

**UNIVERSITY OF KWAZULU-NATAL**

**THE STUDY OF THE EFFECTIVENESS OF AN IT RISK MANAGEMENT  
STRATEGY**

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degree of  
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**TO WHOM IT MAY CONCERN**

20 May 2010

This dissertation, entitled *The Study of the Effectiveness of an IT Risk Management Strategy*, by Vernon Vukile Ndimeni, has been edited to ensure technically accurate and contextually appropriate use of language.

Sincerely

A handwritten signature in blue ink, appearing to read 'CM Israel', with a stylized flourish at the end.

**CM ISRAEL**  
**BA Hons (UDW) MA (UND) MA (US) PhD (UNH)**  
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I Vernon Vukile Ndimeni declare that

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- (ii) This dissertation/thesis has not been submitted for any degree or examination at any other university.
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## **TERMS AND ABBREVIATIONS**

<b>CEO</b>	Chief Executive Officer
<b>COSO</b>	Committee of Sponsoring Organizations of the Treadway Commission
<b>ERM</b>	Enterprise Risk Management
<b>IT</b>	Information Technology
<b>KPI</b>	Key Performance Indicators
<b>RM</b>	Risk Management
<b>SA</b>	South Africa
<b>SPSS</b>	Statistical Package for the Social Sciences Organization for Economic and Development
<b>UK</b>	United Kingdom
<b>USA</b>	United States of America

## **ABSTRACT**

Risk management is an evolving discipline in the developing and developed world and has received increased prominence from the 1990s' corporate accounting scandals, the Turnbull study in the US and the 2009 global financial crisis. Within organisations, risk management is competing with profit making whereas the focus of risk management is on improving organisational performance.

The aim of this study was to establish the effectiveness of a risk management strategy at an Information Technology organisation in South Africa. An exploratory research approach was used and was conducted using a survey. An extensive literature review was conducted and seven research questions were subsequently formulated to guide the study. A mailed questionnaire designed with a Likert scale was used to collect data and the questionnaire was administered to a convenience sample of 25.9 percent of employees from a population of 204 employees.

Descriptive and inferential statistical analyses were performed to interpret data and revealed that the employees believed that risk management is essential and that management support is necessary but not sufficient to implement an effective risk management strategy. A salient feature was that management needed to perform continuous improvement in the ever-changing risk management landscape and in addition, the inculcation of a risk management culture was equally vital. The study recommends that organisations need to assess the current corporate risk maturity level and review the current corporate risk strategy, risk structure, and risk criteria, as part of a risk management programme. The study suggests further research into the impact of industry drivers on risk management.

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# CHAPTER ONE

## OVERVIEW OF THE STUDY

---

### **1.1 Introduction**

Corporate organisations exist to make profit but differ radically in the way risk is managed. Shimpi, Durbin, Laster, Helbing and Helbing (2001, p. ix) could not have put this more succinctly: “Our starting point is the recognition that risk is the lifeblood of a corporation. It provides the opportunity to turn a profit, but raises the spectre of ruin”. Examples of how risk can be mismanaged are major corporate failures that surfaced in the 90s e.g. Barings Bank, Orange County, Procter and Gamble, Sumitomo Bank and Long Term Capital Management. These created a greater demand for risk management thinking and solutions as corporations sought to avoid similar catastrophes (Shimpi et al., 2001). Although research has been conducted on risk management (Fishkin 2006; Conrow 2003; Lam 2003 and Helbing 2001), and different authors (Andersen 2006; South African Public Service Commission 2003; Hoffman 2002 and Shimell 2002), have discussed the criteria for an effective risk management strategy, little attention has been given to an effective risk management strategy in the corporate sector.

### **1.2 Motivation for the Study**

The significance of this study is to help shareholders with the monitoring of the effectiveness of the risk management strategy of an organisation, ensuring that the risk exposure is managed to an acceptable corporate level which does not erode the targeted financial performance of the organisation and at worst, threaten the continued existence of the organisation. In addition, this study may be of interest to management teams who need to establish the maturity phase of their existing risk management system. This is a necessary assessment phase before management considers the alignment between the organisational and risk management strategies. The study discusses risk programmes that can benefit organisations by increasing awareness with respect to the employee’s role in managing risk in their immediate business environment. Lastly, the outcomes of the study will help management teams integrate risk management and practice

into their organisation's management culture.

### **1.3 Focus of the Study**

In 1997, the South African government embarked on a privatisation programme and privatised the Information Technology divisions of Eskom, Denel and Transnet (Department of Public Enterprises 2001). The Minister of Public Enterprises, who was managing the portfolio that included the four government entities, adopted a resolution, together with the cabinet of the Republic of South Africa, to merge the four Information Technology (IT) divisions into one entity. Denel, Eskom and Transnet agreed to form a company that would conduct information technology business in the Republic of South Africa, Africa and the rest of the world. They also agreed to sell their respective information technology businesses to this company as a going concern in return for shares (Department of Public Enterprises 2001). The newly formed company was registered as arivia.kom (the company name is always spelt in lowercase, except for when it is the first word in a sentence, in which case the first 'a' will be uppercase).

Arivia.kom commenced operations in January 2001 as a provider of IT solutions and services. By the year 2009, it was amongst the five largest IT companies in South Africa and now has more than 900 employees. The company's vision is to be the dominant Information and Communications Technology solutions company in Africa. More than 70 percent of the company's revenue is generated from the outsource deals signed with Transnet and Eskom. The company has faced many challenges as a new organisation, particularly those accompanying a merger of three different entities e.g., the integration of multiple social and cultural environments, work ethics and a myriad of systems, processes and business models. The consequences of these disparities have sometimes resulted in unfavourable audit findings in arivia.kom corporate functions, including the risk management function (arivia.kom 2007). The challenge of addressing audit findings about the manner risk is managed in the organisation is contrasted with the organisation's core existence, which is to make profit, and this is the essence of the current survey research study.



#### **1.4 Problem Statement**

Effective risk management at arivia.kom would provide increased organisational effectiveness, better risk reporting and improved business performance (Lam 2003). However, between the two competing objectives of profit attainment and effective risk management, profit attainment is inclined to receive more prominence (Shimpi et al. 2001). For example, organisations tend to measure performance with more emphasis on financial objectives rather than on an internal process like risk management (Thompson Jr, Strickland III & Gamble 2005). In the current profit-driven economic system, this imbalance is likely to persist for some time at the expense of non-financial objectives in general and risk management in particular. Without effective risk management to help arivia.kom achieve its organisational objectives, risk exposure will continue to escalate resulting in the erosion of the targeted financial performance and at worst threatening the continued existence of arivia.kom (Shimpi 2001; arivia.kom 2007).

A review of the existing risk management strategy is consequently needed and this will ensure that the organisation is aware of its risk exposures, understands its true risk and return economics, and enable it to take more of the profitable risks that make sense for the organisation and less of the ones that do not (Lam 2003, p. 46).

The study will explore options for the implementation of an effective risk management strategy at arivia.kom. A survey will consequently be conducted among employees of arivia.kom to gather their perception of risk management and similarly, a literature review will be conducted on effective risk management strategy.

#### **1.5 Research Approach**

The problem caused by the conflicting organisational objectives necessitated that different options for an effective risk management strategy formulation were explored in the following manner.

The population of this research consisted of 204 permanent employees of arivia.kom who were based across South Africa. Convenience sampling was used

to select the sample from the population by choosing employees working in the corporate function, who were likely to be familiar with the concept of risk management.

An exploratory research approach was used and a survey research study conducted using the questionnaire instrument to gain insight into the participant's perception of risk management. Furthermore, secondary research was conducted by sourcing scholarly writings and books on risk management, with a particular focus on effective IT risk management strategy literature material.

The unit of analysis was the employee and by describing the perceptions of the employees and reviewing the literature, the following objectives guided the research:

(a) to establish the extent of employee perception towards risk management, and also to establish how the employees managed risk in their immediate environment; and

(b) to establish the effectiveness of the existing risk management strategy at arivia.kom.

## **1.6 Research Questions**

The following research questions guided and directed the study:

- Research Question 1: What is a risk management strategy?
- Research Question 2: What is the extent of perception of risk management among employee?
- Research Question 3: How do employees manage the risk that arises in their immediate environment?
- Research Question 4: What is the effectiveness of the existing risk management strategy across the organisation?
- Research Question 5: What is the impact of industry drivers on risk management?

- Research Question 6: What are the criteria for an effective risk management strategy?
- Research Question 7: How does arivia.kom's risk management strategy compare with that of similar firms?

### **1.7 Limitations of the Study**

Several limitations constrain this study. Firstly, the study used a structured questionnaire with a Likert scale; consequently, the participants were limited in stating their views on the questions but had to select within the Likert scale responses. This means that some of the answers may not accurately represent the point of view of the participants and a comparison of responses of employees within the same organisational level might yield a different perspective. The second limitation of this research is the survey that was conducted during an allocated one-week time interval, with no guarantee that the responses received would differ in another time context. There is also the possibility of other factors outside the control of the study e.g., the setting and fatigue of the participants might have influenced the responses. Lastly, the study involves the collection of data to be collected from all the employees of the organisation. However, the management of arivia.kom preferred that the survey was limited to employees in the corporate functions.

### **1.8 Overview of Subsequent Chapters**

This study is organised into five chapters. Chapter 1, the introduction, contains the motivation and focus of the study, statement of the problem, research questions, study limitations and the organisation of subsequent chapters. Chapter 2 presents the review of literature in response to Research Question 1, 5, 6 and 7 by including an overview of enterprise risk management, the risk industry driving forces, the criteria for an effective risk management strategy and an examination of an enterprise risk management implementation. Chapter 3 is an in-depth discussion of the methodology selected for this study. This includes the purpose of the study, research questions, research design, population and sampling, instrumentation, data collection procedures, validation, analysis of data, limitations, and the summary. Chapter 4 offers a review of the purpose of the

study, the research questions, the demographic profile statistical analysis and presents results in response to research questions 2, 3 and 4. Chapter 5 is an interpretation of the results. Chapter 6 begins with the summary of major survey results, and then presents a discussion of the implications of the study and suggestions for further study. Recommendations for future research are made where relevant questions were not answered by the data analysed in the study. The study is then concluded.

### **1.9 Summary**

This chapter has discussed a broad view of the problem. A further understanding of strategic issues in a broader framework is now required. The literature review framework in Chapter 2 will help achieve a clearer understanding of these strategic issues.

## CHAPTER TWO

### AN OVERVIEW OF ENTERPRISE RISK MANAGEMENT

---

#### **2.1 Introduction**

Risk management is effective when it is aligned to the organisation's strategic objectives and mitigates the risks, which are within the appetite of the organisation. This chapter serves as the conceptual framework upon which the research topic of an effective risk management strategy is founded. Fishkin (2006) defines risk management as an ongoing process, which organisations use to identify, measure, monitor and take actions to manage their various risks. Fishkin (2006) defines risk management as an ongoing process, which organisations use to identify measure, monitor and take actions to manage their various risks. The study will henceforth use Fishkin's definition of risk management as a baseline definition because of its organisational context and its process-centric perspective.

This chapter on the literature review serves:

- (a) as a theoretical framework behind the research questions in Chapter 1,
- (b) as the background to the interpretation of the survey results from the quantitative research to be conducted around the topic of the effectiveness of a risk management strategy, and
- (c) as a response to the Research Question 1, 5, 6 and 7.

The approach used in this chapter entails an overview of the case study company arivia.kom, a broad examination of the literature review and a critical, comparative analysis of risk management. To enrich that approach, the literature search made the scholarly writings and established constructs the search areas. The peer-reviewed references, predominantly journals and research documents, are the primary sources of information. The literature before the year 2000 is excluded to ensure relevance, although a few pre-2000 books and journals are included for historical significance. The examination will nonetheless extend to various disciplines that have informed the study of risk management in general, e.g.

insurance and finance investment, Enterprise Risk Management (ERM) and IT Risk Management in particular.

From the problem statement, which was examined in Chapter 1, two variables emerged “enterprise risk management” and “effectiveness”. These two have predominantly determined the references that are included in the literature review. The design is thematic and uses the independent variable (enterprise risk management) and the dependent variable (effectiveness). The search words are based upon what is published for these two variables, though other literature pieces are included for either their practical or theoretical usefulness.

The following research questions, which were discussed in Chapter 1, serve as the delimiters of the literature review.

#### Research Questions

- (a) Research Question 1: What is a risk management strategy?
- (b) Research Question 5: What is the impact of industry drivers on risk management?
- (c) Research Question 6: What are the criteria for an effective risk management strategy?
- (d) Research Question 7: How does arivia.kom’s risk management strategy compare with that of similar firms?

As part of the approach, the literature review addresses whether the research questions have been answered by the presented research journals and books, whether the published literature leads to more clearly defined research questions, and whether the literature review identifies future research directions where applicable.

The structure of this chapter is as follows:

- An overview of the arivia.kom company profile;
- an overview of enterprise risk management;
- an analysis of the impact of the external drivers on risk management;
- a study of the criteria for an effective enterprise risk management strategy;

- an analysis of a comparative enterprise risk management implementation, and
- the summary.

## **2.2 Profile of arivia.kom**

Arivia.kom is a commercialised state-owned enterprise created through the merger of Ariel Technologies (part of Denel), Datavia (Transnet IT)) and ESKOM ITS (ESKOM's Information Technology Services). arivia.kom commenced operation in January 2001. The company has more than 900 employees and 15 service centres around South Africa and in the 2008/2009 financial year arivia.kom generated R1.9 billion turnover.

The products and services offered by arivia.kom include professional services, databases, servers, hosting, enterprise storage management, security, business continuity management, distributed computing environment, wide area network and mainframe.

The core clients serviced by arivia.kom are located all over South Africa and Africa and these include Transnet, Eskom and the department of Water Affairs.

## **2.3 What is Risk Management?**

The insurance industry was the first to grapple with risk management and consequently the term “risk management” gained currency in the 1960s and 1980s among those interested in explaining broader options for managing “insurable risk”. The insurance risk was characterised by downside risk, for example, risk with a chance of a loss such as damage to property and liability settlements. The advent of risk management reflected the recognition that there were other strategies for managing insurable risks (Doherty 2000).

Table 2.1 shows various definitions of risk management. At one end of the spectrum are those authors who perceive risk management as event-driven, practised in reactive mode. The forward-looking authors are in the middle of the spectrum of definitions and perceive risk management as a pro-active tool that minimises risk exposures. At the other end of the spectrum are the authors who

define risk management as a management process by which identification, measurement, monitoring, and management actions can be taken for various risks.

AUTHOR	RISK MANAGEMENT DEFINITION
Bernstein P.L., 1996	The ability to define what may happen in the future and to choose among alternatives lies at the heart of contemporary societies. Risk Management guides people over a vast range of decision-making, from allocating wealth to safeguarding public health, from waging a war to planning a family, from paying insurance premiums to wearing a seatbelt, from planting corn to marketing cornflakes.
Treasury Board of Canada, 1999	Risk Management means taking advantage of opportunities and taking risks based on an informed decision and analysis of the outcomes.
Borge D., 2001	Risk Management means taking deliberate action to shift the odds in one's favour, increasing the odds of good outcomes and reducing the odds of bad outcomes.
Shimpi et al., 2001	The starting point is the recognition that risk is the lifeblood of a corporation. It provides the opportunity to turn a profit, but raises the spectre of ruin.
Conrow E. H., 2003	Risk Management is the act or practice of dealing with risk. It includes planning for risk, assessing (identifying and analysing) risk issues, developing risk-handling options, monitoring risk to determine how risks have changed, and documenting the overall risk management programme.
Fishkin C., 2006	Risk Management is an ongoing process, which organisations use to identify measure, monitor and take actions to manage their various risks.

Table 2.1: Definitions of Risk Management, showing differing viewpoints



In addition, the definition of risk can be synthesised in terms of attributes and context. For instance, the attribute of risk as a choice rather than fate, is the common characteristic in the different definitions of risk management. Bernstein (1996) asserts that risk is a choice rather than fate is still applicable today. Bernstein (1996) further points out that the story of risk is all about the actions people dare to take which depend on the freedom to make choices.

The differences in the definitions are more from a context perspective. Bernstein (1996) has an individualistic approach whereas Shimpi et al. (2001), Conrow (2003) and Fishkin (2006) have an organisational approach. The definitions are useful to the Research Question 1 from a theoretical perspective because they provide a theoretical base of definitions from which to conduct the study. The study is thus afforded an opportunity to review definitions which have been rendered inappropriate by recent scholarship and adopt pertinent definitions.

In the above section the literature on what is risk management was reviewed and it is therefore now appropriate to outline an overview of IT Risk Management and subsequently delve into the evolution from risk management to enterprise risk management.

### 2.3.1 IT Risk Management

In tandem with the increase in IT expenditure by organisations, there has also been an increase in dependency on technology by the organisations. Risk needs to be managed. Considering that organisations have become largely susceptible to the risks of IT failure and this has consequently added a major challenge for information systems executives to manage (Bandyopadhyay, Mykytyn & Mykytyn 1999, p.437).

Abram (2009, p.1) defines IT risk management as “the process that allows IT managers to balance the operational and economic costs of protective measures and achieve gains in mission capability by protecting the IT environment.” The main aim of IT risk management is to protect IT resources assets such as data, hardware, software, personnel and facilities from internal technical failures, illegal

access and external threats e.g. natural disasters. According to Masing (2009, p.50) the IT risk management process has the following benefits: (a) it creates a scope for IT risk assessments; (b) it allows for the assessment of key risk indicators; (c) it provides the basis for automation ; and it creates the ability to baseline risks.

## **2.4 The Evolution from Risk Management to Enterprise Risk Management**

Lam (2003, p. 3) identifies crisis management as one aspect of risk, noting that this is extremely expensive, time-consuming and embarrassing. From a different perspective, Shimpi et al. (2001) emphasise that the starting point is the recognition that risk is the lifeblood of a corporation because it provides the opportunity to turn a profit, but raises the spectre of ruin. The SA Public Service Commission (2003) strengthens this view, stating that the present state can be managed to influence the future, and Borge (2001) argues that while the future might be uncertain, it can be influenced to a certain degree.

The following two sections examine the evolution from the risk management era to the enterprise risk management era.

### **2.4.1 The Risk Management Era**

According to Lam (2003, p. 95) the application of risk management concepts was developed more than a thousand of years ago. Lam points to an example of the earliest risk management recorded in the Code of Hammurabi which was written nearly 4000 years ago. The Code was one of written laws during the Baylonian era and the Code offered basic insurance in situations where a debtor could not to repay a loan to a creditor (merchant), if some personal catastrophe made repayment impossible for the merchant. This was in essence a transfer of risk. The era of risk management, which began during the 1960s and 1970s, focused on protection against downside risks, such as credit controls investment and liquidity policies, audit procedures and insurance coverage. Lam (2003, p. 235) describes this evolution of risk management in two stages:

## **Stage1- Minimising downside**

The insurance risks had previously been characterised by downside risks e.g., risk with a chance of a loss, like damage to property and liability settlements. The advent of risk management reflected the recognition that there were other strategies for managing the insurable risks.

Subsequent to this trendsetting by the insurance and banking sectors, it was inevitable that the two sectors would influence the early work of the authors on risk management (Lam 2003). Lam (2003, p. 236) acknowledges that the objective of these defensive risk management practices was to minimise losses.

## **Stage2- Managing uncertainty**

The insights of the 1990s informed what Lam (2003) calls the second stage of risk management i.e., managing uncertainty. The focus was on managing volatility around business and financial results. The investors were justifiably intolerant of earnings volatility, and the risk management practices evolved for management to anticipate potential loss and manage the increased volatility. Examples of resulting risk management practices were the risk transfer products, credit scoring, simulation models and a sharp increase in the recognition of operational risk management. Lam (2003, p. 210) defines operational risk as the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems, or from external events. The Turnbull Report (Fraser & Henry 2007) emerged against this scandal-ridden background, with Barings Bank and Enron's well-publicised losses, notwithstanding the growing demand for assurance on risk management and effective control. The following section will examine the next phase of the evolution, the Enterprise Risk Management era.

### **2.4.2 The Enterprise Risk Management Era**

Barton, Shenkir and Walker (2002) contend that most organisations have traditionally viewed risk management as a specialised and isolated activity, as reflected in Table 2.2 below.

Old Paradigm	New Paradigm
<ul style="list-style-type: none"> <li>▪ Fragmented</li> </ul> <p>Departments manage risk independently; accounting, treasurer, internal audit primarily concerned.</p>	<ul style="list-style-type: none"> <li>▪ Integrated risk management coordinated with senior-level oversight; everyone in the organisation views risk management as part of his or her job.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Ad hoc</li> </ul> <p>Risk management done whenever managers believe need exists to do this.</p>	<ul style="list-style-type: none"> <li>▪ Continuous - risk management process is ongoing.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Narrowly focused</li> </ul> <p>Primarily insurable risk and financial risks</p>	<ul style="list-style-type: none"> <li>▪ Broadly focused - all business risks and opportunities considered.</li> </ul>

Table 2.2: Key Features of the New Risk Management Paradigm

Adapted from Barton, T.L., Shenkir, W.G. & Walker, P.L. 2002, *Making Enterprise Risk Management Pay Off*, Prentice Hall, New Jersey. p. 1.

As shown in Table 2.2, the risk management perspective is shifting for some organisations from a fragmented, ad hoc, narrow approach to an integrated, continuous, and broadly focused approach (Barton et al. 2002).

A number of developments in the past decade have contributed to increased interest in enterprise risk management. Doherty (2000 p.55) lists risk-management aligned changes in regulation with examples of publicly traded

companies in Canada, the United States of America (USA) and the United Kingdom (UK), who had implemented corporate governance rules and guidelines during the 1990s.

The enterprise risk management era is examined in the following subsections and these cover what enterprise risk management is, what the enterprise risk management's integrated approach is, and what the impact of the external environment on enterprise risk management is.

#### A. WHAT IS ENTERPRISE RISK MANAGEMENT?

Similar to the risk management era, it was inevitable that there would be many and varied definitions of enterprise risk management. One of the widely accepted definitions is the Committee of Sponsoring Organizations of the Treadway Commission (COSO) definition. COSO was formed in 1985 to study the factors that could lead to fraudulent reporting and to make recommendations for public companies, their auditors, the Securities and Exchange Commission (SEC), other regulators and educational institutions in the USA. Enterprise risk management as defined by COSO is a process put into effect by an entity's board of directors, management and other personnel, and applied in strategy setting, across the entity. The process is designed to identify potential events that may affect the entity, to manage risk within the entity's appetite, and to provide reasonable assurance regarding the achievement of the entity's objectives (Moeller, 2007). The above-mentioned organisation-wide approach is common in many enterprise risk management definitions, and Culp (2001) supports the organisation-wide approach of the COSO findings.

