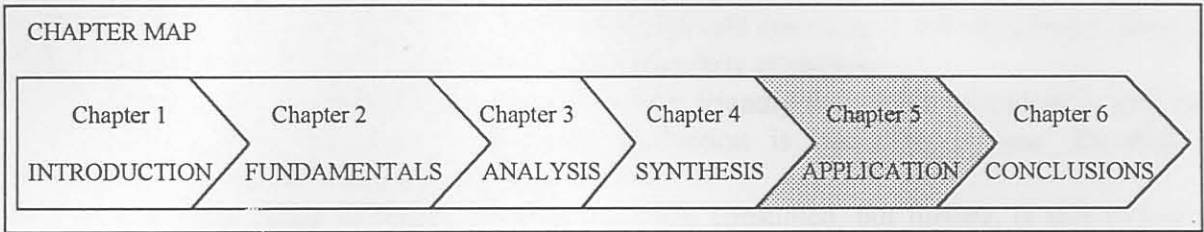


5. Application

5.1 Chapter context



This chapter aims to describe the application of the theory in practice. The developed theory is used to conduct a consulting engagement where its attributes are tested. This application is used to challenge the theoretical framework by means of the evaluation put forward. The purpose of this evaluation is to identify gaps, limitations and to ascertain whether the theory holds water. Finally, hypotheses are put forward.

NOTE:

The nature of the project is such that it is very sensitive to the client in that it entails a major business change and opportunity. It is because of this reason that sensitive details regarding the application cannot be divulged. The researcher has committed to a non-disclosure agreement and therefore no compromising details may be replicated.

As there are very few operators in the area in South Africa, the name of the company is also not disclosed. Attempts are therefore made to describe the application in a way that allows for insight to the reader, but without divulging sensitive information. The focus is therefore on the process and the fit that the theory holds with this and not the details in the process or the detailed results of the process.

5.2 Background

Company X is an operator in the South African process industry. It has a staff complement of about 40,000 employees including a few subsidiaries that it owns in a number of diverse industries. It is a major exporter of raw materials and various other forms of value-added product. X has a few offices dotted around the world but no major operation outside of South Africa.

As a process operator, it shares many similar attributes with other process operators. The most outstanding are listed as follows:

- The business is very capital intensive.
- High volumes, low margins.
- Conservative regarding R&D - will rather outsource this.
- Intense global competition from other operators.
- Strong emergence of substitutes.

Other attributes that colour the nature of the company are:

- A bit of “group think” exists mainly from the isolation during the apartheid years and the fact that it has always been a major source of employment.
- The company has many resources in a wide range of fields and often feel that if anything needs to be done, they can do it themselves.

5.3 The Opportunity

During the past 10 years one of the chief engineers in X had been experimenting with a new base technology. In the last two years the engineer and his team had been able to bring the technology to a point where a commercial scale plant could be erected. The innovation is very significant for the following reasons:

- It is the first technology that promises to practicably integrate various processes that are traditionally batch orientated. The benefit of this is that it illuminates the ineffectiveness and the multitude of process inefficiencies usually associated with batch orientated processes.
- Estimates are that the process can reduce the capital and operating costs between 20% to 30% of the current industry standard. In a capital and resource intensive industry like the process industry this makes the technology particularly attractive.
- The process is significantly more environmentally friendly than other processes in use. As discussed earlier, pressure on emission production is becoming intense. Developed countries should find this particularly attractive.
- It uses a wider range of feedstocks than generally consumed, but further, is able to use a lower grade of feedstock. With the scarce resources in this area, the opening up of other feedstock options not only allows flexibility in resource usage but also allows for tolerance in cost structures.

These factors make the technology attractive not only for a company trying to come down the cost curve but also a global industry which is pinned against aggressive competition from substitutes.

The options open to exploitation range as follows:

- Establish a new business division (operating as a company or any other appropriate legal entity) within the group which will undertake the full range of business activities including R&D, marketing, construction, manufacturing, finance, etc.
- Run a core business which only does development and key commercial activities but outsources other activities.
- Licence the technology to plant contractors and derive income from a metric like Rand per unit product produced.
- Sell off the technology to another capable party and derive a once-off income from the innovation.

5.4 Approach

5.4.1 Overview

The approach to the project is described as follows. The first step in the project was to establish a commercialisation project, the aim of which was to investigate the most appropriate path for exploitation and then implement this successfully. The researcher was commissioned as external auditor for the project as well as the specialist consultant on the risk management sub-project. The project was broken up into four distinct phases as shown in Figure 90.

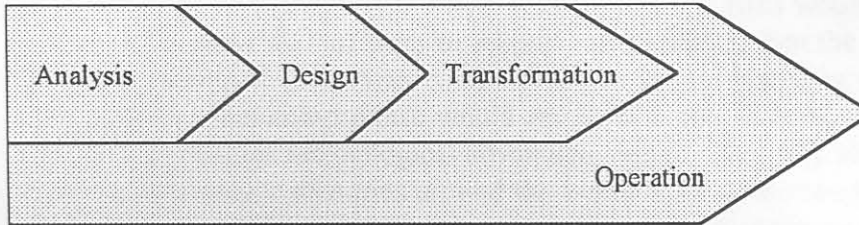


Figure 90 - Phases of the commercialisation project

The purpose of the individual phases of the business solution project are described as follows:

