The Implications of Integrating Governance, Risk and Compliance in Business Intelligence Systems on Corporate Performance Management

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Executive Summary
The last decade organizations have understood more and more the importance of enforcing achievement of the goals defined by their strategy through metrics-driven management. The data warehousing process in Business Intelligence Systems, though supporting bottom-up extraction of information from data, currently fails in the top-down enforcing of the organization strategy. Corporate Performance Management includes the data warehousing process, but it also requires a component capable of monitoring the time-critical operational processes to allow tactical and operational decision-makers to tune their actions according to the organization strategy. Integrated Governance, Risk and Compliance is proposed one of these components by providing an organization new capabilities of risk management and creating enterprise value by utilizing technology to efficiently and effectively manage risk across the organization.

1. Introduction

1.1 Context

Lately the business climate is putting organizations under different stress than they have experienced for a long time. Today's ever-changing business climate is complex and difficult to predict. At the same time the current economic state is forcing board and executives to look for profit and eradicate losses in the organization, make hard decisions about where to allocate resources and dealing with an increasing demand for their accountability. Also new legal and regulatory mandates have organizations scrambling for faster and more detailed information about the results and performance of the organization so that they can report financials with confidence (Kopcke 2003).

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In the ever-changing climate of business the capability to adapt is a worthy asset (Thierauf 2001). Intelligence is the ability to understand the relationships of presented information in such a way to guide actions to adapt an organization strategy (Thierauf 2001; Vriens and Philips 1999). Business Intelligence (BI) then encompasses the whole process of collecting, processing and interpreting information for an organization strategy (March and Hevner 2007; Vriens and Philips 1999). Business Intelligence Systems (BIS) give organizations the ability to take data from multiple data sources and transform it to singular and definitive information (Loshin 2003; Moss and Atre 2003). This information lets decision-makers show data, gain context, understand trends and anomalies to answer to performance management questions (Cognos 2007).

A growing number of organizations have recognized that the management reports generated with BIS by themselves are no longer sufficient. The generated management reports must be tightly coupled with their strategic and operational planning processes to let managers set and share the strategy of the organization. This can be achieved with fully integrated Corporate Performance Management (CPM) systems that bring together enterprise planning and financial management applications with comprehensive BI functionality. CPM is called the second era in BI (Kopcke 2005; Golfarelli et al. 2004).

1.2 Research problem and questions

As organizations use their ability to adapt to cope with the ever-changing business environment, they require unprecedented visibility into the dials and levers that affect their performance. Only through these insights can organizations achieve the level of individual and group accountability that is at the heart of improving the previously mentioned results and meeting the reporting requirements. One of the currently new levers driving organizational performance is the Governance, Risk and Compliance (GRC) concept (OCEG 2007).
Initial interest in GRC was driven by the Sarbanes-Oxley (SOX) act, but currently the perspectives of organizations in all industries on the components of governance, risk and compliance are maturing. These components are linked and aligned, and together provide a possibility to improve the quality of information, necessary for risk and compliance management. Resulting risk intelligent organizations evolve from managing risk as a transaction or compliance activity to adding business value by improving the operational decision-making and strategic planning.

Although lately there has been a lot of research in the area of the subjects BI, CPM and GRC, the knowledge of the relations and the implications of integrated GRC is insufficient. With the arrival of the second era of BI and with GRC presumably providing the component to allow decision-makers to improve operational decision-making and strategic planning it is of common interest to do research on the implications of integrating GRC in BIS and on the resulting added value for CPM.

This leads to the following research question that is addressed in the study:
RQ: **What are the implications of integrating Governance, Risk and Compliance in Business Intelligence Systems on Corporate Performance Management?**

1.3 Outline

This article consists of six sections and an appendix as illustrated in figure 1-1.

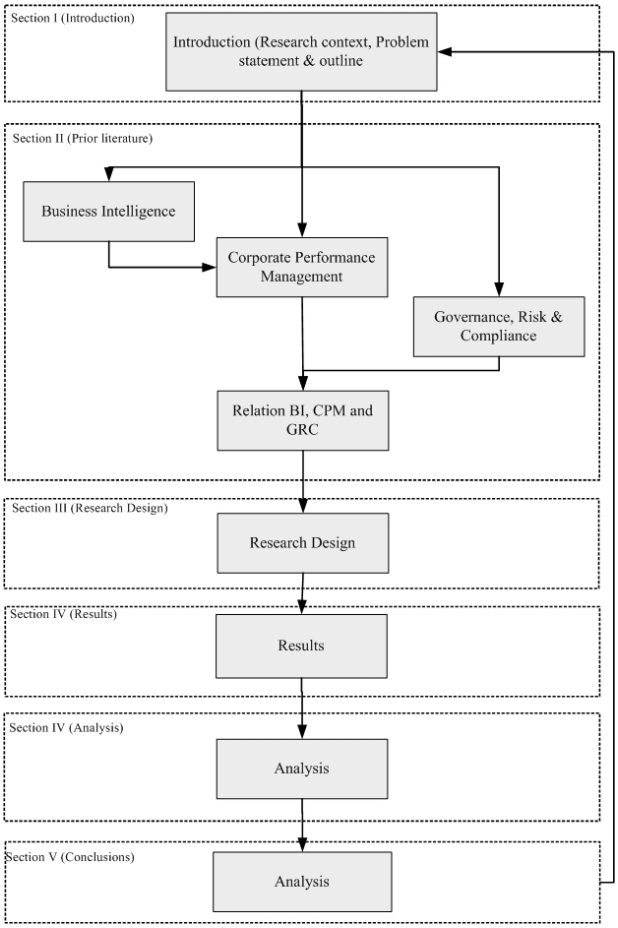

Figure 1-1: Outline article

The first section gives a brief outline of the research context, problem statement and outline of this article. The second section contains the prior literature. It provides an introduction in BIS, CPM, GRC and the relations between these concepts. The third section contains the research design, section four provides the results of the research and section five the analysis of the results. The last section, section six, contains the conclusions based on the research.