Another enterprise risk management perspective is from Barton et al. (2002), who observe that sometimes enterprise risk management is referred to as integrated, strategic, business-wide or enterprise-wide risk management; these terms can be used interchangeably. Barton et al. (2002) write from a scientific research perspective, having conducted a case study of five prominent companies. The approach used by Barton et al. (2002) is practical and they for example point out that an ideal approach for implementing enterprise-wide risk management is not

feasible because so much depends on the culture of the company and the change agents who lead the effort. This perspective is useful in addressing the research problem.

## B. ENTERPRISE RISK MANAGEMENT'S INTEGRATED APPROACH

Lam (2003) recognises the advantages of the integrated approach by Barton et al. (2002). Nonetheless, Lam (2003 p. 238) points to the shortcomings of managing the silo risk management functions and states that the objective of the integrated approach is achieved when using the integrated approach with silo risk functions.

## C. EXTERNAL ENVIRONMENT AND ENTERPRISE RISK MANAGEMENT

The external environment is a major factor in risk management. For instance, while good risk management is an integral part of business decision-making, Lam (2003, p. 239) emphasises that the changes in the business environment affect the practice of effective risk management. He also cites the examples of globalisation, technology, changing market structures (deregulation, privatisation, new competition), and restructuring (mergers, acquisitions, strategic alliances, reengineering, outsourcing). Lam (2003) writes from a finance research framework, and has an interpretative research orientation. Lam (2003) appeals more to theory and helps to understand the research problem.

The era of the traditional, silo-based approach to risk management has evolved into enterprise risk management. One basic argument behind the enterprise-wideness of risk management is from Andersen (2006, p. 114), which contends that the intention is to make risk management a cross-functional activity in order to identify, evaluate and manage risks that have a potential effect on the achievement of organisational objectives at all levels. In this form, risk management creates a platform for a mutual point of reference, a common language, and the sharing of risk knowledge across the organisational span of competences and functional areas. Andersen's (2006) research orientation is

interpretative, and Andersen (2006) appeals more to theory which useful to help understand the research problem from a conceptual perspective.

The era of enterprise risk management had been acknowledged to exist. Substantial, reliable research was used to inform the two research questions. The next section will examine the driving forces behind the risk management industry and the impact of these on enterprise risk management.

## **2.5 The Risk Industry Driving Forces, and their Impact on Enterprise Risk Management**

In the previous section, the overview of enterprise risk management was outlined, to the current discussion of the risk industry drivers and their impact on enterprise risk management.

The driving forces are the major underlying causes of a changing industry and competitive conditions (Shimpi et al. 2001). These will now be examined particularly with reference to risk management.

The topics of driving forces in risk management industry and the impact on risk management are informed by Shimpi et al. (2001) and by Power (2004).

### **2.5.1 The Driving Forces in the Risk Management Industry**

Various authors have written on the drivers of risk management. Shimpi et al. list the following seven major ones.

- I. **RM and professional standards:** Shimpi et al. (2001, p. 234) see the standardisation of risk management practices as possessing a potential to accelerate interest in, and adoption of risk management techniques and programmes. For instance, with financial institutions, Shimpi et al. (2001, p. 234) refer to JP Morgan's Risk Metrics which provide a consistent framework for measuring and managing market risk. Doherty (2000) provides corporate governance standards as example e.g. the board's accountability with respect to risk management. The Doherty study indicated that this driver resulted in an increased adoption of enterprise risk management.

- II. **Technological progress:** Technological developments similar to computer networks and the declining cost of computing power increased the affordability of, and accessibility to, sophisticated risk management systems and products. Consequently, risk management processes are now relatively easier to adopt (Shimpi et al. 2001, p. 234).
- III. **Legal and regulatory standards:** There has been a realisation that business systems are much more complex than before and this has enhanced the role of various public authorities in protecting the interests of consumers and shareholders. A notable example of regulatory standards is the Basel II Committee on Banking Supervision (an international organisation), which has conducted extensive research and issued guidelines intended to improve risk management standards in banks (Shimpi et al. 2001, p. 234) and in South Africa King II Code of Corporate Practices and Conduct is another example. Other authors such as Barton et al. (2002, p. 6) point out that legislation that has been a driver, while Valsamakis (1992, p. 135) points to the example of the South African legal framework. Examples of related legislation are USA's Sarbanes-Oxley act and South Africa's Compensation for Occupational Injuries and Diseases Act.
- IV. **Education and training:** There has been an increase in the number of professional risk management organisations, focusing on broadening risk management definitions and promoting education and the exchange of ideas. Academic research and writing on risk management have both increased. The conference circuit has seen its fair share of the increase, with various experts exposing the virtues of risk management (Shimpi et al. 2001, p. 237).
- V. **Financial market developments:** The developments in the financial markets are playing a major role in the evolution of risk management products and solutions, for example, the consolidation in the financial sector. This has caused the distinction between banking and insurance to blur. The financial giant Citigroup now offers a portfolio of products and



services, anticipating that the provision of risk management products and services will be made easier and more efficient (Shimpi et al. 2001, p. 237). In South Africa we have organisations like Grain Management which offers services like carbon foot printing and reporting to help clients to manage risks emanating from operating environments where environmental impact costs can escalate if unmanaged (Grain Management 2010).

- VI. **Insurance market developments:** There has been increased interest in risk management by the insurance sector. Most of the developments relate to the product or joint venture announcements. The players involved are mainly seeking to expand revenue and earnings, and the opportunity lies in designing risk transfer and financing programmes for previously uninsurable risk classes (Shimpi et al. 2001, p. 238).
- VII. **Major watershed events:** Major events or notable failures that focus attention on failed systems or processes can be the drivers of market developments. Recently, a handful of major corporate failures due to ineffective risk management have surfaced e.g., UK's sub-prime lender Cattles and in the USA, Barings Bank, Orange County, Procter and Gamble, Sumitomo Bank and Long Term Capital Management. These create a greater demand for risk management thinking and solutions, as corporations seek to avoid similar catastrophes (Shimpi et al. 2001, p. 240).

#### 2.5.2 The Impact of Drivers on Risk Management

The risk management industry was not immune to such external stimuli as mentioned above and no one could have predicted the extent of the effect. Specifically Shimpi et al. (2001) note that the driving forces or changes in the business landscape require that corporate managers change the ways in which the enterprise risks are analysed and managed in their midst. For instance, Shimpi et al. (2001) cite examples of shareholders' concerns about the efficient use of their funds, the creation of wealth, public officials' need to protect the consumer, rating agencies and financial intermediaries dealing with broader risk management.

The literature on the topic of the impact of risk covers the era of warfare e.g. during the IRAQI invasion by the USA and other countries. Risk managers of affected corporate had to manage the risks emanating from the fallout from such conflicts, which included a possibility of being sued by the affected employees (Lenckum 2003). Valsamakis (1992, p. 135) said legislative enforcement in South Africa was the driver behind the resultant risk management actions by organisation. For example, acts like the Occupational Health and Safety that protect the worker environment, necessitate that an employer takes risk management measures to avoid violating the law. The risk management literature on the societal impact is scarce, although Power (2004) presents this societal perspective. The study investigates the effect on society caused by the increased focus on risk and is relevant to the Research Question<sup>5</sup> about the impact of industry drivers on risk management. Similarly Spira (2003, p. 656), supports Power's (2004) societal perspective.

The argument by Power (2004) is that the driver for the risk industry is simply a product of the emergence of a new economy and the need to manage intangibles. He emphasises that defensive and secondary risk management influence the rise of risk management, and provides two examples. The first example is that of societies which are faced with one option, to get organised in the face of risks. This is an example of the reach of internal control into all of organisational life. The second example is that of UK societies who think of themselves in terms of risk management ideas. For example, the handling of the UK's foot and mouth crises resulted in the implementation of the project risk management by the UK's private-public partnerships.

In contrast, Power (2004, p. 19) argues against the proliferation of the risk industry. He asserts that this proliferation has caused a retreat of socially valuable intelligence from the public domain. The claim is supported by the example of scientists who have their role transformed away from the socially valuable field of expertise. The study by Borgelt (2007) supports this claim. This example signifies the problem's significance in terms of scope. Power (2004) does nonetheless acknowledge the risk management benefits in the corporate sector. Borgelt (2007)

similarly concludes that the increased focus on risk management has diminished the focus on innovation and the development of the knowledge workforce.

Power uses secondary sources and acknowledges the impact of the drivers e.g., the landmark study of Turnbull and the 1990s trendsetting COSO framework (Power 2004, p.19).

The argument by Power (2004) appeals to emotion: calling risk management a management fad without providing a substantiated argument. For instance, Power's argument is supported with reasons but rarely with evidence, facts or examples. Power (2004) forms a good part of a continuing debate on the value of risk management and though Power (2004) provides limited evidence but he provides reasons to support the argument. The argument is nonetheless useful for the research problem in terms of enumerating the societal impact of drivers on risk management e.g., "the risk management of everything by society" (Power 2004, p. 21).

Finally, the impact of the drivers on risk management has been the increased focus on risk management (Shimpi et al. 2001 and Barton et al. 2002). For example, since the COSO's Internal Control Integrated Framework (ICIF) document, several professional organisations are addressing control and risk assessment in major publications and several of the Big Five accounting firms (Arthur Andersen, Deloitte & Touche, Ernst & Young, KPMG, and PW Coopers) are producing documents expounding the value of enterprise-wide risk management.

## **2.6 An Enterprise Risk Management Strategy**

This section will move the focus from the industry drivers of risk management by examining the different strategies of enterprise risk management. The literature has shown the influence of the insurance industry on the risk industry. The term "risk management" gained popularity in the 1960s and 1970s with those interested in explaining broader options for managing "insurable risk" (Doherty 2000, p. 193). The insurance risks had been characterised by downside risks e.g., risks with a chance of a loss similar to damage to property, and liability settlements.

The next sub-sections will discuss three major categories of enterprise risk management strategies: insurable, fundamental, and generic categories.

#### 2.6.1 Insurable Risk Strategies

The advent of risk management represented the recognition that there were other strategies for managing insurable risks and the following four came to the fore (Doherty 2000).

- i. Risk can be transferred to counter-party by insurance policy purchase or financial hedge. Lam (2003, p. 95) further defined risk transfer in the following manner:
  - risk transfer is the act of moving risk from one entity to another;
  - most often the movement is of some of a company's risk to an external party;
  - the shifting of a given risk is to a different part of the same company, and
  - the creation of a new subsidiary within that company for the specific purpose of managing the risk.
- ii. Risk can be retained either by not insuring (passively) or by self-insuring (actively) e.g., loss settlements. Shimpi et al. (2001, p. 16) qualify risk neglected as risk retained. The authors note that risk transfer and risk retention are sometimes referred to as risk financing.
- iii. Risk can be reduced by investing in preventative measures or tools, equipment or facilities.
- iv. Risk can be avoided either by not undertaking risk activities or by substituting them with less risky processes.

Doherty (2000) is relevant because the risk concepts of “retention”, “reduction”, “avoidance” and “transfer” were then and are currently used and Doherty's

approach is appropriate to the research problem as it presents an historical perspective on the strategies of enterprise risk management.

### 2.6.2 Fundamental Risk Strategies

Doherty (2000) is context-specific and is from an insurance industry perspective. Borge (2001) below adopts a basic approach or what Borge (2001) calls a list of “fundamental strategies” for managing risks (2001, p. 65).

Borge (2001) holds the view that when one is faced with a risky situation one will adopt one or more of the following ten strategies.

- A. Identifying the risks you face: You need to manage a risk you know because identifying risks is easier if you have some idea of what you are looking for. Knowing something about common categories of risk can give you an important advantage (Borge 2001, p. 65) in these strategies e.g., for IT risk management repetitive risks like virus attacks can be documented and solution catalogued for subsequent and quicker corrective actions.
- B. Quantifying the risks you face: In trying to quantify risks, one is forced to think harder and more concretely about one’s risk exposure. Subsequent to quantifying one’s risks, one can take rationally calculated actions that are more closely tailored to one’s particular situation and are therefore more effective in moving closer to one’s desired risk profile (Borge 2001, p. 68).
- C. Preventing risks: The obvious risk management strategy is the prevention or avoidance of unwanted risks. The better you are at identifying and quantifying risks, the better you will be at preventing or avoiding unwanted risks (Borge 2001, p. 68). For example, for IT risk management one needs to ensure to provide backup data for mission-critical IT business systems.
- D. Creating risks: You can try to prevent or avoid unwanted risks but there is nothing to prevent you from creating desirable risks. Opportunities usually come with risks attached and desirable risks are those embedded in attractive opportunities, where the potential gain outweighs the risks (Borge 2001, p. 69). The goal of risk management is to achieve the best possible balance of

opportunity and risk and is not always to eliminate risk. Sometimes achieving this balance means exposing one to new risks in order to take advantage of attractive opportunities (Borge 2001, p. 69). e.g., with IT risk management costs and non-stop business operations necessitate that some IT project rollouts can be tested only in a live or production environment and risk is unavoidably embedded with such a project.

- E. Buying and selling risks: In the event you cannot prevent or avoid unwanted risk, you may be able to sell it e.g., selling a flood-prone house to someone who is not as worried about floods as one is, and ridding oneself of the entire risk. In cases where a desired risk cannot be created, the risk might be bought. For example, if you are thrilled by the prospect of climbing Mount Everest, you can buy a place on the expedition, thereby buying a risk of death in order to gain a chance of glory (Borge 2001, p. 69).
- F. Diversifying risks: Diversification is a powerful way to manage risks. This means that you do not risk everything on one endeavour. In many cases, the thrust of diversification can reduce risk substantially without reducing the expected gain. In real life, diversification is usually not free and at some point, further diversification would not be worth the extra cost (Borge 2001, p. 70).
- G. Concentrating risks: The assumption here is that you have some positive influence over the outcomes. This strategy risks everything in one endeavour.
- H. Hedging risks: This is another way of dealing with unwanted risks. You acquire new risk that offsets precisely the unwanted risk, leaving you with no risk. Since each outcome of the hedge precisely offsets each outcome of the unwanted risk, the net outcome is always zero. This is called a perfect hedge and is just as effective as selling the risk.
- I. Leveraging risks: Although the "advantage" or "leverage" may be used in other areas of risk management strategies, it is in finance that the "advantage" displays its awesome power and danger. With the "advantage" of risk, you magnify all of its potential outcomes, good and bad.

J. Insuring risks: You are insuring a risk when you pay a premium to an insurer who will pay you money if, and only if, a loss event occurs (Borge 2001, p. 80).

### 2.6.3 Generic Risk Strategies

Andersen (2006, p. 34) argues that risk management can be seen as a continuous management process where significant exposures are systematically identified, evaluated, and managed. This is a five-step progression: risk identification; risk evaluation; risk control; risk financing; risk monitoring; and risk reporting and the section below will consider the strategies under the control step at a generic strategy level. .

Under the risk-control process step, Andersen (2006, p. 37) states that conceptually, five strategies are available to control an exposure, similar to the strategies listed by Doherty (2000, p. 95):

- Avoidance - focuses on eliminating the risk.
- Prevention - focuses on reducing the probability of occurrence.
- Reduction - tries to reduce the severity associated with events.
- Segregation - focuses on the division of exposed entities to achieve risk diversification and reduce the aggregate effect from events.
- Transfer - relates to the transfer of the ultimate liability (not just the financial burden) to another organisation.

Andersen (2006, p. 38) points out that the five generic risk control strategies are mostly used in combination, the distinct benefits of this approach being that it ensures a comprehensive and systematic review of the overall exposure and the spectrum of possible solutions.

Anderson (2006) simply lists the strategies without examples. It bears relevance to this study and its list of strategies is approved by Borge (2001). Borge's work (2001) is appropriate to the research problem in terms of possible enterprise risk management strategies but may not be useful in practice.

This section has examined the strategies from the risk management to the enterprise risk management era. The available material is thinly spread, focusing more on the strategy of risk and less on an effective risk management strategy. This underlines the reason why the author has undertaken a research study in this area. For an enterprise risk management strategy to be effective, there need to be criteria against which effectiveness is measured. The next section will examine such criteria.

## **2.7 Criteria for an effective Enterprise Risk Management Strategy**

The previous section discussed the different risk management strategies. Best practice and the criteria for an effective enterprise risk management strategy will now be examined.

A comprehensive, inclusive approach is taken to study the criteria for an effective enterprise risk management strategy. Hoffman (2002, p. 27) concurs that such criteria and the best practice for an effective risk management are elusive. He acknowledges that it would be Hoffman (2002) considers as presumptuous and discouraging, an approach that assumes that the ultimate best practices on risk management has been found. The study will henceforth use both the Shimell (2002, p. 136) risk maturity framework and the research study undertaken by the South Africa Public Service Commission (2003) as the theoretical framework for the topic on the criteria for an effective risk management strategy.

### **2.7.1 Shimell Risk Maturity Framework**

An effective risk management structure allows an organisation to understand the risks in any initiative and to take informed decisions on whether and how the risks should be managed. Shimell (2002) contends that risk management is about taking risks knowingly and not unwittingly.

According to Shimell, there are three stages of risk maturity and five characteristics of organisations intertwined with these stages as evidenced by the risk maturity framework in Fig 2.1.



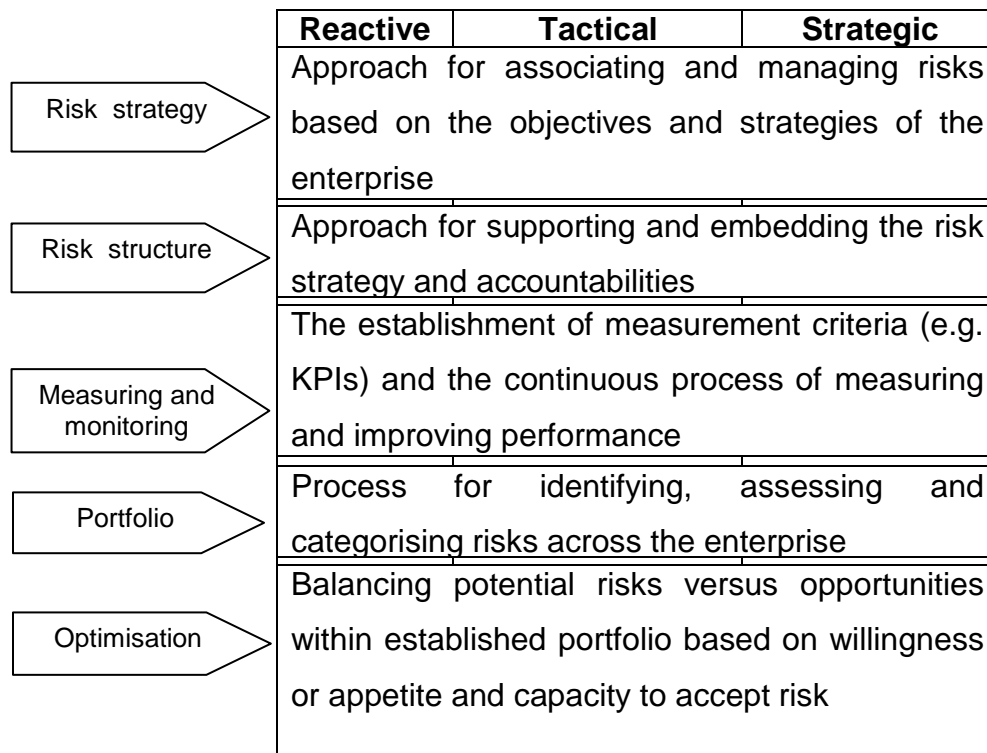


Figure 2.1: Risk Maturity Framework - Adapted from Shimell, P. 2002, *The Universe of Risk*, Prentice Hall, London. p. 136.

With the proviso that risk management can be implemented from different organisational levels, Shimell (2002, p. 136) submits, depending on the maturity level, that there should be an evaluation of the following organisational characteristics: risk strategy, risk structure, risk measuring and monitoring, risk portfolio, and risk optimisation.

### 2.7.2 Risk Strategy

An alignment is necessary between organisational objectives, strategy and risk management. The organisation must understand its objectives and strategies and link those to the strategy around risk. A research study was undertaken by South Africa's Public Service Commission (2003) on the best practice (public service) in risk management in four countries i.e. Australia, the United States, the United

Kingdom, and Canada. The study emphasises that (a) the clear definition of organisational objectives is essential; (b) the objectives and goals of the business unit or department have to be formulated to support the mission and vision of the business unit; and (c) staff in the organisation need to know what is expected of them. This ensures that all risk management activities have to be geared to the realisation of the broader outcomes of the business unit or department.

Andersen (2006) explains that the holistic aspect of enterprise risk management means the framework needs to target all the processes within the organisation where risks can be created. Enterprise risk management thus becomes an organisation-wide approach, related to all activities at strategic as well as tactical levels, not limited to so-called “strategic risks”, but actively seeking integration with the organisational direction.

### 2.7.3 Risk Structure

Once the risk strategy has developed, it must be executed through the risk structure – embedding risk in the organisation’s operation and culture. Barton et al. (2002, p. 28) support this and suggest that a risk management structure is developed in the form of a risk committee or a risk management group to monitor the effort.

However, a different perspective is provided by Lam (2003, p. 68), where he states that a key factor in the cultural issues is whether management “walks the walk” as well as “talks the talk”. The decisions and actions of senior management will do more to influence behaviour than any written policy and that is a reliance on a management team that acts according to the risk culture they need to inculcate.

With regard to top management, the South Africa Public Service Commission (2003) contends that top management should set the tone for risk management. Top management’s strategic direction and commitment translate to the expectation that management needs to lead the process and to ensure that

everybody within the organisation understands the organisational benefits arising from risk management.

In addition, the risk management framework features as part of the risk structure as reflected in different literature. Fishkin (2006, p. 36) refers to a risk framework, emphasising that with a topic as wide as risk management, a starting point is needed in the form of a framework or a common language for describing and discussing risk. Smith and McKeen (2009, p.526) support this integrative approach because IT risk management gains because one organisation-wide risk language will benefit the management of IT risk as well. Shimpi et al. (2001, p. ix) argue that a risk management framework ensures consistency and efficiency among managers. The corporation will embrace a common view of risk and the framework will enable top management to dictate the corporate risk appetite and translate this into instructions for line managers. Lam (2003) cautions, though, that it is more important that the right people are in place and motivated by the right culture and incentives.

Finally, the risk structure needs to drive risk awareness through the organisation. The company needs to drill risk management into lower levels of the organisation e.g., linking risk management with incentives or using intranet or ongoing face-to-face contact between operating management and risk management leadership (Barton et al. 2002, p. 23).

#### 2.7.4 Measuring and Monitoring

This section will cover risk criteria, risk register, continuous improvement, and risk review.