- **Analysis** - This entailed the detailed analysis of the various environmental components making up the attributes of the product and its business environment. Sub-projects in this phase included market research, benchmarking of similar organisations and competing technologies, due diligence on the previous feasibility study, life cycle analysis, scenario planning, analysis of financial optimisation options, risk analysis and the formulation of a baseline business case.
- **Design** - The purpose of this phase was to take the results of the analysis and synthesise this into a set of constructs for the implementation. Sub-projects were orientated around strategy setting, business structural and cultural design and board presentations for further action.
- **Transformation** - The purpose of the transformation phase was to successfully enact the design constructs.
- **Operation** - Figure 90 indicates that the operation phase was undertaken the same time as the analysis. This may seem odd, but in practice, before the commercialisation project commenced, a full-scale commercial plant was being erected to firstly, prove its techno-economic feasibility at this level of operation and secondly, to provide the production site with a low cost production facility. It therefore made sense to integrate the current construction effort with the commercialisation project, with the plant providing not only proof of commercial viability, but also the first implemented site.

The approach to the risk analysis component of the project is shown in Figure 66. The first three steps in the process, namely (1) risk identification, (2) risk estimation and (3) risk evaluation pertain to the analysis phase of the commercialisation project. Risk planning and the risk management philosophy pertain to the design phase of commercialisation project.

5.4.2 Risk analysis

The analysis commenced with an understanding of what the key corporate strategic issues are. This proved to play a very important role in the analysis. The project team were very committed towards the successful commercialisation of the project and in certain instances felt that senior management did not share the passion for the commercialisation or even realise its potential. This held a threat in that a rift was forming with the result that the analysis was not aligned with the business reality and a few “loose cannons” were emerging.

The first step therefore was to identify the strategic risks, i.e. those key risks as opposed to the multitude of technical, financial and process orientated risks. The commercialisation opportunity posed the possibility of a significant change to the direction of the business. The commercialisation proposition was dependent on the strategic position that the corporation was trying to take and not necessarily vice versa, regardless of how attractive the opportunity may be. The risks at this level are dependent on a set of questions as listed below.

- Does the corporation want to diversify its portfolio?
- Is the opportunity a feasible business?
- Is this a business that the corporation would like to enter?
- Does the corporation have the competencies to get into the business?

The sequence of questions assumes that the previous question has a yes answer. If all answers are yes (or fairly close to this) then it would indicate that the full ownership option be pursued (see paragraph 5.3). An answer of no to any, and specifically the first question would indicate a limited involvement in the pursuit of the commercial opportunity.

Regardless of the answer (yes or no), a set of strategic risks would be prevalent. For example, if the organisation did not want to diversify its portfolio, then the risk would be that they may have compromised their own competitiveness by not pursuing the technology, assuming it was feasible. This compromise would result from two factors, namely (1) not pursuing first pick at a significant technological advantage, and (2) they had already submitted applications for patents in major countries around the world. Part of the condition of patent submission is that the nature of the technology is revealed to the rest of the world. This risk on the yes side would be that the CEO would come under pressure for investing in a new venture which was not core, particularly in the light that some major investments in the core business recently had been lack-lustre and the market capitalisation had been dwindling significantly.

The four core questions and their risks played an important role in establishing focus. Alignment with strategic direction was made clearer for senior management, and empathy with the holistic corporate dynamics was established with the project team.

The next step in the analysis was the identification of the business risks. This was achieved by a workshop where specialists in the various fields of the project gave their collective opinion on what the various risks were. The framework that was used to assist the identification of the business risks is shown in Figure 91.