2. Prior Literature

2.1 Business Intelligence

Nylund (1999) traces back the developments associated with BIS to Proctor & Gamble's effort to build a Decision Support System (DSS) that linked sales information and retail scanner data and to the discipline that Gartner Group analyst Howard Dresner dubbed "business intelligence" in the late 1980's. Dresner put into the context of BI "all the technologies that help business make decisions based on fact. Using fact rather than intuition was key to intelligence". In this context intelligence is the ability to understand the interrelationships of presented facts in such a way to guide action to one or more

desired goals to develop and maintain a organizational strategy (Thierauf 2001; Vriens and Philips 1999). BI then encompasses the whole process of systematically collecting, processing and interpreting information with respect to a organizational strategy (March and Hevner 2007; Vriens and Philips 1999).
BIS are useful at different organizational levels within an organization. BIS are mainly used by strategic managers and executives who make decisions that guide the manner in which business is done. BIS provides managers information and helping them to make decisions from semi-structured and unstructured information, which is generated in underlying systems (see figure 2-1). Although BIS and Executive Information System (EIS) look similar, there is a big difference. BIS find answers to questions that decision-makers do not know to ask (Moss and Atre 2003). At first this seems excessive. After all, an EIS can also provide intelligence and insights by sorting out vast amounts of data. But the traditional analysis techniques rely on the analyst to know what to look for in the data. The analyst creates and runs queries based on hypotheses and the executive relies on the business views built into the EIS tool. As problems become more complex, more data-dependant and involve more variables the EIS tools fall short. BIS can support these very complex investigations (Moss and Atre 2003).
BIS are also used at the operational level to support operational decision-making. At this level BIS provide more detailed information about aspects of a process compared with information provided to the strategic level. BIS are represented as the black box in figure 2-1.

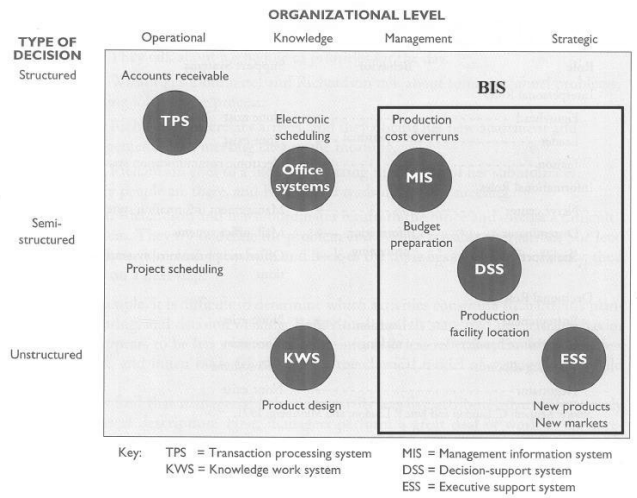

Figure 2-1: IS at the various organization levels support different types of decisions (adapted from Laudon and Laudon 2004)

2.1.1 Definition Business Intelligence

From here we assume that the utilization of BI as IS can be seen as a way that leads to better insight on the internal and external organizational environment and assists in strategic decision-making by providing valuable information. To provide better insight the organization needs to get new information by collecting data about these environments of the organization. BI is all about available information. In the context of BI a distinction for

information is made between data, information and knowledge and intelligence (Rodenberg 1999). Creating intelligence is the ultimate goal of the BI process, because it is in this context that any real value is derived. Figure 2-2 shows the distinction for information in a pyramid of abstraction.

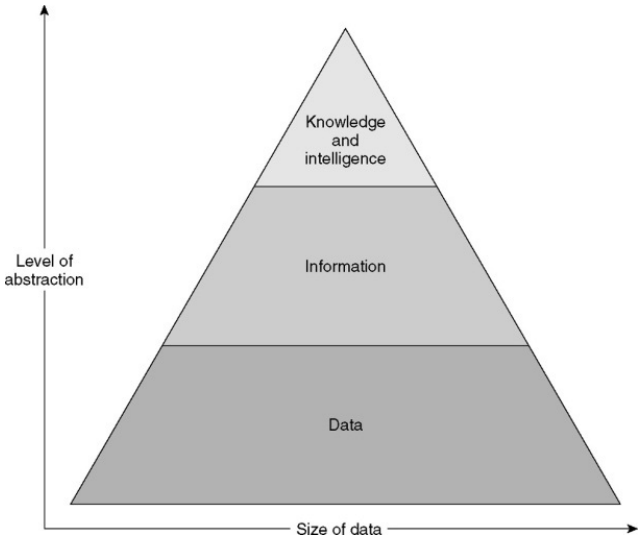

Figure 2-2: Pyramid of abstraction (Loshin 2003)

Reviewing the literature on BI gives several interesting insights and slightly different definitions on the subject (March and Hevner 2007; Hamer 2005; Thierauf 2001; Rodenberg 1999). Notable, all the definitions are based on collecting, interpreting, analyzing and disseminating information as knowledge to users, who can act upon it. A definition by Loshin (2003) covers all the relevant information on BI given in the current literature: "Business Intelligence are the processes, technologies, and tools needed to turn data into information, information into knowledge, and knowledge into plans that drive profitable business action. Business intelligence encompasses data warehousing, business analytic tools, and content/knowledge management."

2.1.2 Business Intelligence System

Now knowing what BI includes, the time has come to discuss the technologies and tools of the system supporting BI. Figure 2-3 shows a high level architecture for implementing BIS.