Risk criteria: According to Shimell (2002), the organisation should initially determine their risk maturity level. With the risk structure in place (Barton et al. 2002), a need arises to establish the criteria to measure risk and to improve performance of the organisation. As part of the risk identification process, Barton et al. (2002, p. 12) point out that, in the context of today's globalised and a rapidly changing businesses, risk is not always apparent. Decision-makers at all levels need to be aware of the risks facing the organisation and in certain instances, the

risk identification process can include risk ranking in terms of significance and influence. The recommendation is that the identification of risks needs to be done at the strategic planning sessions that the organisation undertakes each year (South Africa Public Service Commission 2003). Nonetheless, regarding IT risk management Parent and Reich (2009, p.138) caution stating that the amount of time and Board attention spent on IT governance should correlate with the IT intensity of the organisation. For example, low investment in IT should necessarily mean an organisation spends less time and resources on IT governance compared to an information-intensive organisation like a bank.

Risk register: The South Africa Public Service Commission (2003) found that the risk register or risk information sheet is probably the most important tool required to identify, analyse, and document potential risks. It serves as a current database on risk status. The risk register provides information about the effectiveness of certain risk management actions.

Continuous improvement: From a monitoring perspective, the South Africa Public Service Commission (2003) identified continuous improvement to the ever-changing risk management field as pivotal. This improvement requires the organisations to pay closer attention to developments both in internal and external environments. This was by far the most frequently reported best practice among the countries reviewed. The result is a compilation of a risk profile of the organisation in relation to other organisations. From an IT risk management perspective, Abram (2009, p.5) concurs stating that IT risk management should be categorised as a programme, which continuously reviews the full range of risk responses and can include the management of additional risks for higher returns as a result of risk-aware decision making.

Risk review: The active review of risks informs the corrective management actions. The risks that are identified during the strategic planning process do not remain the same over time. As variables in the internal and external environments change, so does the status of risks to which an organisation is exposed. Therefore, risks are actively monitored, and are reviewed to ensure that damage to the organisation is minimised. In principle, the risks whose expected values of

loss exceed certain thresholds are graduated to higher classification levels in order for senior management to address the risks (South Africa Public Service Commission 2003). Shimell (2002) links this to strategy and emphasises that the risk management strategy should capture all significant risks, and should identify, analyse, prioritise and manage those risks.

#### 2.7.5 Risk Portfolio

The above three steps help management to develop a portfolio of risks. This includes those that have been identified, assessed and categorised across the organisation.

There is nonetheless a further consideration: the risk integration. A study conducted by Barton et al. (2002) identified risk integration as a major element of enterprise-wide risk management system. The study proposes that one builds a portfolio of risks facing the firm and takes an enterprise-wide management of those risks with a review of the following:

- a. inefficient allocation of capital;
- b. inconsistencies in the level of risks assumed;
- c. potential savings, and
- d. pockets of risk that are either over- or under-managed.

The risk integration perspective is further strengthened by the South Africa Public Service Commission (2003) which found that the integration of risk management could not be undertaken in isolation. It needs to be integrated with other management processes similar but not limited to, strategic planning processes, performance management systems, human resource management systems, reporting systems and other internal control activities. Smith and McKeen (2009, p.526) support this integrative approach because will benefit IT risk management since the roles and responsibilities will be clear.

#### 2.7.6 Risk Optimisation

Through optimisation, the risk portfolio is taken through a process of balancing risk and opportunities based on the willingness and capacity to accept risk (Shimell 2002, p. 136).

#### 2.7.7 Risk Management Best Practice

In addition to the five enterprise risk management criteria mentioned above, the following four risk management best practices from the South Africa Public Service Commission (2003) are examined.

- I. An effective communication system facilitates the whole risk management system. This ensures that employees understand the purpose and the importance of their activities in the whole risk management system, in contributing to the overall objectives of the organisation (South Africa Public Service Commission 2003).
- II. Risk management policies need to be developed. These define the organisation's commitment and approach to risk management, set objectives, and broad strategic principles that will be adopted to pursue the objectives of the organisation as a whole. Contingency planning and budgeting are important. Funds, covering upfront and contingent costs, must be explicitly allocated to risk-related expenditure within the defined risk management framework. The funds must be related to programmes undertaken and must cover estimated risk exposures arising from clearly defined activities.

Internal audit committees and units are essential. The internal audit units examine the reasons for changes in risk estimates and actual expenditure. The internal audit unit and the audit committee play a vital role in ensuring that the systems in place are effective in preventing risks from materialising, as well as providing independent opinions about how well the organisation has managed the risks and made use of best practice.

- III. Stakeholder identification and participation are both critical. The risk management activities of the department will benefit and affect some

stakeholders and it is important to identify these activities. With stakeholder cooperation and participation, effective results will likely be achieved to realise the objectives of the organisation. Stakeholder participation requires an effective communication system.

- IV. Each risk must have a risk owner. All the risks identified and recorded in the risk register should be assigned to specific risk owners. Owners will be responsible for implementing the risk action plans. This ensures that all the risks receive some degree of attention. The expectation is that the risk owners will interact with those (internal and external) who are responsible for causing risks. Particularly for IT, Drew (2007, p.27) recommends that IT risk management expertise is established within the organisation's risk management structure. Drew's (2007) submission is that there is a requirement for IT technical expertise to understand the IT risks and they will need to establish a database of IT operational risks based on the technology and architecture of the IT operation.

The following is noted regarding the two major studies discussed above (Shimell 2002; South Africa Public Service Commission 2003). With the first study, Shimell (2002) cites his practical experience as a reason for his authority to propose the risk maturity framework. Shimell's research framework is finance and his research orientation is scientific and interpretative. His work is a pertinent risk framework for identifying the organisation's risk maturity level, though it has been superseded by other literature in other areas. Shimell (2002) uses a primary source that is based upon the research conducted by Shimell with the participants being the risk and internal audit functions, directors from banking, and investment management communities.

On the other hand, the research study by the South Africa Public Service Commission (2003) was conducted with the participants chosen in the public service of four countries (Australia, the United States, the United Kingdom, and Canada). The research problem in South Africa Public Service Commission (2003) is clearly formulated: a need for guidelines on the establishment of a risk management framework for the public service. The author's research orientation

is scientific and the participants were chosen based on whether they had implemented risk management frameworks and risk guidelines for their public sector agencies. The source of information is secondary from published documents. The methodology used in the study involved a review of the literature on best practices in risk management as well as a document analysis approach using the documents specific to risk management frameworks. The study acknowledges the shortcoming that best practice differs between organisations, though there is a general agreement on what constitutes a risk management framework. The study lists as new knowledge the requirement for other management systems e.g. systems to support risk management.

In summary, there is a great deal of research study conducted on the criteria for a risk management strategy, though there is minimal research on the criteria for an effective risk management strategy or on best practice for an effective risk management strategy. Nonetheless, the available research study did provide reliable material for the research question on the criteria for an effective risk management strategy. The implementation of a comparable enterprise risk management will be examined in the next section to assess the feasibility of implementing an enterprise risk management strategy.

## **2.8 An Enterprise Risk Management Implementation**

The previous section examined the criteria for an effective risk management strategy and this section will now examine an enterprise risk management implementation for UnitedHealth Group Incorporated.

Stroh (2005) contends that enterprise risk management works at UnitedHealth Group and is evolving. Stroh (2005) lists the following eight success factors for UnitedHealth Group's successful enterprise risk management implementation:

- a) Risk management is a corporate-driven process and it is owned and executed by the business segments.
- b) UnitedHealth Group turned their sights to enterprise portfolio views and aggregations, looking at horizontal risk themes in addition to vertical risk themes.



- c) UnitedHealth Group has monitoring committees that are extremely active in managing risk and conducting future risk sensing.
- d) Each business segment establishes a “risk expert network” made up of diverse individuals who are responsible for articulating, challenging, and remediating risks that the business currently has or envisions.
- e) Strong executive backing or sponsorship is critical to the success of most significant projects, initiatives at UnitedHealth Group; the buy-in for the projects is received at the appropriate levels of leadership.
- f) In order to ensure accountability, each quarter the vice-president of risk management and the general auditor present the findings from the monitoring of enterprise risks to executive management and the Audit Committee. Accountability, however, goes back to the businesses’ executive sponsors and leaders to manage and report on their risks.
- g) UnitedHealth has adopted a practical approach that fits the culture. The company understands the concepts of risk management, and learns from other trendsetters and in addition, UnitedHealth customises its approach, tools and processes as to what will work in the UnitedHealth culture.
- h) There is a team promoting UnitedHealth’s risk management discipline, continuously executing proactive self-evaluations and mitigations of risk. In addition, Internal Audit has been positioned as an important independent validation mechanism for the effectiveness of controls and the accuracy of management’s assessment of controls.

The above list strengthens Lam’s (2003, p. 51) argument that a successful enterprise risk management programme is possible and Lam (2003) shows that enterprise risk management works for UnitedHealth. Lam’s work is current and is useful in terms of the feasibility of implementing enterprise risk management, and an existing UnitedHealth ERM implementation report is submitted as evidence. Lam (2003) appeals more to ERM practitioners and it is part of a raging debate on whether enterprise risk management adds value. Lam’s work makes apparent the multiple benefits for UnitedHealth. These include strong governance and controls, remedial actions concerning business risks, awareness, and alignment of leaders

to enterprise risk management, a no-surprise management environment and the provision of a value-added consultancy to the internal business.

## **2.9 Summary**

The published literature does answer most of the critical questions raised in this research though there is limited availability of literature on an effective risk management strategy and on an effective IT risk management strategy. There is no need to re-formulate the following research question: (a) Research Question 1 “What is a risk management strategy?”; (b) Research Question 5 “What is the impact of industry drivers on risk management?”; and (c) Research Question 7 “How does arivia.kom’s risk management strategy compare with that of similar firms?”. Research Question 6 “What are the criteria for an effective risk management strategy?” could have been re-formulated differently as follows “What are the criteria for a governance framework for an effective IT risk management ?” and this should yield widened access to literature.

Nonetheless, there are literature pieces worth noting. One literature study to be considered on how it is argued is the study by Doherty (2000) on the drivers of the risk management industry. Doherty provides substantive reasons and sufficient evidence to back up his arguments.

Another literature study is from a well-know author of risk management books, Lam. His methodology is experimental. Arguments are further supported by current and practical examples. Lam’s (2003) contribution is considerable in the study of the criteria for a successful ERM programme.

This chapter has conducted an overview of enterprise risk management, analysed the effect of the external environment on risk management, conducted a study on the criteria for an effective enterprise risk management strategy and finally, analysed an enterprise risk management implementation. The next chapter examines the steps followed in the execution of the survey and provides a justification for the research methods used.

## CHAPTER THREE

### RESEARCH METHODOLOGY

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#### **3.1 Introduction**

The previous chapter covered strategic issues in a broader framework of the literature review. The research methodology that was employed in the resultant survey will be presented in this chapter. Chapter three will cover the objectives of the study, the description of the research design, the data collection process, the validity and reliability of the instrument and lastly, the data analysis which will be conducted regarding Research Question 2, 3 and 4.

#### **3.2 Objectives of the Study**

The objective of the study is to establish:

- a) to establish the extent of employee perception towards risk management, and also to establish how the employees managed risk in their immediate environment; and
- b) to establish the effectiveness of the existing risk management strategy at arivia.kom.

#### **3.3 Description and Purpose**

The purpose of this study is to determine the effectiveness of risk management at a South African IT organisation, and the study will conduct quantitative research in the form of a survey.

Bless and Higson-Smith (1995, p.46) define a survey as the collection of information on a wide range of cases, each case being investigated only on the particular aspect under consideration. The particular aspect in this research is risk management and the survey approach was hence deemed appropriate for the study. Another reason for using the survey approach was the large size of the sample and the time constraints of less than a week imposed by the organisation. The support for the approach used in this scenario is drawn from Nardi (2006, p. 68), who argues that questionnaires are more efficient tools for surveying large samples of participants in short periods of time. The primary approach was one of the likely approaches the study considered. The reason was that the primary

approach enables the collection of spontaneous independent reactions, which could be used to inform the study's research questions. Lastly, this study made use of the quantitative approach for the various reasons. The theory explains the factors affecting survey response and the techniques used to prevent the challenges that arise in using the survey approach. Leedy and Ormond (2005) and Stacey (2005) subsequently recommend the quantitative approach for this scenario, where the variables are also known.

### **3.4 Research Approach**

The research design was conducted in four major phases of fieldwork. The first phase in the research process began with an in-depth review of academic literature. The second phase in the research process was the design and construction of the questionnaire and this included one pilot study among four employees to help test the measuring instrument and is discussed in the following subsection.

#### **3.4.1 The Pilot Test**

A pilot study was important to address the validity and reliability of the survey. Moreover, Leedy and Ormond (2005) recommend the use of a pilot study to test the reliability and the validity of a measuring instrument. In addition, the pilot study was important because this questionnaire, although based on similar criteria from previous research, was not administered before.

A direct relationship exists between the questions in the survey and the research questions, which were derived from the literature review. The pilot was conducted with four employees, including two for whom English was a second language. The employees were required to complete the questionnaire, comment on any ambiguities, uncertainties, or areas of confusion, and to assess whether the questions flowed logically, and whether the total time allowed for was reasonable. The participants used in the pilot study did not form part of the sample group.

On return of the pilot responses, the researcher checked for confusion by looking items consistently answered incorrectly, marks left on the pages or other annotations; skipped and for multiple responses that were selected when only one

was expected. All feedback was recorded and the questionnaire was revised and amended based on the findings of the pilot study.

The third phase involved the administration of the questionnaire to a convenience sample of employees. Electronic mail was used to send out the survey. The majority of the data collected was in the form of ranked data. The data collected from the survey was analysed using the Statistical Package for the Social Sciences (SPSS) software. This sample of employees was pivotal, as they were likely to be conversant with the concept of risk management and this would make the questionnaire easier to understand.

The final sample was 204 employees and they were chosen from an authorised list of employees by the arivia.com department of Communication. The participants were selected from corporate functions and the survey needed to be done quickly with a deadline of a week period. Emory (1980, p.177) defines convenience sampling as the non-probability sampling which is unrestricted and is used to assess ideas or even to gain ideas about a subject of interest. The study has employed convenience sampling using the non-probability technique.

The fourth phase of the research was exploratory in nature and involved a quantitative study based on an analysis of responses obtained by indirect observation from a structured questionnaire. The objective of the study was to examine the relationship between the variables of effectiveness and risk management. Moreover, the quantitative research approach is supported by Leedy and Ormond (2005), when it is used to answer questions about relationships between measured variables with the purpose of explaining phenomena.

The next section examines particularly the second phase in the research process, on the design and construction of the questionnaire.

### **3.5 The Questionnaire Design**

This step is informed by the stage during which the literature was reviewed; it was also aligned to the research questions. The design of the questionnaire was based on a variety of inputs from the literature review. The survey was intended to

obtain the participant's attitude or opinions about risk and the current arivia.kom IT risk management strategy. Saunders, Lewis and Thornhill (2000, p. 295) point out that scale questions are often used to collect attitude data, with the most common approach being the Likert scale. The Likert scale questions indicate the degree to which the participants agree or disagree with a statement or a series of statements. The study used a five-point Likert scale (Appendix 1).

The questionnaire was made available in English and comprised 33 questions (Appendix 1).

The questionnaire consisted of two sections described below.

- Section 1: This section was used to obtain the participant's demographic information. This information was used for the demographic analysis of the whole data.
- Section 2: This section was used to measure (a) the extent of employee perception towards risk management; (b) the extent to which employees can manage risk in their immediate environment; and (c) the effectiveness of the existing risk management strategy at arivia.kom.

The questions in the questionnaire were designed, as far as possible, to answer Research Question 2, 3 and 4 outlined in chapter 1 and there was one questionnaire per participant.

The ranking of choices was the same throughout the questionnaire. "1" was "strongly agree" for all sets of items. The consistency of the research was achieved with a standard questionnaire.

The questionnaire had a due date and the researcher thanked the participants for their time at the end of the questionnaire.

### **3.6 Limitations and Practical Considerations**

For practical considerations, the case study organisation was reluctant to conduct an organisation-wide survey because of "survey fatigue" which might have manifested itself given recent internal surveys and they allowed the survey to be

conducted among only the employees from corporate functions. This subsequently led to a convenience sample of 204 participants, out of an organisation of 900 employees. The survey was conducted with a deadline of a week' time but the collection of the responses took longer than a week. Dillon, Midden and Firtle (1993, p.229) point out a convenience sampling constraint in that a non-probability sampling design can not statistically project estimates for the entire population.

The questionnaire approach is supported by Nardi (2006, p. 68), who contends that questionnaires are more efficient tools for surveying large samples of participants in short periods. Generalising to larger populations is one of the strengths of survey research. Nardi (2006), however, cautions that the response rates tend to be lowest for mailed questionnaires and could seriously affect how accurately study can generalise the results to a larger population. Follow-up email reminders were sent used to increase the response rate, which was 25 percent (53 out of 204 participants).

Filtering questions was used as a technique to provide a more accurate portrait of those familiar with the risk management concept, and contingency questions were used to save participants time when responding to questions, especially those that were not applicable to them.

In survey research using a questionnaire as a measuring instrument, some participants' opinions or feelings cannot be characterised dichotomously into a "yes" or "no" response (Nardi 2006, p. 74). The five-point Likert scale best suited for intensity measurement and interval data collection was subsequently used to obviate this shortcoming.

The uniform and fixed-response nature of the questionnaire can limit the extent to which a researcher can adjust for cultural differences in participants, clarify misunderstood items, and explain ambiguous questions (Nardi 2006, p. 68) and arivia.com's case there are cultures as well whose first language is not English, the medium of the questionnaire.

### **3.7 Research Population**

Given the research objective to measure the perception of risk management at arivia.kom, the single case-study approach necessitated that an organisation, arivia.kom, be used for the research study. The target research population consisted of all arivia.kom permanent employees in South Africa and all needed to have access to email. There were 900 employees within arivia.kom. The unit of analysis was employee opinion or perception around risk management and the element was the employee.

### **3.8 Sampling Methodology**

The target sample size was 450 or 50 percent of the employee population. The process used was non-probability sampling, using convenience sampling, with the employees conveniently selected from the corporate functions, and hence assumed to be a representative sample of people who are aware of the concept of risk management. The final sample was chosen by the Communications Department from the authorised list of the organisation's employees by selecting 204 employees (23 percent). The nature of the research is exploratory and the researcher nonetheless felt that this reduced sample would suffice in providing an initial investigation into the employee perception and opinion of risk management at arivia.kom, considering the survey fatigue constraint indicated by arivia.kom management.

Only 53 responses (25 percent of 204) were received. For this type of survey of business people, this is a satisfactory response rate, while considering anything below 15 percent becomes questionable (Malhotra 1993).

### **3.9 Data Collection Strategies**

The questionnaire was designed for a self-administered survey, to be emailed. This was the preferred design because the variables to be measured had numerous values or response categories. The survey conditions were not conducive to read these out to participants over the telephone or in a face-to-face interview (Nardi 2006, p.67).



This data collection method of indirect observation had been used before in a survey of Canada's Risk and Insurance Management society members (Doherty 2000), to determine their reasons for adopting enterprise risk management. Moreover, in the study survey, the participants were geographically spread across the country making access to them difficult, which could have prolonged the turnaround time of the populated questionnaires.

The data collection process for the quantitative approach involved receiving the participants' responses electronically via email, with the option of undertaking a physical delivery of the questionnaire to the researcher. The collection process subsequently lasted more than a week.

The available survey-time slot of one week was limited. The sample was geographically spread and the questionnaire was the preferred tool for quick, widespread deployment, especially with the large number of participants.

The reason for the survey was explained in an enclosed letter, with the option to stop participation clearly indicated. No incentives were offered for participation; the duration of the survey was stated and the option to respond anonymously was provided to participants.

### 3.9.1 Research Instrument Format

Table 3.1 below shows the allocation of questions against the four categories mentioned above.

Category	Questions
Demographic	1-7
Perceptual	8.1-8.24
Contingency	8.25
Perceptual	8.26-8.33

Table 3.1: Question Allocation by Questionnaire Category

The categories in the measuring instrument (questionnaire) are shown in Table 3.1 above.

### 3.9.2 Demographic Variables

Table 3.2 below indicates the seven demographic variables captured in the questionnaire for the purpose of data analysis.

Variable 1	Age
Variable 2	Gender
Variable 3	How many years of formal education do you have beyond secondary/high school?
Variable 4	Highest academic or professional qualification
Variable 5	Current job grade
Variable 6	How many years working for arivia.kom?
Variable 7	Main organisational function

Table 3.2: Demographic Variables and Values

### 3.9.3 Administration of the Questionnaire

The study's research objectives are to establish among employees, the extent of risk management perception among employees, the management of the risk by employees in their immediate environment and establish the effectiveness of the existing risk management strategy. The questionnaire was consequently designed to obtain the information to inform these objectives from arivia.kom's employees. In addition, the questionnaire used was not based on an existing instrument, but was designed and developed based on concepts and factors that were identified based on the literature review.

Regarding the research survey, approval was obtained from the CEO of arivia.kom. The Communications Department randomly selected 204 employees to assist in the survey. To ensure participants were candid, the enclosed letter pointed out that the results would be fed into the organisation to help to benefit the organisation. The Communications Department electronically distributed the questionnaire to the participants.

In addition, within the enclosed letter, mention was made of the fact that the survey was not a "right or wrong answer" exercise and lastly there was a "thank you" note for participation. This was necessary to create a non-labelling atmosphere and to operationalise the ethical principle of "avoiding harm to participants". The questions were randomised in the questionnaire to minimise the impact of order bias. Though the survey was conducted over a week, all the responses were collected beyond the one week deadline, between the 18<sup>th</sup> of May 2007 and the 30<sup>th</sup> of June 2007.

Regarding data capture and analysis, a spreadsheet was used to enter the participants' responses. Each row represents a unit of analysis (employee or participant). Each column was a question and each cell was the respective response. The populated spreadsheet information was subsequently used as input to the SPSS database. One participant responded but did not populate the form. This participant's response was treated as "undecided" and the effect was insignificant out of 53 participants.

According to Nardi (2006, p. 68), response rates tended to be lowest for mailed questionnaires and can affect how accurately researchers can generalise the

results to a larger population. A reminder email was subsequently sent to the participants to increase the response rate.

### **3.10 Reliability and Validation**

Nardi (2006, p. 59) argues that a key element in the achievement of reliable and valid information in survey research is the construction of well-written and manageable questionnaires.

One of the major sources of error in studies is poor quality of the measurements, particularly with a questionnaire. Nardi (2006, p.82) points out that measuring behaviour with a questionnaire is actually a measurement of what people say they do. As a measuring instrument, the questionnaire's weakness is that it will indicate only what the people remember and what they are willing to tell you about their behaviour. Selective memory and perception and a willingness to be candid all play a role in the validity and reliability of the data collected. Consequently, the quality of a research study has to be measured, and Yin (1994) popularised the use of a four-test approach to measure this quality, through construct validity, internal validity, external validity and reliability.