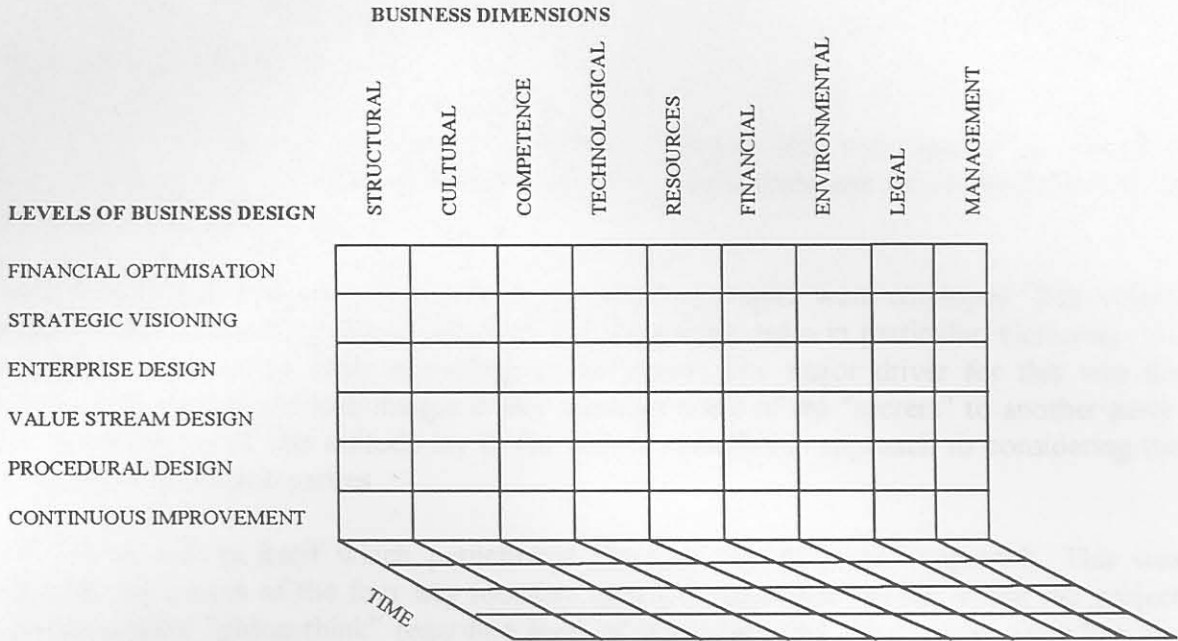


Figure 91 - Risk Identification Framework for the Commercialisation Project

The purpose of the framework (Figure 91) was to assist the identification of risks in workshop format. The x-axis pertains to the various dimensions (e.g. risk groups) of a business typical to that under consideration in the commercial opportunity. The y-axis pertains to the type of business design (and clearly related analysis) that would be considered in the commercialisation project. The z-axis pertains to time. For example a window of opportunity exists for the exploitation of the technology. If this is not seized, then the commercialisation may not be feasible¹.

The identification workshop as well as other project material revealed a lengthy list of roughly 150 risks. Logically, the next step involved the rationalisation of these risks. This was achieved by clustering and core risk analyses with the assistance of the risk estimation scorecard. The risk estimation and evaluation scorecard templates used for this application are shown in appendix E (application documentation). For reasons given earlier, neither the list of risks nor the primary risks are included. The following major types of risk were however, found to be the most important:

- Proof of commercial scale techno-economic viability of the technology.
- Lack of competencies and capability in this business.
- Some limited technical risks pertaining to the innovation itself.
- Some limited financial orientated risks.
- Lack of focused leadership.
- “Loose cannons” and “short-sightedness”.
- The window of opportunity elapsing.
- Loss of intellectual property.

¹ This window was driven by factors like (1) other technological developments, (2) changes in feedstocks, (3) changing demand for the product, etc.

Only two types of estimation tools were used, namely the rating functions and the calculated probabilities. The calculated probabilities were used to determine the financial exposure, while the rating functions were used to establish the relative weighting of risks and their respective sensitivities.

The evaluation centred mainly around a set of management related actions. These actions ranged from the establishment of off-shore structures to the hiring of specialist personnel. The derived interventions included mitigation, avoidance and transfer strategies in the ratio as shown in Table 55¹.

Table 55 - Distribution of Risk Intervention Strategies

#	Strategy	%
1	Mitigation	50
2	Avoidance	40
3	Transfer	10

5.4.3 Risk management design

The design involved three major components, namely the optimisation of the risk interventions, the design of operational management mechanisms and the establishment of the risk management philosophy.

Table 55 indicates that very few transfer orientated strategies were employed. This relates primarily to the culture of the organisation and the project team in particular. Culturally, the organisation wanted to keep everything under wraps. The major driver for this was the concern that they would lose margin if they exposed some of the “secrets” to another party. The manifestation of this attitude lay in the almost xenophobic approach to considering the involvement of outside parties.

This was a risk in itself which perpetuated the “we can do it all” approach. This was addressed by means of the four key focusing questions described earlier. While the project team developed “group-think” regarding level of ownership and involvement regarding the opportunity, the directors were able to take a more holistic view in terms of what would be best for the corporation. This highlights the importance of understanding strategy in a business change initiative, regardless of the change type. A change initiative is undertaken with the aim of improving an organisation’s overall standing in the short as well as long term. A change effort must not lose sight of this by becoming the all consuming object of attention.

From the above it is clear that the management actions tied in closely with the philosophy - the more conservative the actions, the more conservative the risk management philosophy. These in essence perpetuate the characteristic of each other. What was clear in the project was that during the initial phases of the commercialisation, a particularly strong management philosophy would be required. The driving reason was that the owners of the opportunity would have to make sure that they exploited the opportunity and would not be limited by

¹ This distribution is approximate.

undesirable tactics from the competition. Once the business had been established, it would be possible to have a less conservative approach to risk management.

As risk management would be playing an important role in the initial stages of the commercialisation and the business in practice, it was imperative that appropriate risk management constructs be built into the various facets of the new business. During the design phase of the project the strategy was formulated, the business processes designed and the cultural constructs put into place. The risk management needs were built into this. It can be noted that the business constructs were generic enough to be valid for a plant construction business regardless of the nature of ownership of the business. The process design was based on world best practice which was derived from a benchmarking study into this area.

5.4.4 Implementation

At the time of documenting this application, the business opportunity was in process of implementation. During this process the following key risk management strategies were being put into place, namely:

- Establishment of clear leadership.
- Procurement of specialist competencies and leadership to enact the change.
- Putting measures in place to ensure that the opportunity realises its potential. One of the management actions behind this was the commissioning of another external consultant to confirm the purported benefits of the opportunity.
- Bring the shareholders into the process to communicate the opportunity clearly and ensure that the opportunity is enacted according to its real merits.
- Development of a conceptual partnership model where a win-win situation can be created for the exploitation of the innovation.

