. Proposition 4 therefore holds true.
- **Proposition 5** - Objective 5 aimed to determine whether a growing need for risk management in business change is being manifested. There are currently organisations who use risk management practices as part of their business change initiatives. There is a growing recognition of the need to institute risk management. Proposition 5 holds true.
- **Proposition 6** - Objective 6 aimed to investigate the level of sophistication in terms of the usage and availability of relevant risk management methods. Proposition 6 holds true as local organisations do not use formal or sophisticated risk management practices.

3.4 Critique: literature study and market research

3.4.1 Literature study

The following section aims to evaluate the availability and quality of literature as pertaining to this study. The major points are summarised in the following list:

- A wealth of literature is available in various media in areas ancillary and auxiliary to the field of study. There is however, a very limited amount which pertains directly to the field of study as expressed in this document¹. The most valuable direct literature contributions included:
 - Charette [10, 65, 66]
 - Martin [55]
 - Carr and Johansson [82]
 - Brown et al [90]
 - Schumacher [54]
 - EIU [143]

As could be ascertained, a limited amount of literature based their theories on quantitative data or any form of scientific method. Much of the literature is however

¹ As was known at the time of the literature study.

based on the experience of either academics or practitioners. This cannot therefore be discounted. It is the task, *inter alia*, of the literature study to test the most significant propositions.

- The researcher experienced more literature becoming available the longer the study continued, i.e. more people and organisations are finding the field more important and are expressing this more in the public domain. At the time of the literature study it was still evident that much work is required in the field if it could be said that a fair correlation exists between the knowledge in a field and the amount of material available on the subject.
- Some of the material that is very influential in the business world does not necessarily have appropriate theoretical foundation. It is possible that “off-the-cuff” theory may have more influence in practice than material that is scientifically sound. For example, the Harvard Business Review is a very popular business journal although it is not considered a scientifically accredited publication. This brings the old debate to the fore though - does scientific rigour aid or limit innovation and contribution to the commercial field, in contrast with bold, yet unproven theory?

3.4.2 Market research

The following list evaluates and clarifies limitations in terms of the market research undertaken:

- The research was conducted towards the end of 1995. The sample and the population was at a particular level of maturity. It is reasonable to assume that with experience the population will gain experience in terms of the questions proposed. Most of the experiences will however remain consistent. The most important results of the research did however indicate the following:
 - There is a growing need to understand and manage risk in business change. In terms of the level of maturity in this field, it is reasonable to expect that another 5 to 10 years of work will be required directly in this field of endeavour.
 - The four major factors that are needed to deal with risk are generic enough to be valid in the foreseeable future.
- The research is limited to the South African business environment. The implications of this limitation are:
 - At the time of the research South Africa was coming out of a cocoon imposed by sanctions lifted a few years previously and hence had limited multi-national experience.
 - Many multi-nationals were present in the region in South Africa in the sectors targeted and hence a significant level of change was being experienced.
 - While technology and markets are similar between South Africa and other economies, the labour situation is perhaps a little different. In general however, there was no significant difference between the findings of the research and research done elsewhere in the world.
- The market research achieved its stated objectives and is useful for inclusion in the greater study.