#### **3.10.1 Construct Validity**

According to Perry (2001, p. 318), construct validity refers to the formation of suitable operational measures for the concept being tested. To help improve construct validity, Perry (2001) suggests the use of several sources of information about a phenomenon in order to obtain a clear picture of it through convergence or triangulation. Consequently, the triangulation process of this study involved sources from the academic literature on risk management, enterprise risk management and secondary sources from within the case study organisation.

The design elements of the research were considered by using the pilot study and the participant's choice to terminate the survey, and there was minimal space for misinterpretation. Nonetheless, some questions in the questionnaire could be subjective and open to misinterpretation. Consequently, these measurements may lack some validity (Whittaker 2005). Since the survey was self-administered, great care was taken to make sure that questions were phrased as clearly as possible.

In addition, the questionnaire was revised several times to enhance construct validity. This suggests that the construct validity applies to the population as well.

#### 3.10.2 External Validity

External validity refers to the degree to which the research can be generalised into other areas (Leedy & Ormrod 2005). The research study used non-probability sampling. The use of a convenience sample lowers the external validity of a study and for this reason, the sample holds value for the employees in the corporate functions and less general value for the entire total population.

#### 3.10.3 Internal Validity

Leedy and Ormrod (2005, p. 97) state that internal validity refers to the extent to which the design of the study and the data it yields allow the researcher to draw accurate conclusions about cause-and-effect and other relationships within the data. The study consequently needs to indicate measures taken to eliminate other possible explanations for the survey results.

One pilot test was used to validate the construct of the measuring instrument to ensure that the sample participants understood the questionnaire statements. This suggests that the internal validity can be assumed to apply to the population of only the employees in the corporate functions.

#### 3.10.4 Reliability

Leedy and Ormond (2005, p. 93) define reliability as the extent to which the measuring instrument provides consistent results when the characteristics being measured have not changed. The consistency of the research was achieved with a standard questionnaire, which was tested by means of a pilot study to identify and eliminate any inconsistencies in definitions, terminology, or understanding of the questions. The participants were also asked to terminate their participation if the need arose, thus minimising participant fatigue, or lack of clarity that would have resulted in poor reliability. The reliability of the survey results needed to be tested, and one indicator to test the results was inadequate. The Likert scale was used to spread the responses (indicators) needed for the survey over a five-point scale and the same scale was used in the Treasury Board of Canada Secretariat survey of best practices in risk management in the private and public sectors

internationally (Treasury Board of Canada Secretariat 1999). In addition, to increase reliability, minimise error and confusion with the Likert scale, the researcher was consistent with the rankings of choices in the questionnaire e.g. 1=strongly disagree, 5=strongly disagree, throughout the questionnaire for all the sets of items.

The researcher was not physically present and this should have reduced the bias on the outcome, increasing the reliability. This was achieved by having a self-administered survey. All this would suggest that the reliability of the sample results exists.

### **3.11 Analysis of the Data**

Statistical methods Cronbach's alpha, descriptive statistics, Pearson Correlation Coefficient and regression calculations were used to analyse the data in response to the research questions of (a) employee perceptions of risk management; (b) the management of risk as it arises in employee environment; and (c) the effectiveness of the existing risk management strategy. This section examines these statistical methods.

The results obtained were accurately correlated and the data from the questionnaires were captured into SPSS for further analysis. All original responses have been kept on record.

A four-stage approach was adopted to analyse the data:

1. Cronbach's alpha was used as reliability test technique using the internal consistency method and provided an indicator on the reliability of the five-point Likert scale. This test factored in all the thirty-three questions (8.1 to 8.33) for the internal consistency reliability test.
2. Descriptive statistics were analysed to summarise the participant's responses to the entire questionnaire; such statistics included pie and bar graphs.
3. Pearson Correlation Coefficient was used as reliability test technique using the inter-rater reliability method and provided an indicator of the correlation among the items. This test factored in all the thirty-three questions (8.1 to 8.33) for the inter-rater reliability.

4. Regression calculations were analysed to summarise the participant's responses to the entire questionnaire.

All statistical analyses were done using a 95 percent confidence interval, as this is the norm for this type of research (Brandeo 2009).

### **3.12 Summary**

This chapter discussed the research methodology of the research, starting with the phase to review academic literature. It dealt further with the problems that were encountered and the extent to which they were managed, and lastly, discussed how the data was analysed statistically. The next chapter will present the survey data in the form of descriptive and inferential statistics for Research Question 2, 3 and 4.

## CHAPTER FOUR

### PRESENTATION OF RESULTS

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#### **4.1 Introduction**

In the previous chapter, the research methods were explained. This chapter presents the survey data and analysis of data obtained using the research instrument. The analysis is conducted against three Research Question 2, 3 and 4. In addition, the chapter analyses the demographic profile of the participants.

#### **4.2 Purpose of the Study**

The purpose of this study was to establish the effectiveness of a risk management strategy at a case-study organisation in South Africa.

#### **4.3 Demographic Profile of the Sample Participants**

The core sample for the survey was composed of 53 employees. Less than 55 percent of the employees were below 44 years. Males dominated the sample with a 66 percent share. More than 67 percent of the employees received more than three years of post-matriculation education and more than 63 percent of employees obtained a post-graduate diploma or certificate. The survey was fairly spread among employees of different job grades, employee service duration and organisational functions as depicted in Table 4.1.

	%
<b>Age :</b>	
< 22 years	0
22 – 32 years	15
33-43 years	38
44-54 years	22
> 54 years	21



Missing Responses	4
Total %	100%
<b>Gender :</b>	
Female	30
Male	66
Missing Responses	4
Total %	100%
<b>Formal Education post Secondary/High-School:</b>	
Less than a Year	11
1-2 years	11
3-4 years	40
5-6 years	21
More than 6 Years	9
Missing Responses	8
Total %	100%
<b>Highest Academic/Professional Qualification:</b>	
Below Matric	4
Matric	9
Post-Matric	9
Degree	9

Post-Graduate Degree or Diploma	60
Other	4
Missing Responses	4
Total %	100%
<b>Years Working at arivia.kom:</b>	
Less than a Year	6
1- 5 years	11
6-10 years	30
11-15 years	19
More than 15 Years	32
Missing Responses	2
Total %	100%
<b>Current Job Grade:</b>	
SE – Strategic Executive	4
MP – Management Professional	26
SP – Specialist	47
AO – Advance Operator	13
O – Operator	0
P – Professional	8
Missing Responses	2

Total %	100%
<b>Current Sector:</b>	
Accounting	8
Administration	2
Finance	11
Human Resources	9
Marketing	4
Operations	26
Production	4
Customer Services	21
Other	15
Total %	100%

Table 4.1: A Socio-demographic Profile of Participants

#### 4.4 Participants' Perceptions of Risk Management

##### 4.4.1 Individual Question Analysis

Table 4.2 is a summary of the responses from all the Likert-type questions and the total dataset for the survey consisted of a five-point Likert scale used with 27 questions for 53 participants. Only the highest “agree” and the highest “disagree” responses are displayed in Table 4.2 below.

Question	Highest Cumulative “agree” Responses	Ranking Order	Question	Highest Cumulative “disagree” Responses
Q8.1	83%	1	Q8.13	42%
Q8.15	79%	2	Q8.16	42%
Q8.14	64%	3	Q8.26	42%
Q8.8	62%	4	Q8.24	30%
Q8.21	62%	5	Q8.11	28%

Table 4.2: Employee Perception of Risk Management n=53 (Five highest percentages)

As shown in Table 4.2 column 2, participants expressed the highest percentage of the cumulative “agreed” response for question Q8.1 at 83 percent (55 + 28), followed by question Q8.15 at a cumulative 79 percent (39 + 40). In Table 4.2 column 4, the highest percentage from the cumulative “disagreed” responses was indicated for questions Q8.13 at 42 percent (21+ 21), question Q8.16 at a cumulative 42 percent (15 + 26), and question Q8.26 at a cumulative 42 percent (25 + 17.0).

For ease of measurement, the “strongly agree” and “somewhat agree” responses will henceforth be added to give a cumulative percentage score in the discussion below; similarly with the “disagree” responses.

**Research Question 2:** What is the extent of perception of risk management among employee?

Research question 2 is further broken down into the following questions:

**Question 8.15:** In section 8 of the questionnaire, question 8.15 of the survey required the participants to indicate their responses on the Likert scale regarding

whether the company performance and existence are dependent on risk management. Shimpi et al. (2001) note that the starting point is the recognition that risk is the lifeblood of an organisation. Table 4.3 summarises the results from the employee perceptions. Survey results from Table 4.3 (column valid percent) indicate that a substantial number of employees, cumulatively at 79 percent (39 + 40), agreed with the statement that the company's existence and performance are dependent on risk management. However, a differing view is indicated by a cumulative 10 percent (6 + 4) of sampled employees.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	5.7	5.8	5.8
Somewhat Disagree	2	3.8	3.8	9.6
Undecided	6	11.3	11.5	21.2
Somewhat Agree	20	37.7	38.5	59.6
Strongly Agree	21	39.6	40.4	100.0
Total	52	98.1	100.0	
Missing System	1	1.9		
Total	53	100.0		

Table 4.3 : Participant Response to Question 8.15 - Company existence and performance are dependent on risk management?

**Question 8.16:** In section 8 of the questionnaire, question 8.16 of the survey required the participants to indicate their responses on the Likert scale as to whether the effects of risk management are understood by all employees. What matters most is that the corporation adopts the same framework that embraces a common view of risk (Shimpi et al. 2001). Among other benefits, there will be a common appreciation among employees of the effects of risk management. Nevertheless, as Table 4.4 (column valid percent) indicates, more than a quarter of surveyed employees, cumulatively at 41 percent (15 + 26), disagreed with the statement that the effects of risk management are understood throughout the company. Yet, a lesser number of the sampled employees, at a cumulative 34 percent (25 + 9) supported the statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	8	15.1	15.1	15.1
Somewhat Disagree	14	26.4	26.4	41.5
Undecided	13	24.5	24.5	66.0
Somewhat Agree	13	24.5	24.5	90.6
Strongly Agree	5	9.4	9.4	100.0
Total	53	100.0	100.0	

Table 4.4 : Participant Response to Question 8.16 - Effects of risk management are understood throughout the company?

Figure 4.1 below illustrates the perceptions from the participants on whether the effects of risk management are understood by all employees

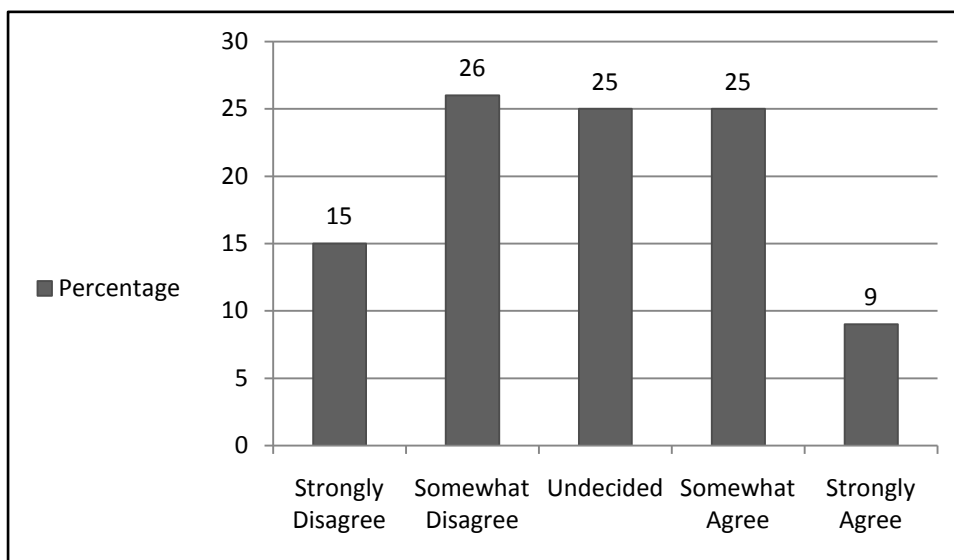


Figure 4.1: Participant Response to Question 8.16 - Effects of risk management are understood throughout the company?

**Question 8.23:** In section 8 of the questionnaire, question 8.23 of the survey required the participants to indicate their responses on the Likert scale regarding whether employees are aware of the importance of risk management and control. According to the South Africa Public Service Commission (2003), all risk management activities have to be linked or geared to the realisation of the broader outcomes of the business unit or department. This enhances the awareness by employees of the importance of risk management and control. More than a quarter of surveyed employees shared this perspective. Table 4.5 summarises the results from the employee perceptions. Results indicate that a cumulative 43.4 percent (34.0 + 9.4) of employees agreed with the statement that employees are aware of the importance of risk management and control in the company. Yet, as shown in Table 4.5 , more than a quarter disagreed with the statement at a cumulative 37 percent (11 + 26) of sampled employees.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	6	11.3	11.3	11.3
Somewhat Disagree	14	26.4	26.4	37.7
Undecided	10	18.9	18.9	56.6
Somewhat Agree	18	34.0	34.0	90.6
Strongly Agree	5	9.4	9.4	100.0
Total	53	100.0	100.0	

Table 4.5 : Participant Response to Question 8.23 - Employees are aware of the importance of risk management and control in the company?

Figure 4.2 below illustrates the perceptions of the participants on whether employees are aware of the importance of risk management and control

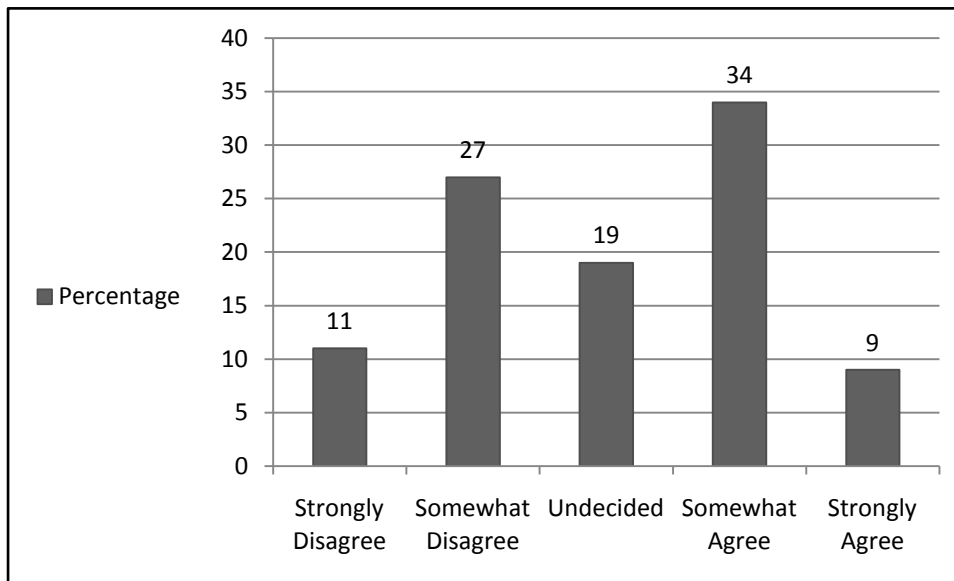


Figure 4.2: Participant Response to Question 8.23 - Employees are aware of the importance of risk management and control in the company?

**Question 8.24:** In section 8 of the questionnaire, question 8.24 of the survey required the participants to indicate their responses on the Likert scale regarding whether the organisation is able to allocate resources to support risk policy and risk practice. According to the Treasury Board of Canada (1999), risk management must be adequately resourced because implementing it requires resources. Table 4.6 summarises the results from the employee perceptions. As shown in Table 4.6 (column valid percent), more than a quarter of sampled employees, cumulatively at 31 percent (8 + 23) disagreed with the statement that the company is able to allocate appropriate resources in support of risk management policy and practice. Yet, more than quarter of surveyed employees supported the



statement at a cumulative 49 percent (34 + 15).

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	7.5	7.5	7.5
Somewhat Disagree	12	22.6	22.6	30.2
Undecided	11	20.8	20.8	50.9
Somewhat Agree	18	34.0	34.0	84.9
Strongly Agree	8	15.1	15.1	100.0
Total	53	100.0	100.0	

Table 4.6 : Participant Response to Question 8.24 - Company is able to allocate appropriate resources in support of risk management policy and practice?

**Research Question 3:** How do employees manage the risk that arises in their immediate environment?

Research question 3 is further broken down into the following questions:

**Question 8.3:** In section 8 of the questionnaire, question 8.3 of the survey required the participants to indicate their responses on the Likert scale regarding whether risk identification and reporting is done in a timely, consistent manner. Shimpi et al. (2001, p. 233) see the standardisation of risk management practices as having the potential to accelerate interest in and adoption of risk management techniques and programmes. Table 4.7 summarises the results from the employee perceptions. The survey results indicated that more than half of the surveyed employees had a different perspective. Table 4.7 (column valid percentage ) indicates that a cumulative 51 percent (23 + 28) agreed with the statement that the identification and reporting on key risks are carried out in a consistent, timely, integrated way and the scoring of risks for likelihood and impact

uses clearly-defined criteria. Nevertheless, more than a quarter of the surveyed employees at a cumulative 32 percent disagreed with the statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	9.4	9.4	9.4
Somewhat Disagree	12	22.6	22.6	32.1
Undecided	9	17.0	17.0	49.1
Somewhat Agree	12	22.6	22.6	71.7
Strongly Agree	15	28.3	28.3	100.0
Total	53	100.0	100.0	

Table 4.7 : Participant Response to Question 8.3 - Risk identification and reporting are done in a consistent and timely manner?

**Question 8.8:** In section 8 of the questionnaire, question 8.8 of the survey required the participants to indicate their responses on the Likert scale regarding whether risk management is embedded within day-to-day management and business processes. Lam (2003, p. 271) contends that every person working for the organisation should know the risk management system, the model, and the hoops that employees have to go through in everything, e.g. regular meetings. Table 4.8 summarises the results from the employee perceptions. More than half of the surveyed employees appeared to be aware of the risk management awareness programme with a cumulative 62 percent (47 + 15) of employees acknowledging the statement that risk management is part of their routine activities. However, as shown in Table 4.8 (valid percent column), less than a quarter of sampled employees, cumulatively at 21 percent (6 + 15), disagreed with this statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	5.7	5.7	5.7
Somewhat Disagree	8	15.1	15.1	20.8
Undecided	9	17.0	17.0	37.7
Somewhat Agree	25	47.2	47.2	84.9
Strongly Agree	8	15.1	15.1	100.0
Total	53	100.0	100.0	

Table 4.8: Participant Response to Question 8.8: - Risk embedded with day-to-day management and business processes?

**Question 8.11:** In section 8 of the questionnaire, question 8.11 of the survey required the participants to indicate their responses on the Likert scale regarding whether the criteria for risk appetite are understood across the organisation. A corporation will embrace a common view of risk and the resultant framework will enable top management to dictate the corporate risk appetite and translate this into instructions for line managers (Shimpi et al. 2001). From the survey findings, it appears that the criteria used by the organisation to determine risk appetite are not well understood considering that more than a quarter of surveyed employees disagreed at a cumulative 28 percent (11 + 17). However, more than a quarter of employees at a cumulative 41 percent (30 + 11) agreed with the statement that the criteria for risk appetite are known to them. Significantly, as shown in Table 4.9 (column valid percentage), more than a quarter of surveyed employees at 30 percent of the sample were undecided on whether the risk criteria are known to them.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	6	11.3	11.3	11.3
Somewhat Disagree	9	17.0	17.0	28.3
Undecided	16	30.2	30.2	58.5
Somewhat Agree	16	30.2	30.2	88.7
Strongly Agree	6	11.3	11.3	100.0
Total	53	100.0	100.0	

Table 4.9 : Participant Response to Question 8.11 - Criteria for risk appetite are understood across the organisation?

**Question 8.13:** In section 8 of the questionnaire, question 8.13 of the survey required the participants to indicate their responses on the Likert scale on whether employees know how to manage the business risk and can identify the risk-owners. South Africa's Public Service Commission (2003) points out that each risk must have a risk owner. All the risks identified and recorded in the risk register should be assigned to specific risk owners and owners will be responsible for implementing the risk action plans. This ensures that all risks receive some degree of attention. Risk owners are expected to interact with those (internal and external) who are responsible for causing risks and within an organisation, risk owners need to be known. Nonetheless, Table 4.10 (column valid percentage ) indicates that more than a quarter of the sampled employees, cumulatively at 42 percent ( 21 + 21), disagreed with the statement that all in the company know how to manage business risk, in terms of the identity of the risk-owners. Significantly there were no "strongly agree" participants among the sampled employees and only 34 percent employees agreed with a "somewhat agree" response.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	11	20.8	20.8	20.8
Somewhat disagree	11	20.8	20.8	41.5
Undecided	13	24.5	24.5	66.0
Somewhat agree	18	34.0	34.0	100.0
Total	53	100.0	100.0	

Table 4.10 : Participant Response to Question 8.13 - All in the company know how to manage business risk and can identify risk owners?

Figure 4.3 below illustrates the perceptions of the participants on whether employees know how to manage the business risk and can identify the risk-owners.

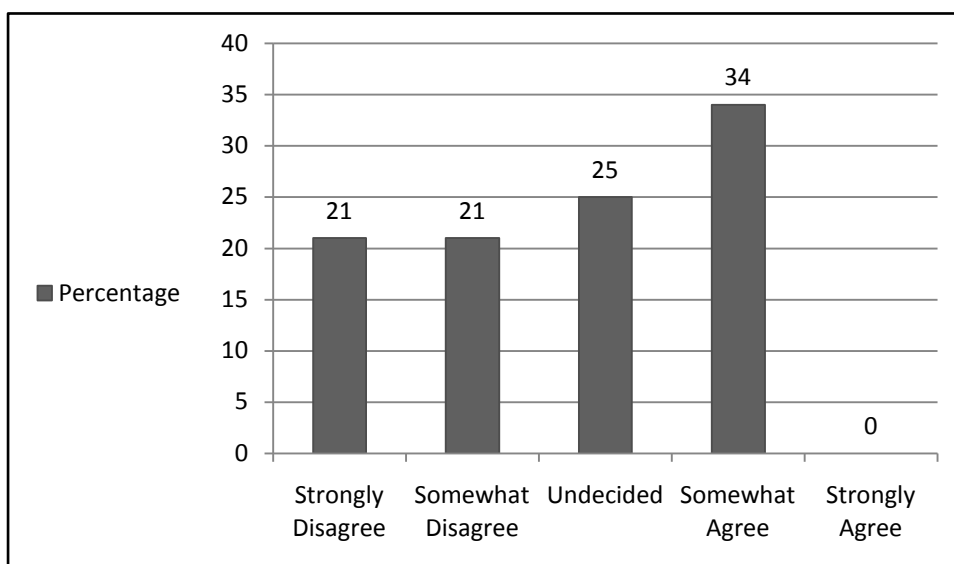


Figure 4.3: Participant Response to Question 8.13 - All in the company know how to manage business risk and can identify risk owners?