It is interesting to note the correlation between these risk management strategies and the 4 risk management themes that emerged from the market research (see Table 49). While the organisation has not finalised the structure for exploitation of the opportunity, it has set into motion the risk management strategies that were identified during the analysis. The most key is the procurement of the correct competencies. The risk then lies in that these competencies may fail (e.g. due to specialists leaving), but contingencies for this occurrence has been put into place.

5.4.5 Operation and phase-out

The business solution has not been through its complete life cycle and accordingly, the risk management interventions have not had the opportunity to follow through.

5.5 Relevance of the application

The application has provided the opportunity to test the risk management framework across a wide range of business intervention types. The relevance to the various change types are shown in Table 56.

Table 56 - Application's Relevance to the Business Change Types¹

#	Change type	Relevance
1	Strategic visioning	The opportunity lies mainly in this area. It presents the corporation with an opportunity which, based on projections, could account for 60% of the total current business in 5 to 10 years. The line of business lies in a completely different area to the current operations. The implications of the opportunity are a new set of competencies and structural and cultural requirements.
2	Financial optimisation	The opportunity requires the establishment of off-shore structures not only to minimise unnecessary financial charges but also to provide an acceptable structure in order to undertake business at the global level ² .
3	Enterprise redesign	This level of change usually entails the expansion of current business or the acquisition of new businesses in a similar line. There was limited relevance to this change type.
4	Value stream reinvention	The design phase of the project put forward a greenfields business structure. This entailed the business processes, strategies and cultural dimensions which can be equated to value stream invention as opposed to reinvention.
5	Procedure redesign	Limited procedure redesign was involved in the exercise.
6	Continuous improvement	As with procedure redesign, limited continuous improvement was involved. The business design did however make pro-active attempts to accommodate a continuous improvement type structure in the future business architecture including the appropriate philosophy.

Perusal of Table 56 indicates that the application provides for a reasonably wide range of testing in terms of the various categories of change types. Those change types that provide the most leverage have been included (see Figure 81 and Figure 82 for an illustration of the leverage profiles of the various change types).

¹ The shaded rows indicate those change types that have the most relevance to the application under consideration.

² These structures would be very useful for other business opportunities and makes sense regardless of this particular opportunity. Its need has been however, been articulated via this project and therefore the risk management is designed and enacted from this project. Like other risk management interventions, the risks need to be managed in an integrated manner along with other business risks once operational.

5.6 Evaluation

This section provides the key where the study comes together in order to get closure. It forms the juncture where the developed theory is tested against application and either the complete theory or a portion thereof is confirmed and a group of hypotheses are put forward where confirmation is not possible. This is graphically illustrated in Figure 2.

The vehicle for achieving this is the verification of the research. This verification comprises of the validity and reliability components. While these topics vary from the requirements of a quantitative orientated study, they are still required in a qualitative study as described in chapter 1. Before these concepts are addressed, the data across the study is examined, but with particular reference to the application.

5.6.1 Analysis

The analysis is guided by the research questions listed in paragraph 1.4. For the ease of reference, these are repeated here. The grand tour question of the study is:

“How can the risks of business change interventions be successfully managed?”

The sub-questions to this are:

- Can the high purported failure rate be substantiated and therefore confirm the need for this study?
- What risks occur when a business moves through a change?
- What types of business changes occur?
- Is there a common thread in risk across industry sector and type of change?
- What management techniques are currently being used to manage the risks of business change?
- What techniques in diverse fields hold potential for managing the risks in business change?
- How can all the risk management factors be integrated into a framework, if this can indeed be achieved?
- Is the risk management framework practicable?

These questions are answered in the following analysis.

(a) Can the high purported failure rate be substantiated and therefore confirm the need for this study?

Various sources indicated that many business change initiatives are not delivering the results that they should purportedly provide. The failures can be as high as 70% according to some reports (see chapter 1). The market research (quantitative analysis) in chapter 3 indicated that while most initiatives were either successful or highly successful (total 59%), a meaningful number of these initiatives (41%) did indeed achieve less than desirable results (see Figure 29).

The corporation that was the subject of the application was undergoing a significant business change initiative which took the form of a downsizing/streamlining exercise. This was undertaken at various centres across the country. The first of these experienced significant cultural distress and production loss. It is only once appropriate risk management measures had been implemented that the improvement targets were achieved. It is interesting to note that the two key risks that needed to be addressed were:

- Not all the stakeholders' concerns were taken into account and properly addressed.
- Strong leadership was in place but it proved to be the wrong type of leadership. The existing leadership tended to function and rely on the S4 style (using the situational leadership model). New leadership was put in where the S1 style was employed which was far more directive, taking little leeway from achieving the desirable results.

This correlates closely with the four main risk themes that emerged from the factor analysis conducted in the market research.

The need for the study was further confirmed in the market research where a significant portion of the sample (62%) felt that the failure of business change initiatives could be attributed to poor risk management (see Figure 47). This was further supported by the quantitative study where 50% of respondents indicated that a generic approach to risk management was indeed possible.

Proof of the importance of risk management in business change comes via the commissioning of the researcher to undertake the risk analysis and design as described in the application. The need for this was manifested in the actioning of risk management interventions which changed the behaviour of management on the project (the 4 core questions described earlier in chapter 5). The success of this resulted in a further commission, also alluding to the need for proper risk management.

(b) What risks occur when a business moves through a change?