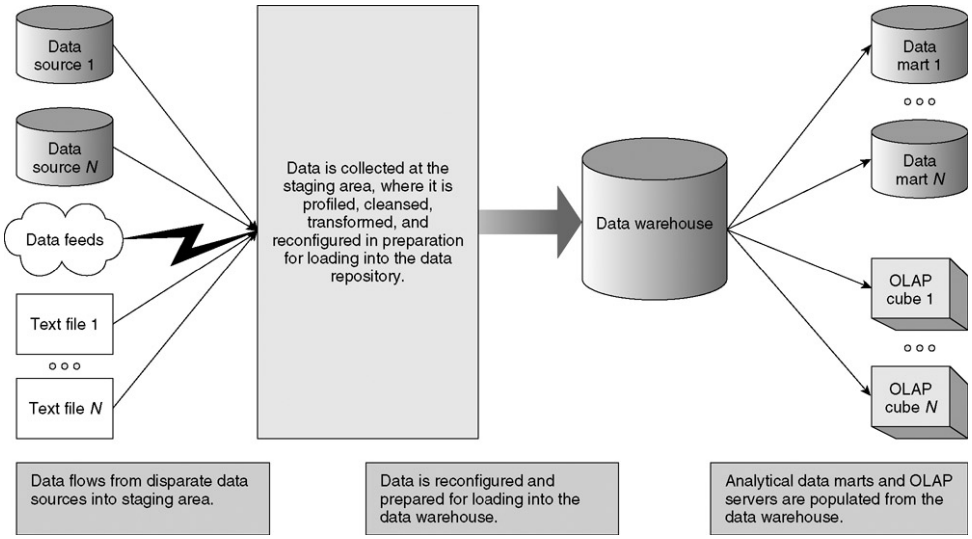

Figure 2-3: A high-level view of the information flow (Loshin 2003)

The BI-cycle starts with the collection of data from data sources, necessary to fulfill the need of information. This collected data is being interpreted and analyzed in the following step to transform it to information.

The data from data sources is loaded into a staging area. An Extract, Transform & Load (ETL) process extracts the data from the data sources, transforms the data from the heterogeneous platforms into a standard format for the Data Warehouse (DW) and loads this data into the DW (Moss and Atre 2003). This process involves the extraction of information from data.

The DW is a "subject-orientated, integrated, time-variant, non-up-datable collection of data used to support management decision-making processes and business intelligence" (Inmon 2002). The purpose of a DW is to establish a primary source of data that feeds the analytical environment within an organization (Kimball et al. 1998). Providing one source of data helps creating one version of the truth within its context that can be accessed in real-time.

From the DW the data is loaded into the analytical environment to populate analytical data marts and Online Analytical Processing (OLAP) servers. By loading the data into the analytical environment, the information can be analyzed and transformed to knowledge. Data marts are subject-orientated subsets of the data warehouse along with the analytical interfaces and tools that provide interface to the user (Loshin 2003). The data mart is fed with small amounts of subject-oriented data from the DW for a specific department or group within an organization.
OLAP presents data sources loaded from the DW (or data mart) in a way that allows an employee to view comparative indicators across multiple dimensions of the data. These indicators are summarized in a way that allows an employee to drill-down on any particular value or dimension (Loshin 2003). By drilling down on the data greater detail can be exposed. The reporting of information can be in the form of dials and charts,

spreadsheets and other interfaces depending on vendor and design choices of the organization (Cognos 2007). This information is used to support decision-making.

2.2 Corporate Performance Management

It is recognized that performance itself doesn't come with a simple definition. From an organizational view it is generally assumed that an organization that is performing well is one that actually will fulfill its objectives or will effectively implement an appropriate strategy (Otley 1999; Lebas 1995). Performance is looking for future potential, but based on knowledge created from data accumulated about the past. An overview of organizational performance is provided in figure 2-4. At the highest level all organizations are in business to achieve objectives. The activities to drive toward the objectives are guided by boundaries. These can be mandated or voluntary.

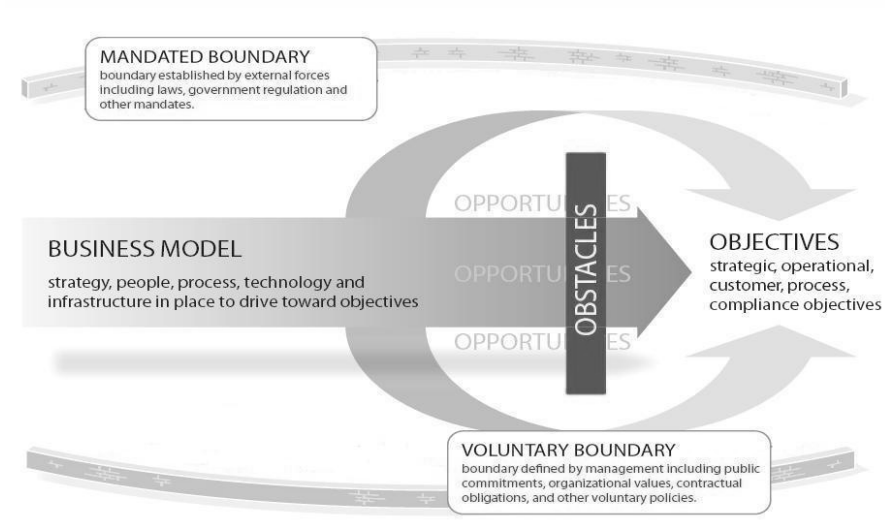

Figure 2-4: The big picture of organizational performance (adapted from Mitchell and Switzer 2007)

2.2.1 Performance Measurement

In the context of the article a quote by Lord Kelvin, "if you cannot measure it, it does not exist" (Lebas 1995), can be read as 'you cannot manage what you cannot measure'. In order to manage a strategy an organization needs to use indicators to measure the achievement of objectives. These achievements are adversely impacted by obstacles (risks). Risk-taking is fundamental to an organization's creation of value. Bernstein (1998) describes the place of risk in the system of performance as "the capacity to manage risk, and with it the appetite to take risk and make forward-looking choices, are key elements of the energy that drives the economic system forward".

Traditional performance measurement systems have concentrated on the development of indicators mostly related to financial dimensions, excluding the non-financial dimensions due to the limited ability to measure these dimensions. Kloot and Martin (2000) show that the success of organizations is based on multiple dimensions, which change both over time and stakeholders. Dimensions are often differentiated as the results of a strategy or the

determinants of the success of the strategy. These dimensions suggest that there should be a strong linkage between the strategic plans and the performance measures.
In order to have a meaningful performance measurement process, an organization has to have clear objectives, formulated from the strategy. For any type of organization strategy, setting clear objectives is vital since objectives provide a mechanism for control. That is, they provide direction and ensure adjustments can be made if objectives are not met. Two widely used techniques for objective setting are CSF (Rockart 1982) and the Balanced Score Card (BSC) (Kaplan and Norton 1992).