**Question 8.19:** In section 8 of the questionnaire, question 8.19 of the survey required the participants to indicate their responses on the Likert scale regarding

whether employees are empowered to handle key risks in their immediate environment. The South African Public Service Commission (2003) highly recommends the adoption of a philosophy that "every manager is a risk manager" to ensure that the personnel at all management levels apply risk management activities consistently across all levels of management within the organisation. Once this philosophy is entrenched in their minds, employees will know how to manage risks arising in their immediate work environment, in terms of identifying and assessing those risks classified as key. Table 4.11 summarises the results from the employee perceptions.

As Table 4.11 (column valid percentage ) indicates, more than half of the sampled employees, cumulatively at 56 percent (44 + 12), agreed with the statement that employees know how to manage risks arising in their immediate work environment, in terms of identifying, and assessing those risks classified as key. Nonetheless, a cumulative 31 percent (17 + 14) disagreed with the statement

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	9	17.0	17.3	17.3
Somewhat Disagree	7	13.2	13.5	30.8
Undecided	7	13.2	13.5	44.2
Somewhat Agree	23	43.4	44.2	88.5
Strongly Agree	6	11.3	11.5	100.0
Total	52	98.1	100.0	
Missing System	1	1.9		
Total	53	100.0		

Table 4.11: Participant Response to Question 8.19 – Employees know how to manage risks in immediate environment?

**Research Question 4:** What is the effectiveness of the existing risk management strategy across the organisation?

This research question is further broken down into the following questions.

**Question 8.1:** In section 8 of the questionnaire, question 8.1 of the survey required the participants to indicate their responses on the Likert scale regarding whether executive and senior management are involved in the risk management process. According to the South Africa Public Service Commission (2003), top management's strategic direction and commitment translates to the expectation that management needs to lead the process and ensure that everybody within the organisation understands how the organisation benefits from risk management. Top management sets the tone of risk management and more than three-quarters of surveyed employees do support this notion. Table 4.12 summarises the results from the employee perceptions. As shown in Table 4.12 (column valid percentage), a substantial cumulative 83 percent (55 + 28) strongly agree with the statement that executive management should be engaged in the risk management process. However, there was disagreement from less than a quarter of the sample, at 11 percent of "somewhat-disagree" employees. Significantly, there were no "strongly-disagree" responses among the sample.

	Frequency	Percent	Valid Percent	Cumulative Percent
Somewhat Disagree	6	11.3	11.3	11.3
Undecided	3	5.7	5.7	17.0
Somewhat Agree	29	54.7	54.7	71.7
Strongly Agree	15	28.3	28.3	100.0
Total	53	100.0	100.0	

Table 4.12: Participant Response to Question 8.1 - Executive and senior management are engaged with the risk management process?

Figure 4.4 below illustrates the perceptions of the participants on whether executive and senior management are engaged with the risk management process.

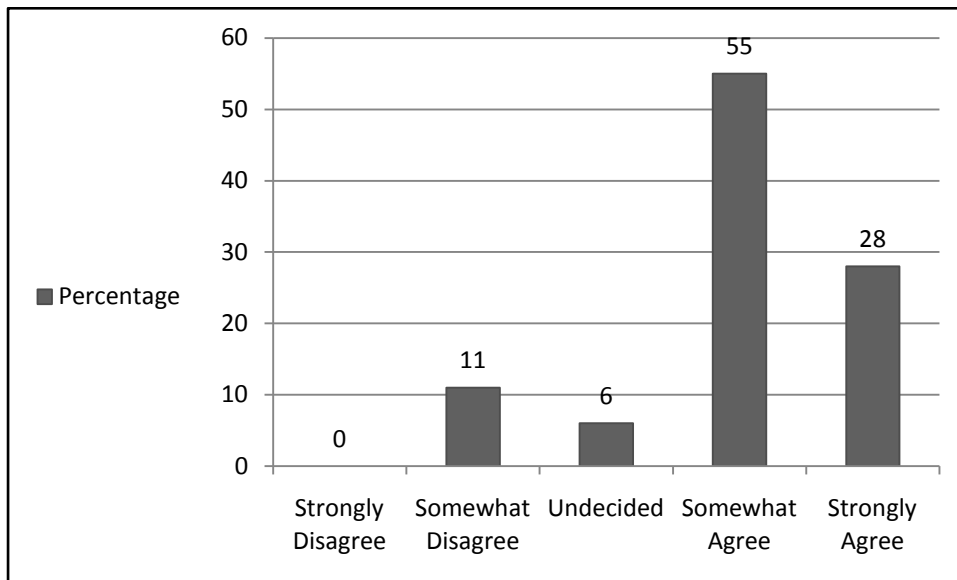


Figure 4.4: Participant Response to Question 8.1 - Executive and senior management are engaged with the risk management process?

**Question 8.2:** In section 8 of the questionnaire, question 8.2 of the survey required the participants to indicate their responses on the Likert scale regarding whether effective communication had occurred with respect to approach to risk-management and employee awareness of the top corporate risks. The promotion of risk awareness is suggested as one of the best approaches to effective risk management (Treasury Board of Canada 1999). This approach is gaining ground as reflected in Table 4.13 (column valid percentage), which indicates that more than half of the surveyed employees at a cumulative 60 percent (43 + 17) agreed with the statement that risk management arrangements have been effectively communicated to employees. Nevertheless, more than quarter of surveyed employees disagreed at a cumulative 25 percent (6 + 19).



	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	5.7	5.7	5.7
Somewhat Disagree	10	18.9	18.9	24.5
Undecided	8	15.1	15.1	39.6
Somewhat Agree	23	43.4	43.4	83.0
Strongly Agree	9	17.0	17.0	100.0
Total	53	100.0	100.0	

Table 4.13: Participant Response to Question 8.2 - Effective communication occurs regarding the approach to risk management and employee awareness?

**Question 8.4:** In section 8 of the questionnaire, question 8.4 of the survey required the participants to indicate their responses on the Likert scale regarding whether risk information is provided to employees in a user-friendly manner. The risk message needs to be employee-friendly and in parallel with this, employees at the lower levels need to understand the purpose of risk management activities and their contribution to the achievement of the organisation's objectives (South Africa Public Service Commission 2003). Despite this statement, the survey results suggested that more than a quarter of the surveyed employees had a different perspective. As shown in Table 4.14 (column valid percentage ) indicates, at a cumulative 27 percent (8 + 19), the surveyed employees disagreed with the statement that risk information is provided to them in a user-friendly way. However, there was also agreement with the statement by more than half of the sampled employees, at a cumulative 58 percent (41 + 17).

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	7.5	7.7	7.7
Somewhat Disagree	10	18.9	19.2	26.9
Undecided	8	15.1	15.4	42.3
Somewhat Agree	21	39.6	40.4	82.7
Strongly Agree	9	17.0	17.3	100.0
Total	52	98.1	100.0	
Missing System	1	1.9		
Total	53	100.0		

Table 4.14: Participant Response to Question 8.4 - Risk information is provided to employees in a user-friendly way?

**Question 8.5:** In section 8 of the questionnaire, question 8.5 of the survey required the participants to indicate their responses on the Likert scale regarding whether employees are encouraged to report significant risks, up the management chain. The South Africa Public Service Commission (2003) argues that reporting methods and frequency of reporting help to ensure that the organisation has the capacity to make the risk information available as and when it is required. The survey results indicated a broader acknowledgement of this. Table 4.15 (column valid percentage ) shows that at a cumulative 58 percent (32 + 26), more than half of the sampled employees agreed with the statement that employees are encouraged to report significant risks up the management structure. Nonetheless, there was also disagreement with the statement by more than a quarter of the sampled employees, at a cumulative 26 percent (9 + 17).

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	9.4	9.4	9.4
Somewhat Disagree	9	17.0	17.0	26.4
Undecided	8	15.1	15.1	41.5
Somewhat Agree	17	32.1	32.1	73.6
Strongly Agree	14	26.4	26.4	100.0
Total	53	100.0	100.0	

Table 4.15 : Participant Response to Question 8.5 - Employees are encouraged to report significant risks up the management chain?

**Question 8.6** In section 8 of the questionnaire, question 8.6 of the survey required the participants to indicate their responses on the Likert scale regarding whether effective risk communication exists between divisions and regions. Open communication is necessary for risk management to succeed (Treasury Board of Canada 1999). Without open communication risk, management cannot be “everybody’s business”. Managers require direct communication channels up, down and across their business units to help identify risks and take appropriate actions, and information must be shared: more than a quarter of surveyed employees had a similar perception. Table 4.16 summarises the results from the

employee perceptions. As the Table (column valid percentage ) indicates, a cumulative 45 percent (36 + 9) agreed with the statement that there is effective communication about risk between divisions and regions while more than quarter of sampled employees, at a cumulative 40 percent (17 + 23), disagreed with the statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	9	17.0	17.0	17.0
Somewhat Disagree	12	22.6	22.6	39.6
Undecided	8	15.1	15.1	54.7
Somewhat Agree	19	35.8	35.8	90.6
Strongly Agree	5	9.4	9.4	100.0
Total	53	100.0	100.0	

Table 4.16 : Participant Response to Question 8.6 - Effective communication about risk does exist between divisions and regions?

Figure 4.5 below illustrates the perceptions of the participants on whether effective risk communication exists between the divisions and the regions.

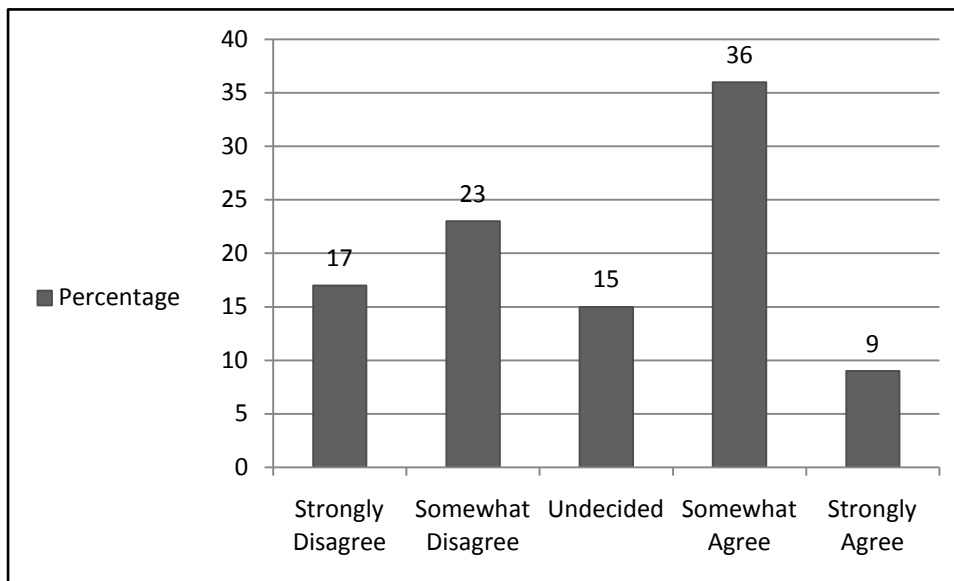


Figure 4.5: Participant Response to Question 8.6 - Effective communication about risk exists between divisions and regions?

**Question 8.7:** In section 8 of the questionnaire, question 8.7 of the survey required the participants to indicate their responses on the Likert scale regarding whether management has the training, and support needed for risk management. Viscusi and Gayer (2004) propose that education, training and learning interventions can minimise risk exposure by creating a knowledge workforce and a knowledge capital. Less than half of the sampled employees had a different perspective with respect to training. Table 4.17 summarises the results from the employee perceptions. Results (column valid percentage ) indicate that a cumulative 36 percent (15 + 21) of employees did not agree with the statement that management had the training and support to manage risk. However, a cumulative 40 percent (25 + 15) agreed with the statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	8	15.1	15.1	15.1
Somewhat Disagree	11	20.8	20.8	35.8
Undecided	13	24.5	24.5	60.4
Somewhat Agree	13	24.5	24.5	84.9
Strongly Agree	8	15.1	15.1	100.0
Total	53	100.0	100.0	

Table 4.17 : Participant Response to Question 8.7 - Managers do have the training and support needed to manage risk?

Figure 4.6 below illustrates the perceptions of the participants on whether management does have the training and support needed for risk management.

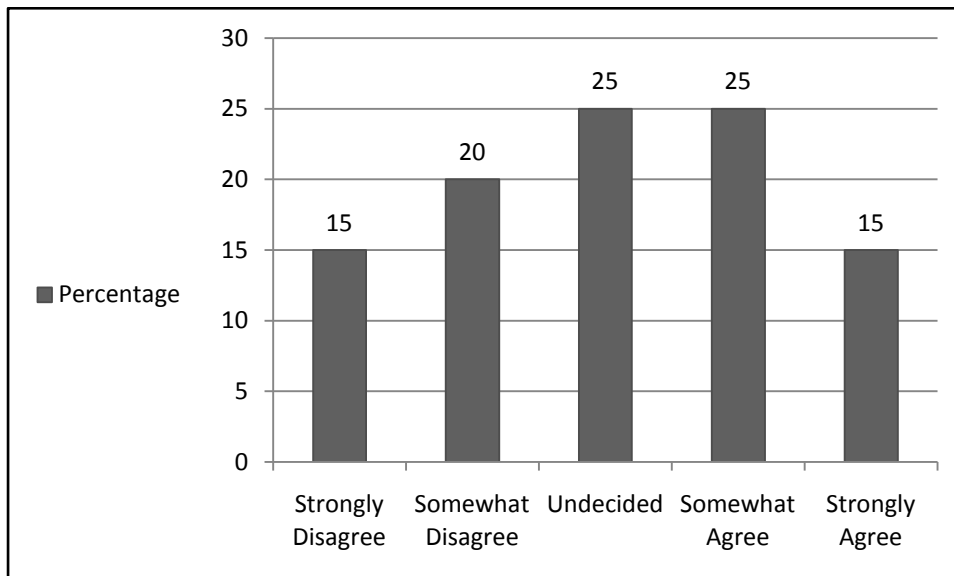


Figure 4.6: Participant Response to Question 8.7 – Managers do have the training and support they need to manage risk?

**Question 8.9:** In section 8 of the questionnaire, question 8.9 of the survey required the participants to indicate their responses on the Likert scale regarding whether information provided on risks, is used for its management. The South Africa Public Service Commission (2003) argues that the whole risk management system should be facilitated by an effective communication system. The reporting and information systems are vital; these must have the capacity to make the information available as and when it is required and more than half of the surveyed employees appear to agree. Table 4.18 summarises the results from the employee perceptions. As Table 4.18 (column valid percentage ) indicates, a cumulative 60 percent (45 + 15) of employees agreed with the statement that risk information is used to actively manage, and monitor risks. Nonetheless, as shown in Table 4.18 (column valid percentage ), more than a quarter of surveyed employees disagreed at a cumulative 26 percent (9 + 17).

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	9.4	9.4	9.4
Somewhat Disagree	9	17.0	17.0	26.4
Undecided	7	13.2	13.2	39.6
Somewhat Agree	24	45.3	45.3	84.9
Strongly Agree	8	15.1	15.1	100.0
Total	53	100.0	100.0	

Table 4.18 : Participant Response about Question 8.9 - Information about risks is used to actively manage and monitor them?

**Question 8.10:** In section 8 of the questionnaire, question 8.10 of the survey required the participants to indicate their responses on the Likert scale regarding whether an assessment of costs and benefits is routinely done for the existing risk controls. According to the South Africa Public Service Commission (2003), continuous improvement to the ever-changing risk management field is pivotal. This improvement requires organisations to pay closer attention to developments both in internal and external environments. The survey findings nonetheless suggested that the routine assessment of risk controls for costs and benefits needs review. Just more than a quarter of surveyed employees, at a cumulative 38 percent (21 + 17.0), agreed with the statement that the assessment routinely occurs and a slightly lower number of employees disagreed at a cumulative 32 percent (7 + 25). Significantly, as shown in Table 4.19 (column valid percentage), more than a quarter of sampled employees, at 30 percent are undecided on whether the routine assessment of risk controls for costs and benefits does occur.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	7.5	7.5	7.5
Somewhat Disagree	13	24.5	24.5	32.1
Undecided	16	30.2	30.2	62.3
Somewhat Agree	11	20.8	20.8	83.0
Strongly Agree	9	17.0	17.0	100.0
Total	53	100.0	100.0	

Table 4.19: Participant Response to Question 8.10 - An assessment of costs and benefits is routinely done for existing risk controls?

Figure 4.7 below illustrates the perceptions of the participants as to whether an assessment of costs and benefits is routinely done for the existing risk controls.

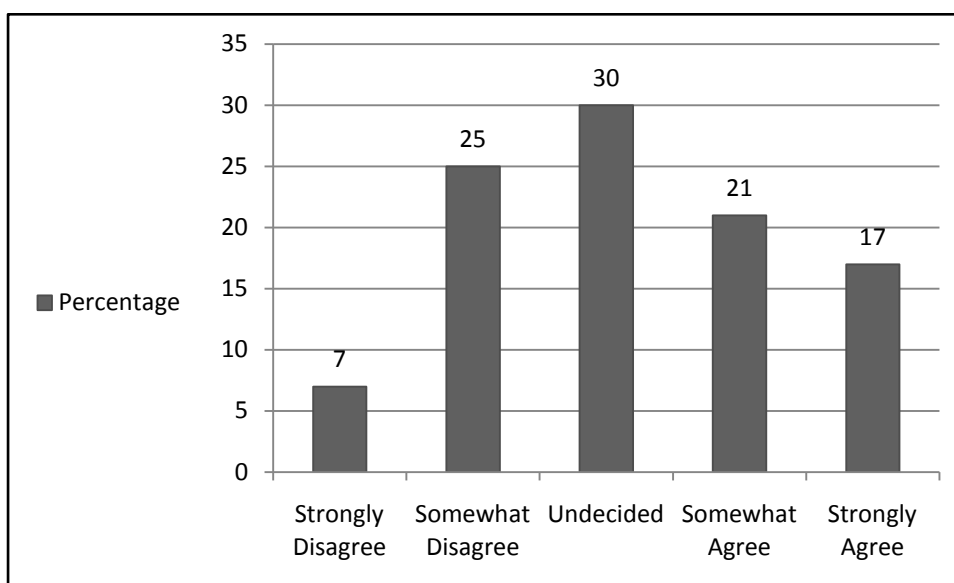


Figure 4.7: Participant Response to Question 8.10 - An assessment of costs and benefits is routinely done for existing risk control?

**Question 8.12:** In section 8 of the questionnaire, question 8.12 of the survey required the participants to indicate their responses on the Likert scale regarding whether there is a common understanding of risk terminology across the organisation. A common business risk language enables managers to talk with employees across all levels in the organisation (De Loach 2000). The survey results indicate that more than a quarter of surveyed employees have a different perspective. Table 4.20 summarises the results from the employee perceptions. As shown in this table (valid percent column), a cumulative 38 percent (23 + 15) disagreed with the statement that there is a common understanding of risk terminology across the company. Yet more than a third of employees at a cumulative 34 percent (21 + 13) reported the opposite, agreeing with the statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	12	22.6	22.6	22.6
Somewhat Disagree	8	15.1	15.1	37.7
Undecided	15	28.3	28.3	66.0
Somewhat Agree	11	20.8	20.8	86.8
Strongly Agree	7	13.2	13.2	100.0
Total	53	100.0	100.0	

Table 4.20: Participant Response to Question 8.12 - Common understanding of risk terminology across the company?

Figure 4.8 below illustrates the perceptions of the participants on whether a common risk terminology is used across the organisation.



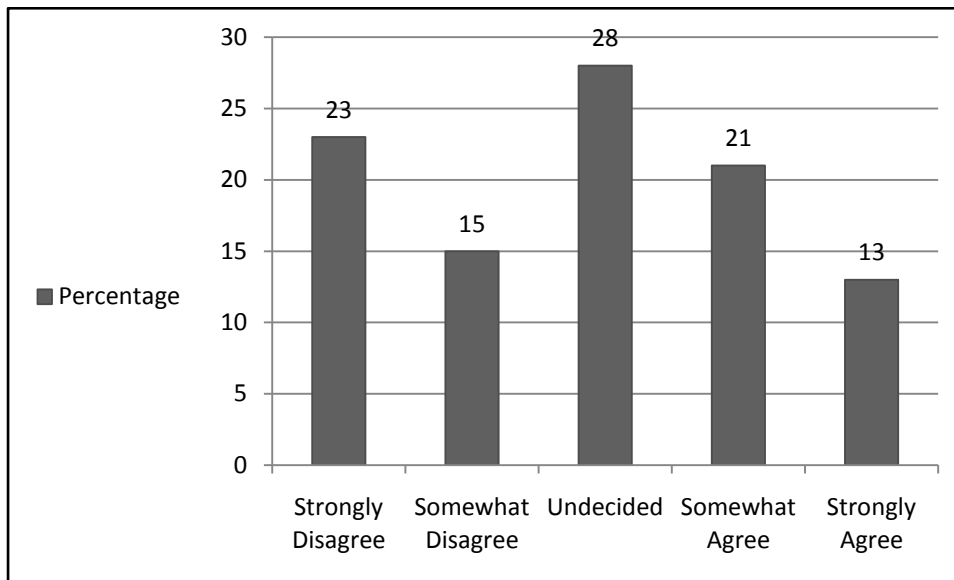


Figure 4.8: Participant Response to Question 8.12 - Common understanding of risk terminology across the organisation?

**Question 8.14:** In section 8 of the questionnaire, question number 8.14 of the survey required the participants to indicate their responses on the Likert scale regarding whether management attitude towards risk management is clear. Shimell (2002) argues that once the risk strategy is developed, it must be executed through the risk structure, embedding risk in the organisation's operation and culture. Lam (2003, p.68) agrees, stating that a key factor in the cultural issues is whether management "walks the walk" as well as "talks the talk". The decisions and actions of senior management will do more to influence behaviour than any written policy because of the criticality that senior management acts according to the risk culture to be inculcated. The management vision of risk management is essential and the findings suggested the vision is widely understood among the sampled employees. Table 4.21 summarises the results from the employee perceptions. The survey results indicated that more than half of the sampled employees, at a cumulative 64 percent (41 + 23), agree with the statement that management's attitude to risk management is clear. However, as

shown in Table 4.21 (column valid percentage ), less than a quarter of sampled employees, cumulatively at 23 percent (4 + 19), disagreed with this statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	3.8	3.8	3.8
Somewhat Disagree	10	18.9	18.9	22.6
Undecided	7	13.2	13.2	35.8
Somewhat Agree	22	41.5	41.5	77.4
Strongly Agree	12	22.6	22.6	100.0
Total	53	100.0	100.0	

Table 4.21: Participant Response to Question 8.14 - Management attitude towards risk management is clear?