The literature study and the market research provides direction regarding the types of risks that a business may experience when undertaking a business change. A wide range of risks were selected from literature and practitioners' experience which were then taken to the market to (1) test their validity and to (2) determine the major themes of risk.

Factor analysis was used to reduce the list of risks into a set of 4 generic themes as given in paragraph (c), p123. These themes are confirmed via two other sources. The first is via practitioners in the field who assisted with the theory generation phase of the study. The second is via the application described earlier in chapter 5 that does indicate a close correlation with these themes.

What the application and the market research does suggest, is that there are risks which are unique to every business change initiative. This does not pose a problem however, unless they cannot be identified.

(c) What types of business changes occur?

During the initial stages of the study it was difficult to establish a universal classification of business change types that would be meaningful enough to use as a standard for comparison. This difficulty was borne by the wide range of change types, the variances across organisations and the fact that the unsubstantiated nature of some material raises concerns regarding validity and reliability.

In order to provide a starting point, Martin's 5 level business change hierarchy was used (see Figure 25). The five levels seem feasible. A sixth level namely financial optimisation was added. The difference with this though is that it has a limited organisational impact while having a significant financial impact as illustrated in Figure 81 and Figure 82. With this model as a basis, the market research tested the use of this model. The quantitative analysis revealed that the 5 level model of Martin proved to be useful while financial optimisation as a level of change received little support (see Figure 30).

While this model does provide a useful framework for analysing the type of business change under consideration, it is feasible that a particular business intervention may operate at various levels in the business change type hierarchy. Evidence for this is provided by practitioners in the field as well as the application which illustrates this phenomenon in Table 56. While it is granted that the intervention may incorporate various change types, it is feasible to analyse the change intervention by means of the individual change types of which it is comprised. The analysis attributable to each change type can then be used to analyse the complete intervention under consideration.

(d) Is there a common thread in risk across industry sector and type of change?

This question relates to proposition 2 of the quantitative research included in chapter 3. This research concludes that there are 4 general themes of risk which can be attributed to business change, regardless of the level of business change under consideration. In individual cases however, risks are significantly different across the various levels of business change. The research further indicates that risks are significantly different across business sectors.

These findings tie in with the findings in the preceding sub-section.

(e) What management techniques are currently being used to manage the risks of business change?

This question is largely answered by means of the literature study and the market research undertaken in chapter 3. The respondents ranked the list of management techniques according to use and effectiveness. What was interesting is that the same techniques ranked in the top 8, although their sequence differed according to the ranking criteria as shown in Table 35 (p133). These techniques are evaluated in Table 57 against their use and effectiveness in the application.

Table 57 - Use and Effectiveness of Techniques in the Application






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

Table 57 indicates that all of the techniques were used except for the high level of communication. The exclusion of this technique is reasonable since the project has a high level of intellectual property which has to be protected. As illustration, information is limited only to the project team, even most of the organisation's own employees are not privy to any sensitive information regarding the opportunity.

The use and effectiveness of the other techniques was very high as illustrated with the shaded circles. The last, namely addressing the employees needs does not feature as highly as the others with respect to effectiveness, mainly as the opportunity is a new business under consideration. This means that the change does not necessarily imply that existing jobs and habits will be affected. A significant portion of the project staff were also contractors which in itself limits the concerns normally associated with own staff during a business change. It may be noted however that the needs of the very few key employees had to receive significant attention as they were effectively removed from their "safe" line jobs and put into a situation where their future was uncertain. This was however not a proactive strategy as it was more of a "fight the fire" approach.

It must be noted that another technique, namely the *establishment of the correct competencies* rates very highly in the application both in terms of use and its effectiveness. From the market research, this is the 9th factor out of 29 both in terms of its use and its effectiveness which seems to support this assertion in the application. It follows that it is reasonable that these 9 factors are at least considered as risk management techniques when

¹ Legend (this is used throughout the remainder of the analysis section):

 = *Extremely effective*,
  = *Highly effective*,
  = *Reasonably effective*,
  = *Limited effectiveness*,
  = *Not effective at all OR was not tested/used*

undertaking a business change, particularly relates to the levels of change types that can be mapped onto the application (see Table 56).

The literature study also explores a range of tools that are used in support of risk management. As with the techniques, these were also tested in the market research exercise. Also, like with the techniques, the same group of tools features in the top 4 in terms of use and effectiveness as shown in Table 36 (p134). The use and effectiveness of these top ranked tools are evaluated against their use in the application as shown in Table 58.

Table 58 - Use and Effectiveness of Tools in the Application





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

Table 58 illustrates that all these tools were used and proved to be effective in the application.

(f) What techniques and tools in diverse fields hold potential for managing the risks in business change?

In order to try and bring in some innovative thinking, some lateral fields of endeavour where risk is managed are reviewed in paragraph 3.5. These fields and their most relevant techniques are listed in Table 59.