2.2.2 Definition Corporate Performance Management

The introduction of laws such as SOX and Basel II which require organizations to increase the transparency for managing financial and customer information and focus on good governance have greatly increased the significance of performance management systems in organizations the last decade. The second reason is the trend to improve control and profitability by the creation of approaches like the BSC. Organizations have understood the importance of enforcing achievement of the objectives defined by their strategy through metrics-driven management.

The current DW process within BIS supports bottom-up extraction of information from data necessary for decision-making, but lacks a capability for top-down enforcing of the organization strategy (Kopcke 2005; Golfarelli et al. 2004). A growing number of organizations have recognized that the management reports generated with BIS by themselves are no longer sufficient. The generated management reports must be tightly coupled with their strategic and operational planning processes to let managers set and share the strategy of the organization. This can be achieved by CPM (Kopcke 2005). The definition of CPM has been consistent since Gartner Research introduced the term in 2001 (Viaene and Willems 2007; Cognos 2005):

“CPM is an umbrella term that describes all of the processes, methodologies, metrics and systems needed to measure and manage the performance of an organization.”

CPM emerges from the current BI framework. CPM includes DW, multidimensional analysis and OLAP, but it also requires a reactive component capable of monitoring the operational processes to allow tactical and operational decision-makers to adjust their decisions and following actions according to the strategy of the organization (Kopcke 2005; Golfarelli et al. 2004). The aim of CPM is to integrate a number of applications into a single environment that includes all the necessary elements of performance management.

2.3 Governance, Risk and Compliance

Initial interest in Governance, Risk and Compliance (GRC) was driven by the SOX act, but currently the perspectives of organizations in all industries on the components of governance, risk and compliance are maturing. Organizations are expanding their initiatives to embrace an integrated view on risk and compliance (Deloitte 2007; SAP 2006). The reason is that today’s ever-changing business climate is complex and difficult to predict. At the same time organizations face unprecedented numbers of legal and

regulatory mandates, and increasing demand for board and executive accountability. Through these, obstacles and boundaries are created which have an adverse impact on achieving the objectives of the strategy.

The purpose of GRC is to provide sustainability, consistency, efficiency and transparency for the multiple governance, risk and compliance processes in the organization. This can be achieved by the cooperation among the roles responsible for GRC as well as leveraging a common framework and technology infrastructure. This involves the movement to an integrated organizational structure where GRC can be centrally overseen, but accountability is distributed to the organizational levels where it belongs (McClean and Rasmussen 2007). By becoming involved in an integrated strategy and employing an all-embracing GRC solution organizations can leverage common information, processes and systems to help them integrate governance, risk and compliance processes with performance management. McClean and Rasmussen (2007) name integrated GRC as the upcoming governance platform for defining, maintaining and monitoring risk. Without an integrated GRC strategy an organization is more vulnerable as the complexities and interdependencies of risk increase.

2.3.1 Definition Governance, Risk and Compliance

To effectively support decision-making and manage an organization all three components within GRC are needed, the components are linked and aligned (Rasmussen 2007; SAP 2006). For example good governance is achieved by proper risk and compliance management. GRC is not just about one role in the organization that is responsible for everything related to governance, risk, and compliance. The following definition of GRC as a whole is adapted from Forrester Research (Rasmussen 2007) and approved by Deloitte:

GRC is multiple processes working together in a common framework, collaboration or architecture to provide an organization overview of the information, processes, controls and evidence needed to effectively govern, manage risks and adhering to prevailing laws throughout the organization.

Next to governance, risk and compliance there are more processes playing critical roles in GRC. To understand the complete portfolio of processes related to GRC a summary is shown in figure 2-5.

SPELLING IT OUT

There are more processes than governance, risk and compliance playing critical roles in GRC, but 13-letter acronyms rarely catch on. To understand the complete portfolio of processes related to GRC, consider the following areas:

1. **Governance.** Processes typically executed by the board, corporate secretary and governance professionals including board management, stakeholder relations, evaluating performance against enterprise objectives, vetting strategy, risk oversight and so forth.
2. **Strategy.** Processes typically executed by the chief executive officer, c-suite as a whole and strategy professionals including setting strategy, designing balanced scorecards, managing corporate performance and the like.
3. **Risk Management.** Processes typically executed by the chief risk officer, business line and other executives including: identifying, assessing and managing all types of risk (e.g. strategic risk, financial risk, operational risk, compliance risk).
4. **Audit.** Processes typically executed by the chief audit executive, internal audit, audit committee and external auditors including managing internal audits, facilitating external audits, executing financial reporting, evaluating internal controls over financial reporting and other risks, and conducting investigations.
5. **Legal.** Processes typically executed by the general counsel and legal staff such as defining legal strategy, investigations, litigation and assisting with due diligence for mergers and acquisitions.
6. **Compliance.** Processes typically executed by the general counsel, chief compliance and ethics officer, compliance and legal professionals including compliance in areas such as: employment, environmental, government contracts, global trade, anti-fraud, anti-corruption, information privacy and security, sales practices, advertising and marketing.
7. **Information Technology.** Processes typically executed by the chief information officer, privacy officer and/or security officer including automating controls, managing electronic records, facilitating internal and external reporting, delivering electronic filings, securing information and ensuring privacy.
8. **Ethics and Corporate Social Responsibility.** Processes typically executed by the chief ethics officer and chief responsibility officer including managing the code of conduct, developing ethical leaders, promoting adopted principles and values, crafting public communications and reports and aligning incentives and human behavior.
9. **Quality Management.** Processes typically executed by quality professionals throughout the organization such as integrating "lean" thinking, Six Sigma or other techniques into all enterprise processes and conducting root cause analysis and process improvement projects.
10. **Human Capital and Culture.** Processes typically executed by human resource professionals and organizational design and development professionals including enhancing workforce capabilities, appraising individual and team performance, developing culture of performance, integrity, openness and accountability.