**Question 8.26:** In section 8 of the questionnaire, question 8.26 of the survey required the participants to indicate their responses on the Likert scale regarding whether the organisation tends to reflect a risk-taking attitude. The predominant practice of integrating risk management is to build an organisation culture in which everybody is a risk manager (South Africa Public Service Commission 2003). Employees who take responsibility for their actions and outcomes become risk managers and yet more than a quarter of surveyed employees disagreed with this viewpoint. Table 4.22 summarises the results from the employee perceptions. As shown in Table 4.22 (column valid percentage ), a cumulative 42 percent (25 + 17.0) disagreed with the statement that overall the culture of the organisation tends to reflect a risk-taking attitude. However, more than a quarter of surveyed employees at a cumulative 39 percent (30 + 9) reported the opposite and agreed with the statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	13	24.5	24.5	24.5
Somewhat Disagree	9	17.0	17.0	41.5
Undecided	10	18.9	18.9	60.4
Somewhat Agree	16	30.2	30.2	90.6
Strongly Agree	5	9.4	9.4	100.0
Total	53	100.0	100.0	

Table 4.22: Participant Response to Question 8.26 - Organisation tends to reflect a risk-taking attitude.

Figure 4.9 below illustrates the perceptions of the participants on whether the organisation tends to reflect a risk-taking attitude.

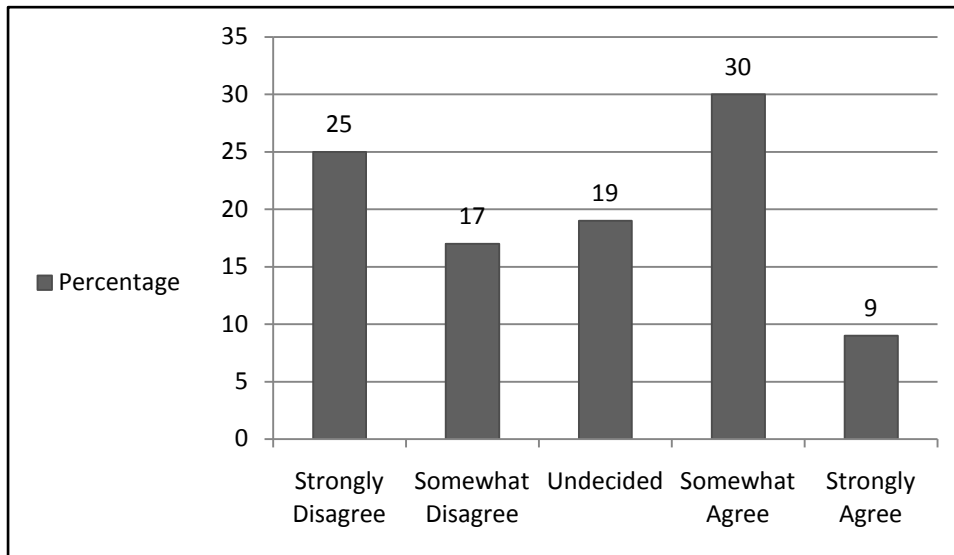


Figure 4.9: Participant Response to Question 8.26 - Organisation tends to reflect a risk-taking attitude?

**Question 8.18:** In section 8 of the questionnaire, question 8.18 of the survey required the participants to indicate their responses on the Likert scale regarding whether risk management accountability and responsibility are documented and communicated. Lam (2003) emphasises that a key component of a successful ERM programme is to establish the respective organisational structure and define the roles and responsibilities for risk management and that these need to be communicated. In addition to being communicated, the accountability and responsibility aspects of the roles need to be documented. Table 4.23 summarises the results from the employee perceptions. As shown in Table 4.23 (column valid percentage), a cumulative 33 percent (10 + 23) disagreed with the statement that the accountability and responsibility for risk management are documented and communicated. Yet, more than a quarter of the sampled employees, at a cumulative 46 percent (31+ 15) agreed with the statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	9.4	9.6	9.6
Somewhat Disagree	12	22.6	23.1	32.7
Undecided	11	20.8	21.2	53.8
Somewhat Agree	16	30.2	30.8	84.6
Strongly Agree	8	15.1	15.4	100.0
Total	52	98.1	100.0	
Missing System	1	1.9		
Total	53	100.0		

Table 4.23: Participant Response to Question 8.18 - Accountability and responsibility for risk management are documented?

**Question 8.21:** In section 8 of the questionnaire, question 8.21 of the survey required the participants to indicate their responses on the Likert scale regarding whether procedures exist for reporting risk. According to Lam (2003), one of the requirements for risk management is that it should produce timely and relevant risk reporting for the senior management, and the board of directors and procedures need to be in place for this to occur. In support of this statement, Table 4.24 (column valid percentage ) indicates that more than half of the surveyed employees, cumulatively at 62 percent (36 + 26), agreed with the statement that the company has procedures for reporting risks. Less than a quarter of sampled employees thought the opposite, at a cumulative 19 percent (4 + 15).

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	3.8	3.8	3.8
Somewhat Disagree	8	15.1	15.1	18.9
Undecided	10	18.9	18.9	37.7
Somewhat Agree	19	35.8	35.8	73.6
Strongly Agree	14	26.4	26.4	100.0
Total	53	100.0	100.0	

Table 4.24: Participant Response for Question 8.21 - Company has procedures for reporting risks?

**Question 8.22:** In section 8 of the questionnaire, question 8.22 of the survey required the participants to indicate their responses on the Likert scale as to whether a clear policy exists for risk monitoring. The South Africa Public Service Commission (2003) points out that the whole risk management system should be facilitated by an effective communication system. Risk triggers and indicators are also considered important components of the 'early warning system' and this should include defining reporting methods and frequency of reporting. Consequently, a risk control policy is needed to guide all in the organisation. Table 4.25 summarises the results from the employee perceptions. As Table 4.25 (column valid percentage ) indicates, more than half of the sampled employees, cumulatively at 59 percent (36 + 23), agreed with the statement that the company does have a clearly defined policy and that a process existed for reporting changing risks, risk incidents, risk control failings as these occur. However, less than a quarter disagreed with the statement at a cumulative 20 percent (9 + 11).

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	9.4	9.4	9.4
Somewhat Disagree	6	11.3	11.3	20.8
Undecided	11	20.8	20.8	41.5
Somewhat Agree	19	35.8	35.8	77.4
Strongly Agree	12	22.6	22.6	100.0
Total	53	100.0	100.0	

Table 4.25: Participant Response for Question 8.22 - Company has clearly defined policy process for reporting changing risks?

**Question 8.27:** In section 8 of the questionnaire, question 8.27 of the survey required the participants to indicate their responses on the Likert scale regarding whether the organisation supports the taking of considered risks to achieve objectives. An organisational culture change that supports open discussion about risks and potentially damaging information is one of many benefits cited for implementing risk management (Treasury Board of Canada 1999). The new culture tolerates mistakes and learning from mistakes but does not tolerate hiding

errors. The organisation needs to create an environment where employees who undertake considered risks are supported. Table 4.26 summarises the results from the employee perceptions. Despite the importance of such an environment, this table (column valid percentage ) indicates that more than a third of sampled employees, cumulatively at 38 percent (10 + 28), disagreed with the statement that the organisation supports the taking of considered risks to achieve objectives. Nevertheless, more than a quarter of sampled employees at a cumulative 30 percent (26 + 4) agreed with the statement. Significantly, there were more than a quarter of employees, at 32 percent who were undecided on this statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	9.4	10.0	10.0
Somewhat Disagree	14	26.4	28.0	38.0
Undecided	16	30.2	32.0	70.0
Somewhat Agree	13	24.5	26.0	96.0
Strongly Agree	2	3.8	4.0	100.0
Total	50	94.3	100.0	
Missing System	3	5.7		
Total	53	100.0		

Table 4.26: Participant Response to Question 8.27 - Organisation supports the taking of considered risks to achieve objectives?

Figure 4.3 below illustrates the perceptions of the participants on whether the organisation supports the taking of considered risks to achieve objectives.

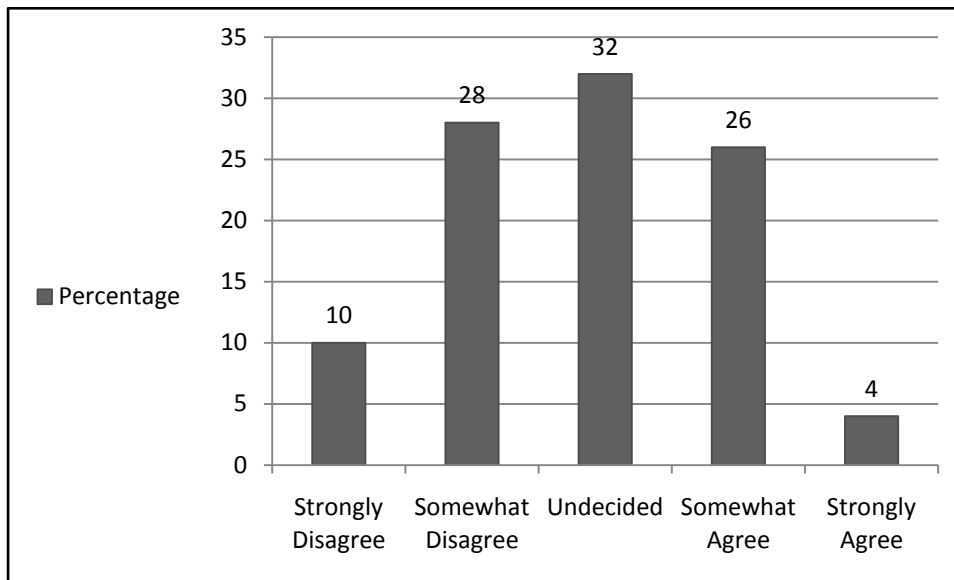


Figure 4.10: Participant Response to Question 8.27 - Organisation supports the taking of considered risks to achieve objectives?

**Question 8.29:** In section 8 of the questionnaire, question 8.29 of the survey required the participants to indicate their responses on the Likert scale regarding whether the risk register is implemented. The establishment of a centralised risk register is critical to ensure ERM is carried out comprehensively and consistently (Fraser & Henry 2007). Despite the risk register's importance, the survey findings suggested the presence of the risk register is limited in the organisation. Table 4.27 summarises the results from the employee perceptions. More than a quarter of surveyed employees reported that the risk register is in place at a cumulative 46 percent (23 + 23), while less than a quarter of employees, at a cumulative 21 percent (7 + 14) were unaware of the existence of the risk register. Significantly, as shown in Table 4.27 (column valid percentage), more than a quarter of sampled employees were undecided on whether the register exists or not, at 33 percent.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	7.5	7.7	7.7
Somewhat Disagree	7	13.2	13.5	21.2
Undecided	17	32.1	32.7	53.8
Somewhat Agree	12	22.6	23.1	76.9
Strongly Agree	12	22.6	23.1	100.0
Total	52	98.1	100.0	
Missing System	1	1.9		
Total	53	100.0		

Table 4.27: Participant Response to Question 8.29 - Company does have a risk register?

**Question 8.32:** In section 8 of the questionnaire, question 8.32 of the survey required the participants to indicate their responses on the Likert scale regarding whether new key risks are allocated owners. All the risks that are identified and recorded in the risk register should be assigned to specific risk owners (South Africa Public Service Commission 2003). Table 4.28 summarises the results from the employee perceptions. As Table 4.28 (column valid percentage ) indicates, more than a quarter of employees agreed at a cumulative 48 percent (38 + 10) with the statement that new key risks are allocated owners. However, another cumulative 26 percent (6 + 20) of sampled employees disagreed with the statement that when new key risks are identified, an empowered owner is charged with the accountability to manage them.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	5.7	6.0	6.0
Somewhat Disagree	10	18.9	20.0	26.0
Undecided	13	24.5	26.0	52.0
Somewhat Agree	19	35.8	38.0	90.0
Strongly Agree	5	9.4	10.0	100.0
Total	50	94.3	100.0	
Missing System	3	5.7		
Total	53	100.0		

Table 4.28: Participant Response to Question 8.32 - When new key business risks are identified a risk owner is allocated?



**Question 8.33:** In section 8 of the questionnaire, question 8.33 of the survey required the participants to indicate their responses on the Likert scale regarding whether risk management incentives are implemented for business partners. For risk management to be effective, stakeholder participation is critical, as most stakeholders in internal or external environments are the main causes of risks that an organisation faces (South Africa Public Service Commission 2003). Table 4.29 summarises the results from the employee perceptions. As Table 4.29 (column valid percentage ) indicates, participants were asked whether the incentives for external stakeholders were in place to enable stakeholders like business partners to manage risks effectively. More than a quarter of the employees at a cumulative 34 percent (16 + 18) disagreed with the statement that incentives are in place. Yet, less than a quarter of surveyed employees at a cumulative 20 percent (18 + 2) agreed with the statement that incentives for business partners to manage risks are effectively in place. Significantly, as shown in Table 4.29 (column valid percentage ), almost half of the employees surveyed at 47.1 percent were undecided on this statement.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	8	15.1	15.7	15.7
Somewhat Disagree	9	17.0	17.6	33.3
Undecided	24	45.3	47.1	80.4
Somewhat Agree	9	17.0	17.6	98.0
Strongly Agree	1	1.9	2.0	100.0
Total	51	96.2	100.0	
Missing System	2	3.8		
Total	53	100.0		

Table 4.29: Participant Response to Question 8.33 - Incentives for business partners to manage risks are effectively in place?

#### 4.4.2 Questions with open-ended Responses

Questions that included open-ended responses were posed to the participants and Table 4.30 below shows the results.

Question	Quotes from responses
Q8.17 “The company’s risks are measured in terms of ”	<ul style="list-style-type: none"> <li>• “strategic impact and positioning”</li> <li>• “business sustainability”</li> <li>• “sustainable services”</li> </ul>
Q8.25 “What are the main barriers to the provision of adequate resources in support of risk management? “	<ul style="list-style-type: none"> <li>• “non-communication”</li> <li>• “lack of communication”</li> </ul>
Q8.28 “The company identifies risks in terms of “	<ul style="list-style-type: none"> <li>• “after the risk has occurred”</li> </ul>
Q8.30 “Choose the person/function responsible for analysing and prioritising the risks facing your company“	<ul style="list-style-type: none"> <li>• “don't know - not communicated”</li> </ul>
Q8.31 “Choose the person/function responsible for addressing the risk “	<ul style="list-style-type: none"> <li>• “don't know - not communicated”</li> </ul>

Table 4.30: Participant Responses to Open-Ended Questions.

## 4.5 Correlation Analysis

The Cronbach’s Alpha was used for the internal consistency reliability test and the Pearson coefficient was used to measure the correlation on individual items and.

### 4.5.1 Cronbach Alpha

Reliability is concerned with estimates of the degree to which a measure is free of random or unstable error. Reliability means many things to many people, but in most contexts, the notion of consistency emerges (Blumberg, Cooper & Schindler 2008).

The assessment of internal consistency measures the inter-correlations between the various indicators or items of a construct e.g. risk management. In this study,

the items serve as the multiple indicators that create a measurement that covers the domain of the construct (Ghauri, Gronhaug & Kristianslund 1995). The other consideration is the robustness of the measuring instrument (questionnaire), which comes with a multiple indicator Likert-scale resulting in the reduction of the random error.

The survey used the Cronbach's alpha coefficient as a measure of the inter-correlations between the various indicators, capturing the underlying construct. The coefficient is a 1 if the items are all the same and 0 if none are related to each other. An alpha coefficient of 0.7 or higher for Cronbach's alpha is generally accepted as sufficient evidence of internal consistency of the Likert scale items.

The results of the reliability analysis are displayed in Table 4.31 and reflect the Cronbach's alpha of 0.961; this was done at the 5 percent significance level.

Reliability Statistics		
Cronbach's Alpha	N of Items	
0.961	27	

Table 4.31: The Results of the Cronbach's Alpha.

The Cronbach's Alpha of 0.961 (or 96 percent), for all the 27 items shows that the questions consistently, assessed the construct, "company's Risk Management."

As evidenced in Table 4.32 below, the questions consistently assessed the construct, as the value of Cronbach's Alpha decreases or increases slightly when the corresponding item is deleted.

Q8.1 - Executive and senior managements engaged with the risk management process.	0.962
Q8.2 - arivia.kom's risk management arrangements have been effectively communicated to employees.	0.960
Q8.3 - Identification and reporting on key risks is carried out in a consistent timely and integrated way.	0.960
Q8.4 - Risk information is provided to employees in a user-friendly way.	0.959
Q8.5 - Employees are encouraged to report significant risks up the management chain.	0.960
Q8.6 - There is effective communication about risk between divisions and regions.	0.959
Q8.7 - Managers do have the training and support they need to manage risk.	0.960
Q8.8 - Risk management is embedded within day-to-day management, business processes.	0.960
Q8.9 - Information about risks is used to actively manage and monitor them.	0.959
Q8.10 - An assessment of costs and benefits is routinely done for existing risk controls.	0.959
Q8.11 - There are known criteria for risk appetite (identification of acceptable/unacceptable risk).	0.958
Q8.12 - There is a common understanding of terminology across the company, used in relation to risk issues.	0.958

Q8.13 - All in the company know how to manage the business risk, in terms of the identity of the risk-owners.	0.959
Q8.14 - Management's attitude towards risk management is clear.	0.959
Q8.15 - The company's existence and performance are dependent on risk management.	0.963
Q8.16 - The effects of risk management are understood throughout the company.	0.959
Q8.18 - The accountability and responsibility for risk management are documented and communicated.	0.958
Q8.19 - Employees know how to manage risks arising in their immediate work environment, in terms of their identification and assessment.	0.959
Q8.21 - The company has procedures for reporting risks.	0.959
Q8.22 - The company has a clearly defined policy, process for reporting changing risks, risk incidents and risk control failings as they occur.	0.959
Q8.23 - Employees are aware of the importance of risk management and control in the company.	0.959
Q8.24 - The company is able to allocate appropriate resources in support of risk management policy and practice	0.960
Q8.26 - Overall, the culture of the company tends to reflect a risk-taking attitude.	0.963
Q8.27 - The company supports the taking of considered risks to achieve objectives.	0.963

Q8.29 - The company does have a risk register/database.	0.960
Q8.32 - When new key business risks are identified, an "owner" of the risk is determined to develop, implement and manage risk processes.	0.961
Q8.33 - Incentives for business partners to manage risks are effectively in place.	.0960

Table 4.32: Effect on Cronbach's Alpha when Items are deleted.

#### 4.5.2 Pearson Correlation Coefficient

Establishing a correlation between two variables is not a sufficient condition to establish a causal relationship in either direction (Griffiths & Tenenbaum 2005). The Pearson correlation coefficient indicates the strength of a linear relationship between two variables, but its value generally does not completely characterise their relationship.

The Pearson correlation coefficient has a potential limitation; it assumes that the data underlying the rating scale are normally distributed. If the data from the rating scale tend to be skewed toward one end of the distribution, this consequently attenuates the upper limit of the observable correlation coefficient (Stemler 2004). The correlation matrix is depicted in Table 4.33 (high correlation) and Table 4.34 (low correlation). Correlation is significant at the 95 percent confidence level, normally used for such studies.

Indicator	Q8.12	Q8.9	Q8.21	Q8.11	Q8.13	Q8.14
Q8.13	0.85					
Q8.21		0.78				
Q8.22			0.78			
Q8.12				0.76		
Q8.18					0.76	0.76

Table 4.33: Pearson Coefficient - very high Correlation (above 0.75).

If Pearson's correlation coefficient value lies between +0.75 and -1, then it is said to be a high degree of correlation. The correlation coefficients in Table 4.33 above show that the 27 items belong to two distinct groups; the table only reflects significant correlations scoring above 0.75, which might suggest that the items are measuring the same construct of risk management. Items like Q8.12, "Common understanding of risk terminology does exist" and Q8.13, "All employees know how to manage the business risk and know risk-owners", show the highest strong correlation (0.85) to each other. This suggests that 72 percent ( $0.85 \times .85$ ) of the variation in the item Q8.13 is determined by item 8.12 and 72 percent is also called the coefficient of determination (Nardi 2006).

Indicator	Q8.15	Q8.26	Q8.27	Q8.1	Q8.5	Q8.16
Q8.27	-0.08				0.01	0.02
Q8.32		-0.05				
Q8.33			0.0			
Q8.7				0.01		

Table 4.34: Pearson Coefficient - low Correlation (below .05).

Table 4.34 reflects significant correlations scoring below 0.05 and this could be an indication that the items are not measuring the same construct. Items like Q.15, “Company performance and existence are dependent on risk management” and Q8.27, “Company supports the taking of considered risks to achieve objectives” are the worst (-0.08) with regard to weak correlation to each other. This suggests that 0.64 percent ( $-0.08 \times -0.08$ ) of the variation in the item Q8.27 is determined by item Q8.15, which could be interpreted as an insignificant influence. 0.64 percent is also called the coefficient of determination (Nardi 2006).

#### **4.6 Regression Analysis**

Harman (1976, p. 6) defines factor analysis in regression as an exploratory tool which can be utilised to subject data to fresh analysis in order to clarify previous formulations, clarifying further the correlation analysis results.

In the Research Question 4, the focus is on the effectiveness of the current risk management strategy. Therefore, in this section, we need to establish which variables (dependent variables: Y) are predicted by which ones (independent variables: X). That is, which ones (independent variables) have effect on the others (dependent variables).

After examining all the variables, the following four are considered as dependent variables:

Y1: arivia.kom's Risk management arrangements have been effectively communicated to employees

Y2: There is effective communication about risk between divisions and regions.

Y3: The Company's existence and performance is dependent on risk management.

Y4: The effects of risk management are understood throughout the company.

To determine independent variables for each of the dependent variables, correlation analysis was carried out to check which ones are strongly correlated to each Y. After examining the correlation matrix, the following independent variables were considered for each dependent variable:



For Y1

X1: Identification and reporting on key risks is carried out in a consistent timely and integrated way

X2: Risk information is provided to employees in a user-friendly way.

X3: Employees are encouraged to report significant risks up the management chain.

X4: An assessment of costs and benefits is routinely done for existing risk controls.

X5: The Company has procedures for reporting risks.

For Y2:

X3: Employees are encouraged to report significant risks up the management chain.

X6: Risk management is embedded within day-to-day management, business processes.

X7: There is known criteria for risk appetite (identification of acceptable/unacceptable risk).

X8: There is a common understanding of terminology across the company, used in relation to risk issues.

X9: All in the company know how to manage the business risk, in terms of the identity of the risk-owners.

X10: Management's attitude towards risk management is clear.

X11: The accountability and responsibility for risk management are documented and communicated.

X12: Employees know how to manage risks arising in their immediate work environment, in terms of their identification and assessment.