Table 59 - Summary of Potential Techniques and Tools on Other Fields

#	Field	Technique/Tool	
1	Financial investment management	<u>For systematic risks:</u> <ul style="list-style-type: none"> • OPT • APT • CAPM • β coefficient 	<u>For unsystematic risks:</u> <ul style="list-style-type: none"> • Portfolios • Diversification
2	Banking	<ul style="list-style-type: none"> • Portfolios • Hedging • Hold liquid assets • Forecasting 	<ul style="list-style-type: none"> • Decentralised decisions on assets, centralised on control • Scenario planning • Linear programming
3	Technology management	<ul style="list-style-type: none"> • Scenario planning • Delphi 	<ul style="list-style-type: none"> • Systems dynamics • Willingness to terminate projects
4	Insurance	<ul style="list-style-type: none"> • Portfolios • Hedging • Reinsurance 	<ul style="list-style-type: none"> • Measurement coupled to incentive schemes • Modify structure of insurance policy • Standardisation of processes
5	Environmental management	<ul style="list-style-type: none"> • LCA • Scenario planning • Market research • Hedging 	<ul style="list-style-type: none"> • Financial resources for contingencies • Insurance • Address perceptions of risk • Communication
6	Business investment	<ul style="list-style-type: none"> • NPV • IRR 	<ul style="list-style-type: none"> • RONA • EMV
7	Product management	<ul style="list-style-type: none"> • Guarantees • Image 	<ul style="list-style-type: none"> • Improve the level of information (e.g. by market research)
8	Engineering projects	<ul style="list-style-type: none"> • Contracting 	<ul style="list-style-type: none"> • Insuring
9	Systems reliability engineering	<ul style="list-style-type: none"> • Probability distributions 	<ul style="list-style-type: none"> • Markovian modelling

Table 59 provides a summary of techniques used to a greater or lesser extent in the various fields. The following list is selected from this summary (the first few relate to techniques while the remainder pertains to tools):

- Address unrealistic perceptions of risk.
- Willingness to terminate projects when this clearly becomes the right option.
- Standardisation of processes and procedures.
- Financial/liquid provisions for contingencies.
- Measurement coupled to incentives.
- Guarantees.
- Insuring.
- Portfolios.
- Hedging.
- Forecasting.
- Scenario planning.
- Linear programming.

- Delphi.
- Markovian modelling.
- Financial return measures including NPV, IRR and EMV.
- LCA.
- Market research.

The choice of the above list is based on those risk management techniques and tools which appear to enjoy the most attention. There is some overlap in the type of tools used in other fields and those covered in the market research. The first 4 techniques provide some interesting approaches that may be useful. Those tools and techniques which were used in the application and their effectiveness is evaluated in Table 60. It must be noted that those tools and techniques which have already been addressed are not included in the table.

Table 60 - Effectiveness of Other Techniques and Tools in the Application






Effectiveness (Application)	Technique/Tool	Effectiveness (Application)	Technique/Tool
	Standardisation of processes and procedures		Delphi
	Measurement coupled to incentives		LCA
	Insuring		

Table 60 indicates that the use of the other techniques proved to be successful, except for insuring. This is however not a fair test of the technique as appropriate opportunities did not arise with which to test it. It is worth mentioning the Delphi approach proved to be highly successful, particularly in the risk analysis phase.

The tools and techniques which were not tested via the application, but have the potential for use in the risk management of business change are the following:

- Markovian modelling
- Insuring
- Portfolios
- Hedging

(g) How can all the risk management factors be integrated into a framework, if this can indeed be achieved?

The constructed risk management framework is described in paragraph 4.5. This framework was developed from the literature, the quantitative based market research and practitioner inputs. The evaluation of this framework against the application is provided in the next subsection (see paragraph (h)).

(h) *Is the risk management framework practicable?*

In order to determine if the framework is feasible, the analysis is based on the framework described in paragraph 4.5 (p210). The basis for the evaluation is Table 54 where the process and the anticipated deliverables are discussed.

(i) *Derive the strategic risks*

The application is a little different to some of the lower level business interventions in the sense that two levels of business strategy were involved. These were firstly, the mother corporate from which the innovation was nurtured and secondly, the new greenfield business under consideration. The project originally was tempted to conduct its own strategic analysis exercise, which is based on the assumptions that (1) either the mother organisation's strategy was clear and concise or that (2) it had no relevance for the strategy of the opportunity. Either assumption is flawed as the opportunity is dependent on the mother corporation for direction and enactment. The implication is that this strategy should first be made transparent. The opportunity analysis did initially go ahead without taking due cognisance of the mother corporate strategy. This did cause some tension as the initial comment from the corporate strategy was that "we are not in this business", which understandably led to some tension.

Table 61 indicates the process required in order to derive the strategic risks. As described above this was necessarily done at two levels, namely at (1) corporate level and at (2) opportunity level. The corporate level analysis focused more on process element 1 (PE₁) and PE₂. The opportunity analysis functioned at all the PE levels. It may be noted that this was an iterative process as shown in Figure 92.

Table 61 - Analysis of "Derive Strategic Risks"

#	Process	U ¹	E	Deliverables	U	E
1	Driver analysis	✓	●	Key business drivers	✓	●
2	Establish strategic architecture	✓	●	Vision, mission, strategic intent, business objectives	✓	●
3	Scenario planning	✓	●	Scenarios, key risks	✓	●
4	System dynamics modelling	✓	◐	Causal loops, stock and flows, simulation results	✓	◐

Table 61 indicates that all the PE's were used, either during the analysis or the corporate strategy or during the analysis and establishment of the strategy for the opportunity. While the system dynamics modelling PE and its deliverable were not considered extremely effective, they are still promise to be useful. This is primarily due to the timing of the modelling. It was unfortunately done later in the process; during the design phase (see Figure 90) and its usefulness in the initial identification of risks was therefore limited. It will be far more useful if the modelling, particularly the causal loop analysis is conducted up front. A system dynamics

¹ U = use, E = Effectiveness

simulation was not done. It was not necessary in the application, and may not be required in general. It may be useful in certain instances where a high level of uncertainty exists; i.e. neither experience nor primary information is available.