Figure 2-5: Spelling out GRC (Mitchell 2007a)

2.3.2 Maturity integrated GRC

Technology is assuming a key and enabling role in the process of integrating GRC and IT projects, priorities and processes are being increasingly driven by GRC considerations. This movement to an integrated organizational structure brings along uncertainty. IT strategies, architecture decisions and applications have not approached governance, risk and compliance considerations in an integrated manner yet. Organizations have typically dealt with governance, risk and compliance needs in a fragmented and isolated fashion, manual and not sufficiently integrated with performance management (Dittmar 2007; Mitchell 2007b). The technology is not adequately used to support governance, risk management or compliance, but is critical to GRC because IT can be the enabler of high quality information necessary for decision-making. The fragmented state of an infrastructure without integrated GRC is shown in figure 2-6.

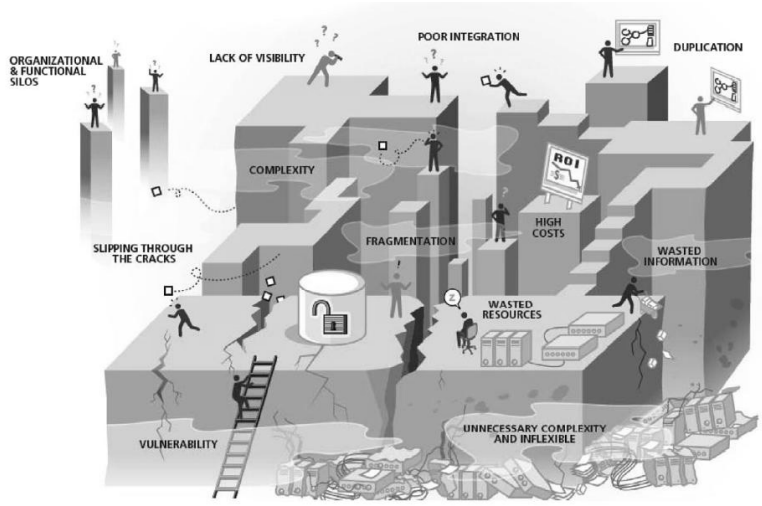

Figure 2-6: Fragmented state without integrated GRC (Deloitte 2007)

In this fragmented state information, processes and systems all live separate, silos-based lives within the organization. The result is a tangle of controls and practices buried inside

functional or geographic silos with numerous isolated activities. Silos within operations often create complexity and duplication of efforts and it leaves major gaps uncovered (Mitchell 2007b; SAP 2006). By the effective use of IT and architected solutions to embed GRC in mainstream processes and decision-making, organizations can create an enterprise wide, program based approach instead of a silos, project based approach. This possible future approach is visualized in figure 2-7.

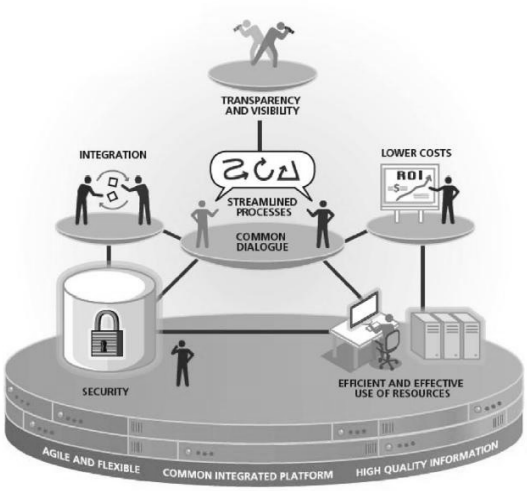

Figure 2-7: Future comprehensive state with integrated GRC (Deloitte 2007)

Figure 2-7 shows that a common integrated platform for GRC can offer organizations a framework for high quality information necessary for performance, compliance and risk management. This makes an organization more agile and flexible. Aligning the IT assets to support proactive risk management and compliance can offer much more direct and cost-effective means for an organization. But strategic adoption of IT for GRC takes time, as the integrated GRC Maturity Model in figure 2-8 makes clear.

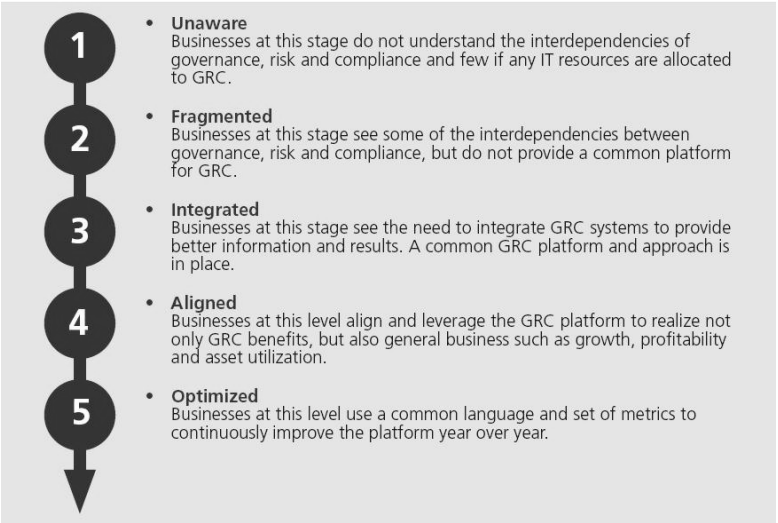

Figure 2-8: Integrated GRC maturity model (Deloitte 2007)

2.4 Relation BI, CPM and GRC

Despite investments in technology (to name BIS) to provide valuable information for decision-making some organizations still are not able to meet the information requirements to monitor risk, make informed decisions, drive strategic planning and ultimately drive future performance. Improved Information Quality (IQ) would allow managers to make better decisions (Dittmar and Vogel 2008; Lattner 2006).
Risk is a function of the complexity of doing business and the business environment. The complexities increase as the business or environment becomes more dynamic. It is important for organizations to look how they respond to these changes. Risk can be closely related to organizational performance, while these changes in complexity change or create new obstacles having an adverse impact on achieving objectives (Azvine et al. 2007).
Enterprise Risk Management (ERM) are actions undertaken based on the measurement of the achievement of business objectives. ERM can provide reasonable assurance of the extent to which objectives are achieved (COSO 2004). GRC extends traditional ERM by the integration of risk management in processes for better internal control (Buith 2008).