X5: The Company has procedures for reporting risks.

X12: The Company has a clearly defined policy, process for reporting changing risks, risk incidents and risk control failings as they occur.

For Y3:

X13: Executive and senior managements engaged with the risk management process

X10: Management's attitude towards risk management is clear.

X5: The Company has procedures for reporting risks.

For Y4:

X6: Risk management is embedded within day-to-day management, business processes.

X8: There is a common understanding of terminology across the company, used in relation to risk issues.

X10: Management's attitude towards risk management is clear.

X11: The accountability and responsibility for risk management are documented and communicated.

X12: Employees know how to manage risks arising in their immediate work environment, in terms of their identification and assessment.

X14: Employees are aware of the importance of risk management and control in the company.

Before running the regression analysis, a factor analysis was performed to check whether the number of variables could be reduced. The main applications of factor analysis techniques are:

(1) to *reduce* the number of variables and

(2) to *detect structure* in the relationships between variables, that is to *classify variables*. Therefore, factor analysis is applied as a data reduction or structure detection method.

The resultant factors were factor one “Effective Risk Management Strategy”, factor two “Employee Risk Management Awareness” and factor three “Management Accountability for Risk Management”. Risk Management will henceforth be abbreviated to “RM” because of table space constraint. Table 4.35 below condenses the results of the factor analysis for dependent variables and independent variables. Each variable loads exactly in one factor, that is, it has higher correlation to only one factor.

It can be seen, from Table 4.35 that all the dependent variables Y1, Y2, Y3 and Y4 form factor one “Effective RM Strategy”. Similarly, eight independent variables in the table, form factor one “Effective RM Strategy”. Out of 14 independent

variables, only four form factor two “Employee RM Awareness”. Lastly, four independent variables form factor three “Management Accountability for RM”. New variables (factors) were created by adding the score of all the variables loading on each of them, and then created categorical binary variables as shown in Table 4.36.

Variables	Effective Strategy	RM	Employee Awareness	RM	Management Accountability for RM
<b>Dependent variables</b>					
Y1	0.757				
Y2	0.584				
Y3	0.808				
Y4	0.831				
<b>Independent variables</b>					
X1					0.628
X2			0.802		
X3			0.873		
X4	0.591				
X5			0.613		
X6	0.647				
X7			0.635		
X8	0.656				
X9	0.781				
X10	0.705				
X11	0.709				
X12	0.881				
X13					0.938
X14	0.758				

Table 4.35: Factor Analysis Components (factors) and the Loadings (correlations) of each Variable to its corresponding Factor.

Factor	Minimum value	Maximum value	Codification
<b>Dependent variable</b>			
Effective RM Strategy	5	20	<= 13 : Disagree (1)  > 13 : Agree (0)
<b>Independent variables</b>			
Effective RM strategy	9	38	<=24: Disagree (1)  > 24 : Agree (0)
RM Employee Awareness	5	20	<= 13 : Disagree (1)  > 13 : Agree (0)
Management Accountability for RM	3	10	<= 6 : Disagree (1)  > 6 : Agree (0)

Table 4.36: Creation of categorical Binary Variables from Factors.

From the binary variables, the logistic regression was performed which is a type of regression where the dependent variable is dichotomous or binary variable. The results are shown in Table 4.37 below;

<b>Variable</b>	<b>Parameter (B)</b>	<b>Odds (exp (B))</b>	<b>P-value</b>
<b>Intercept</b>	2.406	11.089	0.000
<b>Effective RM</b>			
<b>Strategy</b>	-2.584	0.075	0.000
<b>RM Employee</b>			
<b>Awareness</b>	-1.028	0.358	0.200
<b>Management</b>			
<b>Accountability for</b>			
<b>RM</b>	-0.812	0.444	0.339

Table 4.37: Logistic Regression Results.

As evidenced in Table 4.37, that “Effective RM Strategy” is the only variable in the model with an intercept whose p-value is less than 0.05.

The Odds is the ratio of probability of “agree” by the probability of “disagree” in the dependent variable. Therefore, the interpretation of the results in Table 4.37 is as follows:

In absence of all factors with a value 0 (which is Agree) among the three factors in the model (Intercept only), the probability of people agreeing on the dependent variable is 11 times the probability of them disagreeing. That is, in the absence of the three factors, participants are likely to agree about the dependent factor.

All the three factors decrease the chance of agreement in the dependent variable. That is, in the presence (code = 1 which is Disagree) of “RM Process Working”, the likelihood of agreement in the dependent variable is 0.075 times the one of the disagreement. That is, people are more likely to disagree about the dependent

factor, in the presence of factor 1 “Effective RM Strategy”. Similarly, people are likely to disagree in the presence of factor two “RM Employee Awareness” and factor three “Management Accountability for RM”.

In conclusion, participants are likely to agree that the risk management process works since the correlation analysis results indicated that the participants seemed to agree with the independent factors from the factor analysis.

#### **4.7 Summary of Findings**

Chapter 4 reviewed the purpose of the study and examined the demographic profile of the sampled employees. The five top-scoring responses were discussed for an overview on the participants’ perception of risk management. Finally, an analysis of the Research Question 2, 3 and 4 was conducted and the chapter ended with a summary of the findings.

The next chapter will provide a discussion of the research findings of the study and will interpret and explain the findings in conjunction with the literature, previous research and case studies.

## CHAPTER FIVE

### DISCUSSION

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#### 5.1 Introduction

The previous chapter provided a presentation of the results in the context of the Research Question 2, 3, and 4, as well as the statistical analysis. This chapter will use the data collected to either support or refute research propositions made at the outset of the study. The chapter therefore uses two sources to interpret the survey. The first source is the questionnaire responses, which serve as the multiple indicators that create a measurement covering the domain of the construct (Ghauri et al. 1995). The second source is the existing literature, which was reviewed in Chapter 2 and was predominantly guided by Research Question 1, 5, 6 and 7. Both information sources are examined to assess the dependent construct “the effectiveness of the risk management strategy”. In addition, the extent to which the survey results differ from prior studies is examined and plausible reasons provided. The conclusions are subsequently drawn because of this all-inclusive process. The chapter is divided into sections covering the analysis of questionnaire responses, the interpretation of the findings and summary of the chapter.

#### 5.2 Individual Question Analysis

Research Question 2, 3 and 4 will be used to categorise the study’s findings from the survey.

5.2.1 Research Question 2: What is the extent of perception of risk management among employee?

**Question 8.15:** The “agree” study result accounts for more than three quarters of the respondents (78.9 percent). The result is the second highest among the “agree” responses. The percentage gap against the 9.6 percent “disagree” responses is a very significant 69.3 percent, notwithstanding the 11.5 percent of non-committal respondents. In addition, the “agree” study result is consistent with the notion by Shimpi et al. (2001) that a corporation’s starting point is the recognition that risk is the lifeblood of a corporation. From the highly significant

“agree” result, the conclusion suggests that for a large number of the respondents, there is a perception that risk is indeed the lifeblood of the organisation and management needs to ensure alignment between the risk management strategy and the governance element of the risk framework in order to maintain this perception.

**Question 8.16:** It is also worth noting that there is no significant difference between the 41.5 percent “disagree” responses and the 33.9 percent “agree” responses: the difference is 7.6 percent. Although the “disagree” result goes against existing literature (Shimpi et al. 2001), who point to an increasing trend in appreciating the need for risk management among organisations, the result has been accepted because the “disagree” response rate is more than a third of respondents. For this sample of respondents, the conclusion is that in some cases there is understanding of the effects of risk management despite the presence of 24.5 percent of respondents who are non-committal. The differences between “agree”, “disagree” and the non-committal respondents are not significant; evidence that is more conclusive is needed, and consequently none of the results can be generalised to the entire population. Management needs to ensure alignment between the risk management strategy and the governance element of the risk framework, with the aim of increasing employee awareness about the effects of risk management.

**Question 8.23:** Regarding whether the employees appreciate the importance of risk management and control, there were no significant differences between the “agree” (43.4 percent) and “disagree” (37.7 percent) responses, with a difference of 5.7 percent between them. Nonetheless, the “agree” result is accepted, as it constitutes more than a third of the respondents. The result supports existing literature from a study by Barton et al. (2002), which found that risk awareness should be driven, throughout the organisation. In addition, there are an 18.9 percent of respondents who are non-committal. However, for the respondents studied, the conclusion is that that appears to be a limited perception of the importance of risk management and control. Management needs to ensure alignment between the risk management strategy and the risk and control



optimisation element of the risk framework with the aim of an effective risk awareness programme.

**Question 8.24:** Although the “agree” study result provides evidence that 49.1 percent of respondents agree that, the resources are on hand to support risk policy and practice, the study result is nonetheless the fourth highest among the “disagree” responses (30.1 percent). Moreover, there are 20.8 percent non-committal respondents. In addition, the “agree” study result supports a prior study by the Treasury Board of Canada (1999) that concluded that risk management must be adequately resourced. The conclusion from the “agree” result suggests that for the sample studied, there is a perception in some cases that the resources are on hand to support risk policy and risk practice. Management needs to ensure alignment between the risk management strategy and the governance element of the risk framework, with the aim of increased resource provision.

5.2.2 Research Question 3: How do employees manage the risk that arises in their immediate environment?

**Question 8.3:** The “agree” responses account for more than half of the respondents (50.9 percent) in the study and the percentage gap against the 32 percent “disagree” responses is a significant 18.9 percent, notwithstanding the 17 percent non-committal respondents. The “agree” study result is significant; hence the conclusion can be drawn that a large number of respondents perceive that risk identification and reporting are done in a timely and consistent manner. Management needs to ensure alignment between the risk management strategy and the risk and control optimisation element of the risk framework with the aim of sustaining the level of perception. An alternative interpretation could be that the employees are aware of risk reporting but from a unidirectional perspective, only from top management to lower rungs of the organisational structure.

**Question 8.8:** The study result is the fourth highest among the “agree” responses; it accounts for more than half of the respondents (62.3 percent) and the percentage gap against the 20.8 percent “disagree” responses is a significant 41.5 percent, notwithstanding the 17 percent non-committal respondents. In

addition, the “agree” study result supports existing literature (Shimell 2002) who argues that risk should be embedded in the organisation’s operation and culture. The “agree” study result is significant and suggests that for a large number of respondents, the conclusion can be drawn that suggests that there is a perception that risk is widely embedded in the organisation’s operation. Management needs to ensure alignment between the risk management strategy and the monitoring and reporting element of the risk framework, with the aim of maintaining this level of perception.

**Question 8.11:** The study result on “agree” responses (41.5 percent) accounts for more than a third of the respondents, while the “disagree” response (28.3 percent) is the fifth highest among the “disagree” responses and the percentage gap between these is 13.2 percent, notwithstanding the fact that more than a quarter (30.2 percent) respondents are non-committal. It is worth noting that the “disagree” result contradicts prior work by Shimpi et al. (2001) that argued that an embraced common view of risk should translate into a risk appetite understood by all in the organisation. For the sample of respondents, the conclusion is that it appears that the criteria used by the organisation to determine risk appetite, are understood by a fair number of employees. Management needs to review the alignment between the risk management strategy and the assessment element of the risk framework with the aim of an increased understanding among the employees about the acceptable risk appetite. An alternative interpretation would be that the employees understand the criteria used but as non-participants in the risk process.

**Question 8.13:** The study result on “disagree” responses constitutes more than a third of respondents (41.6 percent). It is the highest among the “disagree” responses but the “disagree” study result refutes prior work by the South Africa Public Service Commission (2003) that concluded that each risk must have a risk owner who will be responsible for implementing risk action plans. For the sample of respondents, no generalisation can be made to the entire population about any of the study results because of the insignificant difference (7.6 percent) between “agree” (34 percent) and “disagree” responses and the 24.5 percent of respondents who are non-committal on this item. The conclusion drawn is that

the study result cannot be accepted because of the two-pronged and ambiguous nature of the item. Further research can help to split the question into two separate questions for further investigation. No conclusive evidence can be presented by the study for the high percentage of “disagree” responses. However, based on item Q8.32 “New key risks are allocated owners”, that seems to indicate that employees know the risk-owners, it can be speculated that the 41.6 percent “disagree” result relates more to the risk-owner aspect of the question.

**Question 8.19:** The evidence on “agree” responses accounts for more than half of the respondents (55.7 percent) and the percentage gap against the 30.8 percent “disagree” responses is a significant 24.9 percent, notwithstanding the 13.5 percent non-committal respondents. In addition, the “agree” study result supports partly a prior study by the South Africa Public Service Commission (2003) that concluded that the empowerment of employees is possible through the philosophy that “every manager is a risk manager.” The “agree” study result is significant and the conclusion drawn suggests that a large number of the respondents perceive that the employees are empowered to handle risk in their immediate environment, and that management needs to ensure alignment between the risk management strategy and the governance element of the risk framework with the aim of an increased employee empowerment.

5.2.3 Research Question 4: What is the effectiveness of the existing risk management strategy across the organisation?

**Question 8.1:** The study result (83 percent) accounts for more than three quarters of the respondents. It is the highest among the “agree” responses and the percentage gap against the 11.3 percent “disagree” responses is a very significant 71.7 percent, notwithstanding the 5.7 percent of non-committal respondents. In addition, this “agree” result supports a prior study by the South Africa Public Commission (2003) that concluded that top management needed to lead the risk management process. The conclusion is that the high significance of the “agree” result would appear to indicate that there is wide perception among the respondents that senior and executive management have set the tone of the risk management process. Management in general needs to ensure alignment

between the risk management strategy and the governance element of the risk framework with the aim of sustaining this high level of perception.

**Question 8.2:** The study result for “agree” responses accounts for more than half of the respondents (60.4 percent) and the percentage gap against the 24.6 percent “disagree” responses is a very significant 35.8 percent, notwithstanding the 15.1 percent non-committal respondents. In addition, the “agree” study result supports a prior Board of Canada study (1999) that concluded that the promotion of risk awareness is one of the best approaches to effective risk management. The “agree” study result is significant and suggests that for a large number of the sample of respondents, the conclusion can be drawn that there is a high perception among employees that an organisational approach exists to risk management and that employees are cognisant of top risks. Management needs to ensure alignment between the risk management strategy and the governance element of the risk framework with the aim of sustaining the high level of perception.

**Question 8.4:** The study result for “agree” responses accounts for more than half of the respondents (57.7 percent) in the study and the percentage gap against the 26.9 percent “disagree” responses is a significant 30.8 percent, notwithstanding the 15.4 percent non-committal respondents. In addition, the “agree” study result supports a prior study by the South Africa Public Service Commission (2003) that concluded that the risk message needed to be employee-friendly. From the “agree” responses, a conclusion may be made drawn which suggests that a large number of the respondents do receive risk information in a friendly manner. Management needs to ensure alignment between the risk management strategy and the risk and control optimisation element of the risk framework, with the aim of sustaining the level of perception. An alternative interpretation could be that the employees are aware of risk reporting but from a unidirectional perspective, only from top management to the lower rungs of the organisational structure.

**Question 8.5:** The evidence from the “agree” responses accounts for more than half of the respondents (58.5 percent) and the percentage gap against the 26.4 percent “disagree” responses is a significant 32.1 percent, notwithstanding the 15.1 percent of non-committal respondents. In addition, the “agree” study result

supports a prior study by the South Africa Public Service Commission (2003) that concluded that defining reporting methods and frequency of reporting help to ensure that the organisation has the capacity to make the risk information available as and when it is required. From the “agree” study result, a conclusion can be drawn that suggests that a large number of the respondents are aware of measures encouraging them to report significant risks up to management level. Management needs to ensure alignment between the risk management strategy and the risk and control optimisation element of the risk framework with the aim of sustaining the level of perception.

**Question 8.6:** There is an insignificant percentage gap of 5.6 percent between the “disagree” response (39.6 percent) and the “agree” response (45.2 percent); the “agree” response accounts for more than a third of the respondents, notwithstanding the 15.1 percent of non-committal respondents. From the “agree” study result, a conclusion can be drawn that from a fair number of respondents, there appears to be a limited awareness of the risk management communication between the division and the regions. Management needs to ensure alignment between the risk management strategy and the risk and control optimisation element of the risk framework, with the aim of increased communication between the divisions and regions.

**Question 8.7:** Regarding whether management does have the training and support needed for risk management, no significant differences were found for the “agree” (39.6 percent) and “disagree” (35.9 percent) responses, with a difference of 3.7 percent between them, despite 24.5 percent of respondents who are non-committal. The “agree” result is accepted as it constitutes more than a third of the respondents and it is noted that it supports existing literature by Viscusi and Gayer (2004), who deem training as a necessary intervention with respect to creating a knowledgeable workforce and knowledge capital to minimise risk exposure. In addition, for the sample of respondents, the conclusion is that there appears to be a limited perception about the training and support meted out to management enabling them to manage risk. Management needs to ensure alignment between the risk management strategy and the governance element of the risk framework

with the aim of an enhanced training and development programme. The alternative interpretation is that the limited perception is an indication of the organisation's demographics that are more skewed towards non-managers in quantity and are unaware of the risk training management undergoes.

**Question 8.9:** The “agree” responses account for more than half of the respondents (60.4 percent) study and the percentage gap against the 26.4 percent “disagree” responses is a highly significant 34 percent, notwithstanding the 13.2 percent of non-committal respondents. From the “agree” study result, a conclusion can be drawn that suggests that a substantial number of respondents perceive that the risk information provided is used for risk management. Management needs to ensure alignment between the risk management strategy and the quantification and aggregation element of the risk framework, with the aim of ensuring that the communication reaches the employees about the ultimate use of the risk information they provide.

**Question 8.10:** Regarding whether routine assessment of costs and benefits are performed for risk control, no significant differences were found for the “agree” (37.8 percent) and “disagree” (32 percent) responses, with a difference of 5.8 percent between them. Moreover, there is a significant number of respondents, more than a quarter (30.2 percent), who are non-committal. Shimpi et al. (2001) point out that it is not all investments into risk management that can be cost-justified. The differences between “agree”, “disagree” and the non-committal respondents are not significant and more conclusive evidence is needed here. Consequently, none of the findings can be generalised to the entire population. However, for the sample of respondents, the conclusion is that there appears to be limited awareness about the routine assessment of risk management costs and benefits. Management needs to investigate which risk investments are appropriate for a cost-benefit analysis.

**Question 8.12:** It is also worth noting that there were no significant differences between 37.7 percent “disagree” responses and the 34 percent “agree” responses; the difference between these two is 3.7 percent. Although the “disagree” result conflicts with existing literature (De Loach 2000) that suggests

that common business risk language needs to be used across all organisational levels, the result has been accepted because the response rate is more than a third of the respondents. For this sample of respondents, the conclusion is that it would appear that the use of common risk terminology is limited despite the existence of more than a quarter of respondents (28.3 percent) who are non-committal. The conclusion that can be drawn is that the differences between “agree”, “disagree” and the non-committal respondents are not significant. More evidence that is conclusive is needed and none of the findings can thus be generalised to the entire population. Management needs to review the alignment between the risk management strategy and the assessment element of the risk framework with the aim of inculcating and evolving further an employee culture that uses a common risk language.

**Question 8.14:** The “agree” evidence (64.1 percent) accounts for more than half of the respondents, and is consistent with Lam’s notion (2003 p. 51) that a successful ERM programme needs to shape the organisation’s risk culture by “setting the tone from the top”. This evidence is the third highest response among the “agree” responses. In addition, the percentage gap between this “agree” response and the 22.7 percent “disagree” response is a significant 41.4 percent, notwithstanding the 13.2 percent non-committal respondents. The “agree” study result is significant and a conclusion can be drawn that suggests that top management has not only set the tone for the organisations but they have also through actions, reinforced their commitment to the risk management process. Management needs to ensure that there is alignment between the risk management strategy and the element of monitoring and reporting from the risk framework in order to sustain this perception.

**Question 8.18:** The “agree” responses (46.2 percent) account for more than a third of the respondents and the percentage gap against the 32.7 percent “disagree” responses is a significant 13.5 percent, despite the 21.2 percent of non-committal respondents. The differences between “agree”, “disagree” and the non-committal respondents are not significant and more evidence that is conclusive is needed. However, for the sample of respondents, the conclusion is that there seems to be a fair number of employees who are aware that the risk

management accountability and responsibility are documented and communicated. Management needs to ensure alignment between the risk management strategy and the governance element of the risk framework, with the aim of increased employee awareness about risk roles.

**Question 8.21:** This study result ranks as the fifth highest among the “agree” responses. It accounts for more than half of the respondents (62.2 percent) and the percentage gap against the 18.9 percent “disagree” responses is a very significant 43.3 percent, notwithstanding the 18.9 percent of non-committal respondents. In addition, the “agree” study result supports a prior study (South Africa Public Service Commission 2003) that concluded that defining reporting methods and frequency of reporting are essential for the implementation of a risk management strategy. The “agree” study result is significant and the conclusion drawn suggests that a large number of the respondents perceive that risk procedures exist to provide for timely and relevant risk reporting. Management needs to ensure alignment between the risk management strategy and the governance element of the risk framework, with the aim of increased employee awareness on procedures.

**Question 8.22:** The evidence on “agree” responses accounts for more than half of the respondents (58.4 percent) and the percentage gap against the 20.7 percent “disagree” responses is a very significant 37.7 percent, notwithstanding the 20.8 percent non-committal respondents. The study result for “agree” responses is significant and a conclusion can be drawn that suggests that for a large number of the respondents there is an awareness that a clear policy exists for risk monitoring. Management needs to ensure alignment between the risk management strategy and the governance element of the risk framework, with the aim of an increased understanding regarding risk policy.

**Question 8.26:** The study result on “disagree” responses (41.5 percent) accounts for more than a third of the respondents, it is the third highest among the “disagree” responses and the percentage gap against the 39.6 percent “agree” responses is an insignificant 1.9 percent. In addition, there are 18.9 percent respondents who are non-committal. It is worth noting that the “disagree” result



contradicts prior work by the Treasury Board of Canada (1999), in which it was evident that a risk-taking attitude across an organisation should support open discussion about risks. For the sample of respondents, it would appear that there exists but limited evidence of a risk-taking attitude among respondents; more evidence that is conclusive is needed. Consequently, none of the results can be generalised to the entire population. Management needs to ensure alignment between the risk management strategy and the risk and control optimisation element of the risk framework, with the aim of an accelerated employee education programme. An alternative interpretation for the limited risk-taking could be that employees expect risk management to be the accountability of management only.

**Question 8.27:** The “undecided” study result accounts for more than a quarter of the respondents and it is the third highest “undecided” response at 32 percent, notwithstanding the percentage gap of 8 percent between the “disagree” responses (38 percent) and the “agree” responses (30 percent). In addition, the “disagree” result refutes a prior study where a survey by the Treasury Board of Canada (1999) concluded that acceptable risk levels should be communicated to all stakeholders. The differences between “agree”, “disagree” and the non-committal respondents are not significant. More evidence that is conclusive is needed, and consequently none of the results can be generalised to the entire population. However, the conclusion is that for this sample of respondents, the indication is that very limited allowance is provided for employees to take considered risks. Management needs to ensure alignment between the risk management strategy and the risk and control optimisation element of the risk framework, with the aim of an effective risk policy on corporate risk appetite.