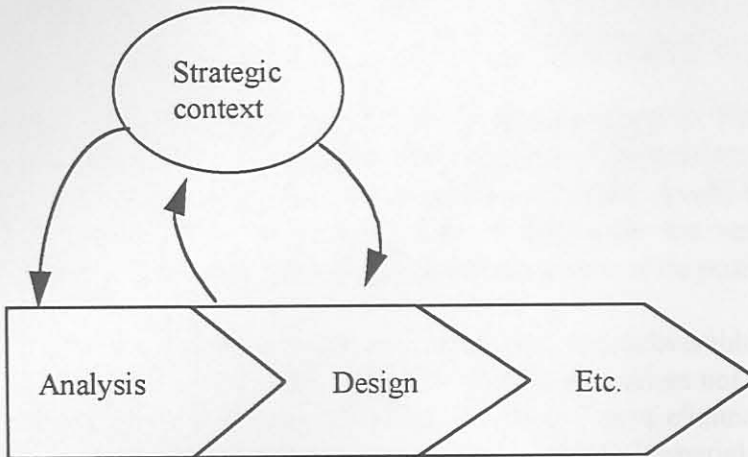


Figure 92 - Iterative Strategy Analysis and Design Process

In summary, the process elements and deliverables as described in the framework are useful in practice. The simulation of the system dynamics is not always required; only in areas of high uncertainty.

(ii) Define the business problem

The analysis of the business problem/opportunity definition based on the application is outlined in Table 62.

Table 62 - Analysis of "Define Business Problem"

#	Process	U	E	Deliverables	U	E
1	Problem/opportunity analysis	✓	●	Problem/opportunity identification	✓	●
2	Stakeholder analysis	✓	●	Stakeholders and their needs	✓	●
3	Project definition	✓	●	Project mandate, method description, project and opportunity/problem scope	✓	●

Table 62 indicates that the PE's and the deliverable based on the application prove to be very effective. These processes were all used in the project and served the business intervention process just as well as it did the business change risk management process. A very useful technique that emerged from the application was the establishment of a *baseline business definition*. This baseline allows various parties to work on various aspects of a project and not mis-align their efforts. In other words it provided a useful configuration management service. This baseline was then also used in the analysis (described in the next sub-section) of the risks, where the baseline risk exposure was determined.

(iii) Analyse the risks

The use and effectiveness of the analysis process elements in the application are summarised in Table 63

Table 63 - Analysis of "Analyse the Risks"

#	Process	U	E	Deliverables	U	E
1	Identify risks	✓	●	List of risks	✓	●
2	Reduce risks	✓	●	List of primary and <i>meaningful risks</i> ¹	✓	●
3	Estimate risks	✓	●	Estimation of the nature of the risks	✓	◐
4	Establish normalised estimation scorecard	✓	●	Estimation scorecard and <i>baseline risk exposure</i>	✓	●
5	Profile risks	✗	⊕	Risks profiled according to four quadrants	✗	⊕
6	Determine alternative management actions	✓	●	Management action alternatives	✓	●
7	Establish evaluation scorecard	✓	●	Evaluation score card and risk exposure	✓	●

Table 63 shows that all the process elements except for PE₅, "profile risks", were used. The reason why this was omitted was because of project time and the need for the ensuing deliverables. In retrospect, the inclusion of this PE would have made a significant difference to the productivity in the long term. It allows for the very clear but quick inspection and generation of management interventions by virtue of its positioning in the 4 quadrants.

As Table 63 indicates, those processes used and deliverables generated proved to be at least very effective. In PE₂, the reduction of risks was taken not only to the primary risks, but also the irrelevant risks (even if they were primary) were eliminated. This takes the generated risk management framework further and proved to be essential in order to reduce the number of risks identified, especially in the light of the original listing which amounted to circa 150 risks.

PE₄ indicates that an additional concept, namely the *baseline* was added during this process element as alluded to in the preceding sub-section. This does not make a significant change to the process. The purpose of this is to set a basis from which risk exposure can be improved. With a baseline in place, it is possible to set a target for the improvement of the risk exposure. This concept is particularly useful in projects at the higher level of business intervention where the financial attractiveness plays a very important role before getting into the project. The market research indicated that a cost benefit analysis done up front is one of the top risk management techniques.

One of the top risk management tools was claimed to be the return on investment type measures like NPV. The NPV of a project for example, is directly related to the riskiness of the project. In some instances the discount rates are coupled to the risk rating of a country.









¹ The italics indicates an additional deliverable or process.

Using the standard country risk premiums may actually turn very attractive projects down where this is used as the standard discount factor. If the risks can be better managed then it may be possible to bring the rate down and provide a more realistic NPV factor.

(iv) Design the risk portfolio and the philosophy

Table 64 illustrates the use and effectiveness of the “design the risk portfolio and philosophy” process elements in the application.