By utilizing technology to efficiently and effectively manage risk across the organization managers can become more intelligent about risks (Laurent 2006). This means embracing a broader and central overview of risk. Attaining this higher level of risk management is called Risk Intelligence (RI) (Dittmar and Kobel 2008). Resulting RI organizations move from managing risk as a transaction or compliance activity to adding business value by improving operational and tactical decision-making and strategic planning according to the organization strategy (Stiffler 2006). This capability of monitoring time-critical operational processes to allow decision-makers to tune their actions according to the strategy is required by CPM.
Figure 2-9 visualizes the relation between the GRC, IQ and the link to enterprise value. This figure is an adaptation of figure 2-4, visualizing the big picture of organizational performance.

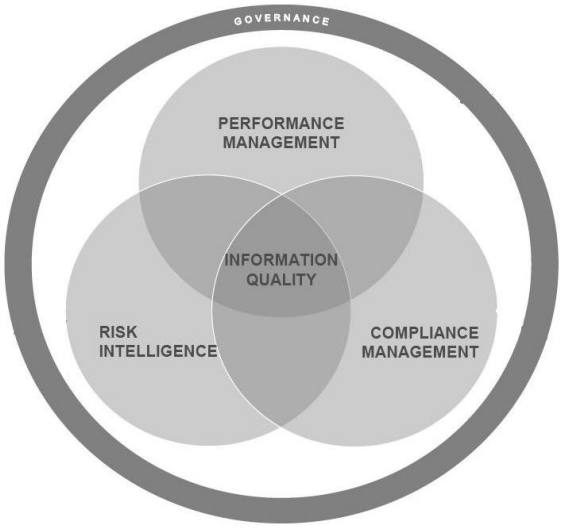

Figure 2-9: GRC and enterprise value are linked

The overall relation of BI, CPM and GRC as explained in this chapter is summarized in figure 2-10.

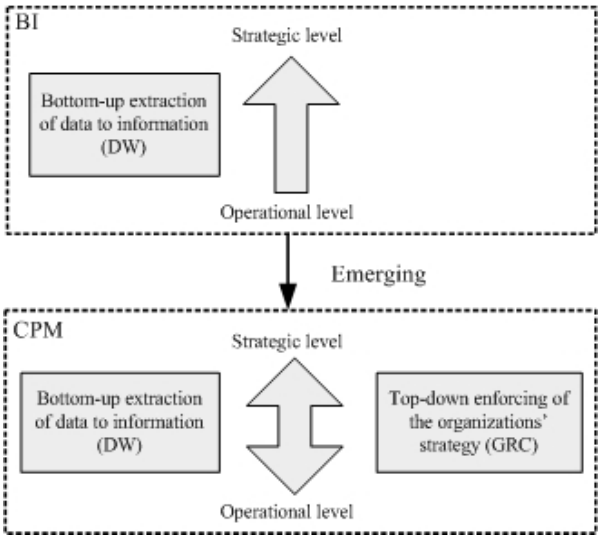

Figure 2-10: CPM emerging from BI

3. Research Design

3.1 Research Method

GRC is a relatively new concept in practice; therefore it turned out to be difficult to conduct a research to validate the prior literature empirically and propose the added value of integrated GRC on CPM. Hardly any organizations have started integrating GRC yet in their current infrastructure. The majority of the organizations are still in their orientating phase or just discovered the importance of GRC. Due to these maturity levels of integrated GRC in BIS it is hard to collect existing statistic or analytical evidence about the implications of integrated GRC. In order to validate the theory and propose the added value of integrated GRC on CPM an adapted application of the Delphi research method is used.

The Delphi method in general may be characterized as a "method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem" (Linstone and Turoff 2002). But according to Linstone and Turoff (2002) there are many different perspectives on the Delphi method and there is a diverse range of applications. For this article the application of the Delphi method as a systematic interactive forecasting method for obtaining forecasts from a panel of independent experts is good applicable due to the fact that GRC is a relatively new concept. The research question does not lend itself to precise analytical techniques, but can benefit from subjective judgments on a collective basis during a workshop. Next to that the time schedules of the experts necessary for the workshop and the costs make frequent group meetings infeasible.

The technique can be adapted for use in face-to-face meetings, and is then called mini-Delphi or Estimate-Talk-Estimate (ETE). The Delphi method has been widely used for business forecasting.

3.2 Research Design

The technique is adapted to an ETE for use in a workshop. During this workshop the Delphi method is used for forecasting the implications of integrated GRC on the organizational processes. The workshop is conducted during a yearly kickoff meeting of GRC as integrated service offering for Deloitte on the 27th of June 2008 in Amstelveen, the Netherlands.
The workshop is composed of statements which are based on the prior literature. The prior literature explained the background of BIS, CPM, integrated GRC and summarized the relations. The statements are a summarization of points of interest within the prior literature giving an implication of the impacts on the internal organizational processes.
The statements, classified by groups of interest, are shown in figure 3-1.

No.	Statement
Integrated approach	
1	An integrated approach for governance, risk and compliance processes results in better information quality.
2	An integrated approach for governance, risk and compliance processes is of more added value for organizations in dynamic environments than in static environments.
3	An integrated approach for risk management improves the quality of performed activities by employees more than a fragmented (silos) approach.
4	The benefits of an integrated approach will exceed the costs.
5	Only top management has the influence to realize an integrated approach.
6	Silos within operations often create complexity and duplication of efforts and it leaves major gaps uncovered.
7	An integrated approach emphasizes a central overview, but accountability is distributed to the organizational level where it belongs.
Automated internal controls	
8	Automated internal controls for governance, risk and compliance processes result in better information quality.
9	Automated internal controls are of more added value for organizations in dynamic environments than in static environments.
10	Automated internal controls improve the quality of performed activities by employees more than manual controls.
11	The benefits of automated internal controls will exceed the costs.
12	Only top management has the influence to realize automated internal controls.
Added value	
13	GRC moves an organization from managing risk as a risk or compliance activity to a business value adding activity.
14	GRC makes organizations more flexible.
15	GRC results in organizations that can react to risks and opportunities more alert (timely).
16	Implementing integrated GRC requires good change management.
17	Legal en regulatory mandates are the most important motives behind GRC programs.
Global	
18	Information Technology is having a key and enabling role across GRC processes.
19	BI/ERP implementations require knowledge and skills of a combination of: • Program and change management; • Internal controls; • Automated internal controls; • BI/ERP configuration; • Process improvements.
20	BI/ERP implementations require functionality to address: • KPI; • KRI.