**Question 8.29:** The study result accounts for more than a quarter of the respondents and is the second highest “undecided” response at 32.7 percent, notwithstanding the percentage gap of 25 percent between the “agree” responses (46.2 percent) and the “disagree” responses (21.2 percent). In addition, the “agree” result supports a prior study by South Africa Public Service Commission (2003) that concluded that the risk register should be implemented and accessible to all stakeholders. The conclusion is that for this sample of

respondents, fair amounts of employees seem to be aware that a risk register exists. Management needs to ensure alignment between the risk management strategy and the monitoring and reporting element of the risk framework with the aim of increased employee awareness about the risk register. There is a possibility though that the employees are aware of disparate or non-centralised risk registers.

**Question 8.32:** The study result on “agree” responses accounts for more than a third of the respondents (48 percent) in the study and the percentage gap against the 26.0 percent “disagree” responses is a significant 22 percent, notwithstanding the 26 percent non-committal respondents. From the “agree” study result, a conclusion can be drawn that suggests that a fair number of respondents are aware that new risk should be allocated owners. Management needs to review the risk management framework with the aim of increasing awareness among the employees, and must ensure alignment between the risk management strategy and the governance element of the risk framework, with the aim of increasing awareness about risk allocation among the employees.

**Question 8.33:** The study result has the highest “undecided” response at 47.1 percent, accounting for more than a quarter of the respondents, notwithstanding the percentage gap of 13.7 percent between the “disagree” responses (33.3 percent) and the “agree” responses (19.6 percent). In addition, the “disagree” result seems to refute existing literature that argues that for risk management to be effective, stakeholder participation is critical (South Africa Public Service Commission 2003). The conclusion is that the highly significant “undecided” result would appear to indicate that there is a high degree of uncertainty among the respondents regarding the incentives for business partners. Management needs to ensure alignment between the risk management strategy and the quantification and aggregation element of the risk framework, with the aim of engaging all the stakeholders in the risk management process.

### 5.3 Overall Findings

The study survey's finding can be summarised as follows:

1. There was insufficient evidence to support or refute the following items:

Q8.10 - An assessment of costs and benefits is routinely done for existing risk controls.

Q8.12 - There is a common understanding of terminology across the company, used in relation to risk issues.

Q8.16 - The effects of risk management are understood throughout the company.

Q8.27 - The company supports the taking of considered risks to achieve objectives.

2. There was sufficient evidence to support the following items:

Q8.1 - Executive and senior managements are engaged with the risk management process.

Q8.2 - arivia.kom's risk management arrangements have been effectively communicated to employees.

Q8.3 - Identification and reporting on key risks are carried out in a consistent timely and integrated way.

Q8.4 - Risk information is provided to employees in a user-friendly way.

Q8.5 - Employees are encouraged to report significant risks up the management chain.

Q8.6 - There is effective communication about risk between divisions and regions.

Q8.7 - Managers do have the training and support they need to manage risk.

Q8.8 - Risk management is embedded within day-to-day management, business processes.

Q8.9 - Information about risks is used to actively manage and monitor them.

Q8.11 - There are known criteria for risk appetite (identification of acceptable/unacceptable risk).

Q8.14 - Management's attitude towards risk management is clear.

Q8.15 - The company's existence and performance are dependent on risk management.

Q8.18 - The accountability and responsibility for risk management are documented and communicated.

Q8.19 - Employees know how to manage risks arising in their immediate work environment, in terms of their identification and assessment.

Q8.21 - The company has procedures for reporting risks.

Q8.22 - The company has a clearly defined policy and process for reporting changing risks, risk incidents and risk control failings as they occur.

Q8.23 - Employees are aware of the importance of risk management and control in the company.

Q8.24 - The company is able to allocate appropriate resources in support of risk management policy and practice.

Q8.29 – The risk register is in place.

Q8.32 - When new key business risks are identified, an "owner" of the risk is determined to develop, implement and manage risk processes.

3. There was sufficient evidence to refute the following items:

Q8.13 - All in the company know how to manage the business risk, in terms of the identity of the risk-owners.

Q8.26 - Overall, the culture of the company tends to reflect a risk-taking attitude.

Q8.33 - Incentives for business partners to manage risks are effectively in place.

Even in a survey of this scope, it is a challenge to reach any certain conclusions about the effectiveness of the IT risk management strategy. However, the data broadly suggest that with the exception of (i) employees not knowing how to manage risk; (ii) the organisational culture being indisposed to risk-taking; and (iii) the absence of risk management incentives for business partners, the employees do have a fair level of perception of risk management and the effectiveness of the existing risk management strategy is not evident. Consequently, the data collected do answer the research question that seeks to establish the following issues: the extent of perception for risk, the management of risk as it arises in employee surroundings, and the effectiveness of the existing risk management strategy.

The conclusions in this section can be generalised to the employees in the corporate functions of arivia.kom among whom the convenience sampling was conducted. .

#### **5.4 Summary**

This chapter presented the research results and interpreted them. In order to achieve its goals, the chapter covered the analysis of the two information sources for the research study, the individual questionnaire responses and the literature work. An analysis was done to compare the survey results with prior work. Areas of support or rebuttal were identified; an interpretation of the results was presented, and a summary of findings was listed. In the next chapter, the recommendations for closing the identified gaps are discussed, while future study areas and recommendations will also be presented.

## CHAPTER SIX

### RECOMMENDATIONS AND CONCLUSIONS

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#### **6.1 Introduction**

This study sought to establish the extent of effectiveness of the IT risk management strategy at the South African IT organisation arivia.kom. The major objectives were to establish employees' perception of risk management, employees' preparedness to handle risks arising in their immediate environment and to evaluate the effectiveness of the current risk management strategy.

Based on the literature review conducted and the survey, the results broadly suggest that the risk management strategy at arivia.kom is not at a stage where it is effective. The interpretation of the findings was presented in the previous chapter. This chapter will provide an overview of the research, summarise the major research results, discuss the limitations and implications of the research, examine future study areas and make recommendations based on the survey results and the literature review.

#### **6.2 Research and Major Survey Results**

The research problem is about the management of the balance that organisations have to maintain between the costs emanating from a risk management strategy and the pursuance of profit. In Chapter 2, a review of literature established an interpretive theoretical framework. An exploratory quantitative survey was conducted and the data collected from the study were analysed and interpreted in relation to theory. The subsection below will discuss the extent to which the research objectives have been addressed.

#### **Accepted results**

- A. The employees of arivia.kom agreed with the following survey items:
  - The employer has empowered the employees to handle risks in their work environment.
  - The information employees provide is used by the management team to manage risk.

The above two survey results support existing literature as reflected in Chapter 5, and the results are accepted.

B. The employees of arivia.kom agreed with the following survey items:

- The company has a clearly defined policy and process for reporting evolving risks, risk incidents and risk control failings.
- The company has procedures for reporting risks.
- The identification and reporting on key risks are carried out in a consistent, timely and integrated way.
- Risk information is provided to employees in a user-friendly way.

Most of the above survey results supported existing literature as reflected in Chapter 5, and the results are accepted

C. The employees of arivia.kom agreed with the following survey items:

- The company's existence and performance are dependent on risk management.
- The organisational environment encourages employees to report the risks up the management structure.

Most of the above survey results supported existing literature as reflected in Chapter 5, and the results are accepted.

In the light of the reliability and validity measures employed in Chapter 3 and the data interpretation in Chapter 5, the accepted results above can be generalised, only to the employees of arivia.kom working in the corporate function but cannot be generalised to the whole arivia.kom population.

## **Rejected results**

D. The following items provided inconclusive results because of insufficient evidence. The results are hence rejected and omitted from the conclusions.

- Within arivia.kom, there is a common understanding of risk terminology.
- The effects of risk management are understood throughout the company.

E. The following items provided inconclusive results because of insufficient evidence and the results are rejected and omitted from the conclusions. However, the items are discussed further in the section “Specific Recommendations for this Study”.

- An assessment of costs and benefits is routinely done for existing risk controls.
- All in the company know how to manage the business risk, in terms of the identity of the risk-owners.

F. The following items provided inconclusive results because of insufficient evidence, and the results are rejected and omitted from the conclusions.

- The effects of risk management are understood throughout the company.

The conclusions above broadly suggest that the objective to assess the effectiveness of the arivia.kom's risk management strategy was achieved satisfactorily but only for the employees working in the corporate functions.

## **6.3 Research Study Limitations**

The following limitations of the research were identified.

- I. Common method bias: one questionnaire is used to measure all constructs and the strength of relationships between the constructs may be somewhat inflated.
- II. arivia.kom management provided a one-week snapshot during which the survey had to be conducted, though the collection of responses took longer than a week.



- III. Sample Size: arivia.kom management were wary of survey fatigue and limited the survey to a reduced population of 204 employees.
- IV. The survey is conducted in a single context i.e. in one organisation and cannot be generalised outside of one organisation.
- V. Single study test is a design limitation, and test constructs were not tested in a different time.
- VI. Questionnaire limitation: The questionnaire cannot provide an explanation of unexpected correlations or lack of correlation.
- VII. The fixed and uniform format of the study which used the questionnaire measurement instrument tends to (i) limit responses about cultural differences; (ii) limit responses about misunderstood questions, and (iii) limit the expression of opinions or feelings.
- VIII. The literature on the impact of industry drivers on risk management is thinly spread.
- IX. The literature on an effective IT Risk Management Strategy is thinly spread.

#### **6.4 Implications of this Research**

This section covers the study contributions to literature and the limitations of the study.

The study results largely support the literature with regard to effective risk management and specifically the following questionnaire items:

- the recognition by the employees that risk management is the lifeblood of their organisation;
- the existence of risk policies, and
- the documentation of risk management roles.

Regarding the management of risk by employees in their immediate environment, the study results support the literature with the following questionnaire items:

- the employee participation in the risk management process; and
- risk awareness programmes are employee-friendly.

On the aspect of the employee perception of risk management in general, the survey results' support for literature was limited in the following questionnaire items:

- I. The ambiguity of item "All in the company know how to manage the business risk and know the risk-owners" necessitates that management at arivia.kom splits the two aspects of the question for further examination. This will be discussed further under the section "Specific Recommendations for this Study of this chapter."
- II. The large number of "undecided" responses against item "Incentives for business partners to manage risks are effectively in place" deems it necessary for further research into the issue of risk management for stakeholders in the service delivery chain. This will be discussed further under the section "Specific Recommendations for this Study of this chapter".

In combining the results of the survey and the literature, the following becomes evident:

1. From the literature review in Chapter 2 and survey in Chapter 4, arivia.kom is in the initial and "re-active" phase of the risk management process. Regarding risk management, the maturity level of the organisation needs to be evaluated firstly by management and the follow-up actions will be informed by outcome from the maturity-level exercise.
2. The body of literature knowledge will be supported by the findings of this study, there are areas that need further research, and are listed in the following section "Suggestions for future study".

## **6.5 Suggestions for Future Study**

The research study covered the scope in the research topic and this subsequently resulted in the following areas being unearthed as areas for further research.

- I. The research study used a quantitative research method approach, with the questionnaire as a measuring instrument. This has limitations regarding the amount of detailed explanation that can be obtained from the participants. A qualitative field methods research approach is recommended, which could result in additional findings or even contradictory ones than what study has discovered.
- II. The impact of industry drivers on risk management.

## **6.6 Specific Recommendations for this Study**

The main research objectives were to establish the perception of risk management among employees, establish how employees manage risk in their environment and establish the effectiveness of the current IT Risk Management Strategy at arivia.kom.

In order to achieve the above three objectives, the following recommendations need to be considered:

- A. One standard set of questions was used for the sample, irrespective of the strategic, tactical and operational level of the participant in the organisational structure. A unique set of questionnaire is recommended for the different organisational level to obtain different perspectives, especially on how employees managed risk in their immediate environment.
- B. The current study looked at a homogenous population and used a convenience sample of employees with similar corporate function backgrounds. A truly representative sample should choose the sample randomly to achieve a more reliable analysis of the perception of risk among the population.
- C. The title of the dissertation is “The Study of the Effectiveness of an IT Risk Management Strategy”. In hindsight, the title “The study of a framework for an IT Risk Management” can unearth comparatively more research information on the effectiveness of an IT Risk Strategy.

- D. Regarding the move from the existing IT risk management phase to an effective IT risk management phase, the implementation needs to be gradual and phased manner and the following actions are essential for consideration in the initial phases:
- i. To review the current corporate risk maturity level (Reactive phase) using an industry-standard risk management framework in order to identify areas within the organisation which need to be addressed, and to help move the risk management process to the next phase (Tactical phase).
  - ii. To review the current corporate risk strategy, risk structure, and risk criteria.
  - iii. To dictate the corporate risk appetite and ensure that it is translated to management instructions.
  - iv. To ensure continued alignment between organisational strategy, strategic objectives and the risk management strategy.
  - v. To implement a risk register, managed at a strategic business level, which is a database of corporate risks and accessible to all levels of organisation.

The recommendations above have considered the risk management challenges of entrenched corporate culture and resistance to change. Nonetheless, arivia.kom should not wait for a perfect system solution to become available and should rather make the best use of what is available.

## **6.7 Summary**

Notwithstanding the selective generalisation of the findings to a section of the population, the research questions were answered satisfactorily and the areas of future study and recommendations were noted. Hopefully, further research into the areas identified will provide insight into refining effective IT Risk Management strategies.

The theory and the findings of the research study reveal the difficulty of finding an effective IT Risk Management strategy applicable to all organisations.

Nonetheless, an effective IT Risk Management strategy needs to consider primarily the organisation's risk management maturity level and risk appetite. In addition, organisations benefit from this approach if they implement IT risk management in a phased manner, which allows the integration of the organisation's unfolding IT Risk Management strategy with the existing, corporate risk structure and corporate risk culture. This will steer the organisation towards the objective of achieving profit in conjunction with implementing an effective risk management strategy and particularly an effective IT risk management strategy.

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# **APPENDIX 1**

## **UNIVERSITY OF KWAZULU-NATAL GRADUATE SCHOOL OF BUSINESS**

### **MBA Research Project**

**Researcher:** Vernon V. Ndimeni (011 / 203-6160 ; 082 907 0433)

**Supervisor:** Professor Anesh Singh (031 260 7061)

### **The study of the effectiveness of a Risk Management Strategy**

#### **Case Study - arivia.kom**

This purpose of this survey is to solicit information from arivia.kom regarding the effectiveness of the company's Risk Management Strategy. The information and ratings you provide us with will go a long way in helping us establish the extent to which arivia.kom's employees (a) appreciate the need for risk management, how it functions, its effects and (b) manage a business risk as it arises in their business environment.

The survey is confidential, voluntary and you can also suspend your participation if need be. The questionnaire should only take 15-20 minutes to complete.

In this questionnaire you are asked to indicate what is true for you, so there are no "right" or "wrong" answers to any questions. Simply indicate your response in the box and work as rapidly as you can. If you wish to make a comment please write it directly on the questionnaire itself. Make sure not to skip any questions. Thank you for participating!

### **BACKGROUND INFORMATION**

*(Please use an X in the blocks provided to indicate your answers)*

**1. Your age-group in years is:**

< 21	22 - 32	33 - 43	44 - 54	> 54

**2. Indicate your gender?**

Male	Female

**3. How many years of formal education do you have beyond secondary/high school?**

< 1	1 - 2	3 - 4	5 - 6	> 6

**4. What is your highest academic/professional qualification?**

Below Matric	
Matric	
Post Matric Certificate	
Degree	
Post Graduate Degree/ Diploma	
Other, please specify	

**5. For how many years have you worked at arivia.kom?**

< 1	1 - 5	6 – 10	11 - 15	> 16

**6. Please indicate your current job grade:**

SE – Band	
MP – Band	
SP – Band	
AO – Band	

O – Band	
P – Band	
I do not know my grade	

**7. Please indicate your main organisational function:**

Accountancy	
Administration	
Finance	
Human resources	
Marketing	
Operations	
Production	
Customer services	
Other (Please specify):	

**8. Please indicate your answer by placing an X in the block below the answer you choose:**

1. Executive (Exco) management and senior management are engaged with the risk management process	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
2. arivia.kom's Risk management arrangements have been effectively communicated to employees e.g. approach to risk-management, employee awareness of the top corporate risks.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>

3. Identification and reporting on key risks is carried out in a consistent timely and integrated way e.g. recording key risks using a standard template, scoring risks for likelihood and impact using clearly-defined criteria.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
4. Risk information is provided to employees in a user-friendly way.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
5. Employees are encouraged to report significant risks up the management chain.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
6. There is effective communication about risk between divisions and regions.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
7. Managers do have the training and support they need to manage risk.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
8. Risk management is embedded within day-to-day management, business processes e.g. performance management, project management and individual performance reviews.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>

9. Information about risks is used to actively manage and monitor them e.g. the nominated risk owners across all levels in arivia.kom should monitor risks and manage them upwards.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
10. An assessment of costs and benefits is routinely done for existing risk controls.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
11. There are known criteria for risk appetite (identification of acceptable/unacceptable risk).	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
12. There is a common understanding of terminology across the company, used in relation to risk issues.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
13. All in the company know how to manage the business risk, in terms of the identity of the risk-owners.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
14. Management's attitude towards risk management	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>



is clear.					
15. The company's existence and performance are dependent on risk management.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
16. The effects of risk management are understood throughout the company.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>

17. The company's risks are measured in terms of: <b>(Please mark answer/s with an X)</b>	a) Financial impact	
	b) Customer impact and satisfaction	
	c) Critical internal processes	
	d) Employee growth and innovativeness	
	e) Other <b>(please specify)</b>	

18. The accountability and responsibility for risk management are documented and communicated.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
19. Employees know how to manage risks arising in their immediate work environment, in terms of identifying and assessing those risks classified as key.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>

20. For the last 12 months the level of risk faced by the company has..... <i>(Please mark answer with an X)</i>	• Not changed	<input type="checkbox"/>
	• Required risk criteria to be reviewed	<input type="checkbox"/>
	• Decreased	<input type="checkbox"/>
	• Increased	<input type="checkbox"/>
	• Not sure	<input type="checkbox"/>

21. The company has procedures for reporting risks.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. The company has a clearly defined policy, process for reporting changing risks, risk incidents and risk control failings as they occur.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Employees are aware of the importance of risk management and control in the company.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. The company is able to allocate appropriate resources in support of risk management policy and practice.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. If the answer in (24) above was a “Strongly Disagree” or “Somewhat Disagree” what are the main barriers to the provision of	• Financial	<input type="checkbox"/>
	• Company culture	<input type="checkbox"/>
	• Internal processes	<input type="checkbox"/>

adequate resources in support of risk management? <b><i>(Please mark your answer/s with an X)</i></b>	• Management style	<input type="checkbox"/>	
	• Individual employee workload	<input type="checkbox"/>	
	• Other ( <b>please specify</b> )	<input type="text"/>	

26. Overall, the culture of the company tends to reflect a risk-taking attitude.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. The company supports the taking of considered risks to achieve objectives.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

28. The company identifies risks in terms of: <b><i>(Please mark answer with an X)</i></b>	• What can happen?	<input type="checkbox"/>	
	• How and why risks arise?	<input type="checkbox"/>	
	• Area of impact?	<input type="checkbox"/>	
	• The source of the risk?	<input type="checkbox"/>	
	• Individual employee workload	<input type="checkbox"/>	
	• None of the above ( <b>please specify</b> )	<input type="text"/>	

29. The company does have a risk register/database.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. Choose the person/function responsible for analysing and	• CEO	<input type="checkbox"/>	
	• Executive Management	<input type="checkbox"/>	

prioritising the risks facing your company.	(Exco)		
	• Internal Audit/Risk office		
	• Finance		
	• Senior management		
	• Employees		
	• Other ( <i>please specify</i> )		

31. Choose the person/function responsible for addressing the risk.	• CEO		
	• Executive Management (Exco)		
	• Internal Audit/Risk office		
	• Finance		
	• Senior management		
	• Employees		
	• Other ( <i>please specify</i> )		

32. When new key business risks are identified, an "owner" of the risk (with the appropriate skills and experience) is promptly determined and charged with the responsibility and accountability to develop, implement, and manage an appropriate business risk	Strongly Disagree	Somewhat Disagree	Undecided	Somewhat Agree	Strongly Agree

management process.					
33. Incentives for business partners to manage risks are effectively in place.	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Undecided</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>

End of Questionnaire.

***Thank you for taking the time to complete the questionnaire.***

## APPENDIX 2

25/09 2007 11:40 FAX

001/001



arivla.kom (Pty) Ltd.  
Trading as arivla.kom  
Reg No. 2000/027643/07

arivla.kom  
Ulwazi Park  
505 15<sup>th</sup> Street  
Randjespark  
Midrand 1685

PO Box 8142  
Halfway House  
1685

e-mail [info@arivla.co.za](mailto:info@arivla.co.za)  
Tel (27 11) 203 0400  
Fax (27 11) 203 6411

20<sup>th</sup> September 2007

Vernon Ndimeni  
Arivla.kom

**Dear Vernon**

I refer to your e-mail application for arivla.kom support for your research for an MBA dissertation.

Your application is supported conditional on the following:

- a) arivla.kom to have sight of your final report before it is submitted to the University. (Report cannot be released before it is signed off by myself.)
- b) The scope of your survey to be reduced to encompass only from Business Development and Corporate (Finance, HR and Legal).

Yours faithfully

A handwritten signature in black ink, appearing to read "K Pillay", written over a horizontal line.

**KIRUBEN PILLAY**  
Chief Executive Officer (Acting)

Directors: Mr N Nyembezi-Helita (Chairperson), Mr K Pillay\* (Acting Chief Executive Officer), Mr P Maharaj (alternate Mr KXT Sockwa),  
Mr JM Buys, Dr SS Mncube, Mr TK Mphuti (\*Executive Director)

## APPENDIX 3



RESEARCH OFFICE (GOVAN MBEKI CENTRE)  
WESTVILLE CAMPUS  
TELEPHONE NO.: 031 – 2603587  
EMAIL: ximbap@ukzn.ac.za

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18 DECEMBER 2007

MR. V NDIMENI (201511821)  
GRADUATE SCHOOL OF BUSINESS

Dear Mr. Ndimeni

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0787/07M

I wish to confirm that ethical clearance has been granted for the following project:

"The study of the effectiveness of an IT Risk Management Strategy"

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully

  
.....  
MS. PHUMELELE XIMBA

→ cc. Post-Graduate Office (Christel Haddon)  
cc. Supervisor (Prof. AM Singh)