Table 64 - Analysis of “Design Risk Portfolio and Philosophy”

#	Process	U	E	Deliverables	U	E
1	Optimise risk portfolio	✓		Risk portfolio	✓	
2	Establish risk philosophy	✓		Risk philosophy	✓	
3	Design operational risk management processes	✓		Operational risk management processes	✓	
4	Design performance management requirements	✓		Performance management structures	✓	

From the table, all the process elements and the corresponding deliverables were used. They were all very effective except for PE₁ as shown. The reason for this was that the optimisation of the risk portfolio was not explicitly used. A more indirect form of analysis was employed in determining the range of optimal actions. The use of the four quadrant technique as shown in Figure 79 would have been far more productive in that it is able to focus attention on those important risks and accordingly suggest a range of typical risk management interventions.

In order to assist with this approach, it is recommended that the estimation scorecard be modified as shown in appendix C. This appendix describes the more important worksheets recommended for the analysis and design phases of the risk management framework.

(v) Implement and integrate the portfolio and philosophy

The use and effectiveness of the implementation and integration process as relevant to the application is shown in Table 65.

Table 65 - Analysis of “Implement and Integrate the Portfolio and Philosophy”

#	Process	U	E	Deliverables	U	E
1	Implement and integrate portfolio and philosophy	✓	⊖	Implemented risk portfolio and philosophy	✓	⊖

Table 65 illustrates that a very moderate level of use and effectiveness was achieved. This again is not due to the level of ineffectiveness of the process, but the fact that at the time of documentation, the implementation and integration had not been complete. It is therefore only possible to assess the effectiveness based on the limited implementation, which in the researcher’s opinion is insufficient to infer generalisability.

(vi) Phase out the risk management intervention

As the business solution is currently in the process of implementation, it is not possible to assess the phasing out of the risk management intervention as shown in Table 66.

Table 66 - Analysis of “Phase out the Risk Management Intervention”

#	Process	U	E	Deliverables	U	E
1	Phase out the risk management intervention	✗	⊕	Phased-out intervention	✗	⊕

5.6.2 Verification

Verification is understood by means of the evaluation of validity and reliability [11, pp157-159]. Validity is constituent of internal and external validity.

(a) Internal validity

Internal validity pertains to the accuracy of information and whether this reflects reality. This has been demonstrated by the following:

- The study has used various methods and sources to confirm trends or discover inconsistencies. The quantitative and qualitative components of the market research in paragraph 3.3 were used to confirm the literature. In turn, these were used to generate the theory with inputs from practitioners. This theory was evaluated against the application. Where possible and relevant, other situations in practice were taken to evaluate the consistency of the theory.
- In Table 1, the epistemological assumption indicates that in a quantitative analysis the researcher is independent from that being researched, while the opposite is true for qualitative research. The positioning of the researcher in respect of the various phases of the study was achieved in accordance with these guidelines. This is demonstrated as follows. During the market research the researcher was only involved in the submission of

the questionnaires and the analysis of the returned data, while the researcher was intimately involved in the qualitative component of the study.

- The internal validity of the market research is discussed in paragraph (g), p87.

(b) External validity

External validity pertains to the generalisability of the results of the study. The external validity of the study is evaluated as follows:

- The external validity of the quantitative research is described in paragraph 3.3.3, which indicates the relevance of the results across all business sectors.
- Only one application was used to test the theory which may raise on concerns regarding the generalisability to other types of business applications [15]. The analysis did however entail a very detailed investigation into an application which included a wide range business change types. This detailed understanding of one application is perhaps richer in terms of the contribution to the theory that a superficial analysis across a few case studies [16].
- Where relevant, other references in practice were included to try and test generalisability in certain cases.
- The theory was constructed with the inputs of practitioners across the world from a wide range of industry sectors as described in chapter 1.
- It is felt that a reasonably high level of confidence can be held in the findings of the study. Those areas where the generalisability is uncertain can be considered hypotheses. These are listed later in this chapter.

(c) Reliability

Reliability in the qualitative study is concerned with the ability to replicate the study given the same instruments and conditions. Yin [12] recommends the use of a protocol for data collection in order to assist in ensuring the replication of the results in another setting. This was done during the study where:

- A protocol of the instruments, procedures and rules of the study was defined.
- A database with the relevant data, notes and reports was kept.

5.6.3 Hypotheses

This paragraph raises those factors of the study, where they were either not tested or concerns exist regarding their generalisability. They are listed as follows:

- “Ensure a high level of communication” is a technique useful for managing risks in a business change project. It plays more of a role in the lower level change interventions than in the higher level interventions.
- Markovian modelling can be a very useful technique in modelling and understanding the risks in business change interventions. It is however, limited to situations where the change conditions are not too complex.

- Insuring, portfolios and hedging are also useful techniques in managing the risks in business change interventions.
- The use of the four quadrant risk profile technique (see Figure 79) is useful in focusing effort and helping to quickly, yet reliably identify risk management interventions.
- The last two phases of the risk management framework (see Table 54), namely (1) implement and integrate the portfolio and philosophy and (2) phase out the risk management intervention provide a useful framework for dealing with the risks in business change during these phases of the management life-cycle.

5.7 Chapter conclusion

This chapter has provided an evaluation of the theory synthesised in the preceding chapter. This evaluation was based on its application to a “real-world” business problem, the answering of the key research questions defined in the first chapter and the thesis verification analysis. The key findings of the chapter are that the theory holds true with the proviso of a few recommendations. A set of hypotheses also resulted.