Figure 3-1: Statements workshop

Usually a research based on the Delphi method undergoes four distinct phases (Linstone and Turoff 2002). The first phase is characterized by exploration of the subject under discussion, wherein each individual can contribute additional information. The subject under discussion, integrated GRC, has already been explored by the group of experts due to their daily practices.

The second phase involves the process of reaching an understanding of how the group views the issue, meaning where the experts agree or disagree. For this the experts were asked to anonymously give a rating on their agreement on the statements by the use of CLiCKAPAD, a radio frequency voting keypad. The rating outcome for each statement illustrates the level of agreement on a statement based on an expert's function and job title. The ratings to be chosen from are:

- Strongly Disagree;
- Somewhat Disagree;
- Neither Agree or Disagree;
- Somewhat Agree;
- Strongly Agree.

Thirdly each statement is discussed after all the statements have been rated. This way a lot of additional information is gathered from the point of view of the experts. During this phase the underlying reasons for the differences are evaluated. For this the experts with deviated answers are asked to share their explanation. This offers the possibility of a discussion.
The last phase, phase four, is the final evaluation. During this phase the experts can anonymously rerate a statement based on all previously gathered information. It is believed that during this process the range of the answers decreases and the group converges towards the "correct" answer. This brings along another benefit, it increases the integrity of the answer (Babbie 2004).

3.2.1 Respondents

The original research design had three different respondent groups: academics with a scientific understanding of the GRC concept, end-users of BIS with integrated GRC and business experts on GRC. A consequence of GRC being a relatively new concept was to find people who were available and willing to participate in the workshop.
The original setup had to be adopted in such a way that just the business experts on GRC were able to validate the prior literature by the statements put up in the workshop. In order to prevent answers with a narrow point of view, the visions of a mixture of twelve business experts on GRC were used during the workshop. The functions present within Deloitte were Consulting, ERS and TAX. Due to this their vision and the implications of integrated GRC for their clients is different.

4. Results

Figure 4-1 presents the results of the conducted workshop. The figure shows the frequency of provided ratings per statement. The rating outcome for each statement illustrates the level of agreement assigned by the experts to the specific statement. A rating of:

1. Stands for "Strongly Disagree";
2. Stands for "Somewhat Disagree";
3. Stands for "Neither Agree or Disagree";
4. Stands for "Somewhat Agree";
5. Stands for "Strongly Disagree".

No.	Statement		1	2	3	4	5	Mean	SD
Integrated approach									
1	An integrated approach for governance, risk and compliance processes results in better information quality.	**Total**	-	**2**	**1**	**5**	**4**	3,92	1,08
		ERS	-	-	-	4	-		
		TAX	-	-	-	-	3		
		CONS	-	2	1	1	1		
2	An integrated approach for governance, risk and compliance processes is of more added value for organizations in dynamic environments than in static environments.	**Total**	-	**5**	**1**	**5**	**1**	3,17	1,11
		ERS	-	4	-	-	-		
		TAX	-	1	-	1	1		
		CONS	-	-	1	4	-		
3	An integrated approach for risk management improves the quality of performed activities by employees more than a fragmented (silos) approach.	**Total**	**1**	**1**	**3**	**4**	**3**	3,58	1,24
		ERS	-	-	-	1	3		
		TAX	-	-	1	2	-		
		CONS	1	1	2	1	-		
4	The benefits of an integrated approach will exceed the costs.	**Total**	-	**1**	**4**	**6**	**1**	3,58	0,79
		ERS	-	-	-	3	1		
		TAX	-	-	2	2	-		
		CONS	-	1	2	1	-		
5	Only top management has the influence to realize an integrated approach.	**Total**	**2**	**4**	**2**	**1**	**3**	2,92	1,51
		ERS	1	-	-	1	2		
		TAX	-	3	-	-	-		
		CONS	1	1	2	-	1		
6	Silos within operations often create complexity and duplication of efforts and it leaves major gaps uncovered.	**Total**	-	-	-	**8**	**4**	4,33	0,49
		ERS	-	-	-	3	1		
		TAX	-	-	-	1	2		
		CONS	-	-	-	4	1		
7	An integrated approach emphasizes a central overview, but accountability is distributed to the organizational level where it belongs.	**Total**	-	-	**2**	**9**	**1**	3,92	0,51
		ERS	-	-	1	2	1		
		TAX	-	-	-	3	-		
		CONS	-	-	1	4	-		
Automated internal controls									
8	Automated internal controls for governance, risk and compliance processes result in better information quality.	**Total**	-	-	**2**	**9**	**1**	3,92	0,51
		ERS	-	-	-	3	1		
		TAX	-	-	-	3	-		
		CONS	-	-	2	3	-		
9	Automated internal controls are of more added value for organizations in dynamic environments than in static environments.	**Total**	-	**3**	**6**	**3**	-	3,00	0,74
		ERS	-	2	1	1	-		
		TAX	-	1	1	1	-		
		CONS	-	-	4	1	-		
10	Automated internal controls improve the quality of performed activities by employees more than manual controls.	**Total**	-	**2**	**4**	**3**	**3**	3,58	1,08
		ERS	-	-	-	1	3		
		TAX	-	1	2	-	-		
		CONS	-	1	2	2	-		
11	The benefits of automated internal controls will exceed the costs.	**Total**	-	-	**5**	**6**	**1**	3,67	0,65
		ERS	-	-	-	3	1		
		TAX	-	-	3	-	-		
		CONS	-	-	2	3	-		
12	Only top management has the influence to realize automated internal controls.	**Total**	**5**	**4**	**1**	**2**	-	2,00	1,13
		ERS	3	1	-	-	-		
		TAX	1	-	1	1	-		
		CONS	1	3	-	1	-		

Added value										
13	GRC moves an organization from managing risk as a risk or compliance activity to a business value adding activity.	**Total** ERS TAX CONS	**1** - - 1	**1** - - 1	**2** - - 2	**5** 1 3 1	**3** 3 - -	3,67	1,23
14	GRC makes organizations more flexible.	**Total** ERS TAX CONS	**1** - - 1	**3** 2 1 -	**6** 1 2 3	**2** 1 - 1	- - - -	2,75	0,87
15	GRC results in organizations that can react to risks and opportunities more alert (timely).	**Total** ERS TAX CONS	- - - -	- - - -	- - - -	**3** 1 1 1	**9** 3 2 4	4,75	0,45
16	Implementing integrated GRC requires good change management.	**Total** ERS TAX CONS	- - - -	**1** - - 1	**1** - - 1	**5** 3 1 1	**5** 1 2 2	4,17	0,94
17	Legal en regulatory mandates are the most important motives behind GRC programs.	**Total** ERS TAX CONS	**1** 1 - -	**2** 2 - -	**3** - 1 2	**5** 1 1 3	**1** - 1 -	3,25	1,14
Global										
18	Information Technology is having a key and enabling role across GRC processes.	**Total** ERS TAX CONS	- - - -	- - - -	**2** 1 1 -	**5** 1 2 2	**5** 3 - 2	4,25	0,75
19	BI/ERP implementations require knowledge and skills of a combination of: • Program and change management; • Internal controls; • Automated internal controls; • BI/ERP configuration; • Process improvements.	**Total** ERS TAX CONS	- - - -	- - - -	**1** 1 - -	**6** 1 1 4	**5** 2 2 1	4,33	0,65
20	BI/ERP implementations require functionality to address: • KPI; • KRI.	**Total** ERS TAX CONS	- - - -	**2** - - 2	**2** - 1 1	**7** 3 2 2	**1** 1 - -	3,58	0,90

Figure 4-1: Workshop results

Next to the frequency of provided ratings the mean and Standard Deviation (SD) of the total results are included per statement. Especially while the Delphi method is focused on achieving a consensus, it requires a measure of the amount of dispersion of the data. Figure 4-2 shows a scatter chart with the mean of every statement. This figure provides insight in the average rating of agreement of a statement by the experts compared to the other statements.

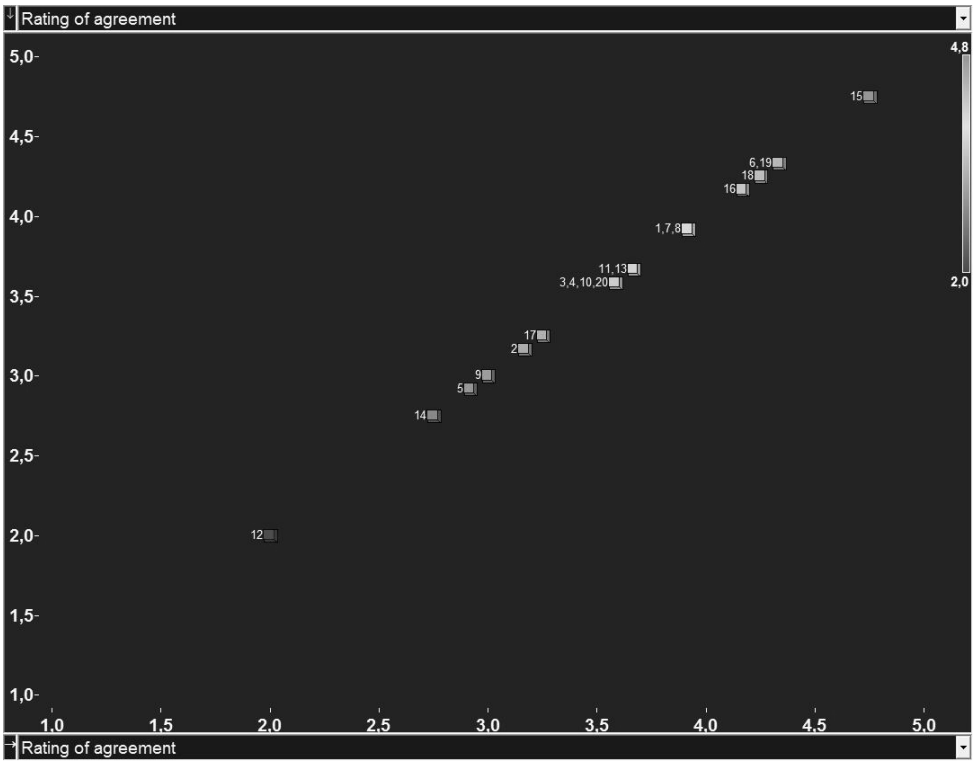

Figure 4-2: Scatter chart means rating of agreement

5. Analysis

5.1 Integrated approach

The results of this group show an interesting trend. At the start of the workshop the SD's of the ratings are quite big, but during the workshop the SD's mitigate. This can be explained by the fact that the understanding of the concept 'integrated approach' by the different experts was different. After the first round of voting some extreme ratings came up and a discussion resulted in three different views on an integrated approach:

- Overcoming a fragmented, silod approach;
- Embed GRC processes in day-to-day activities;
- Integrated approach by the functions ERS, Consulting and TAX on the subject of GRC.

According to the current literature the first two are valid views, but the last one was a complete misunderstanding. After explaining the core of the research this view was removed for further use in the workshop. The other two were both named as being part of an integrated approach. The overall trend of the SD's show that the understanding of an integrated approach grew during the workshop by the help of the explanations of the facilitator and the discussions between the experts.

To give an example of how these different views on an integrated approach would work out the discussion on statement five proves very useful. The experts who see an integrated approach as overcoming a fragmented, silod approach voted on the left side of the distribution. Every manager is able to realize an integrated approach in his own silo. The experts who combined the concept of an integrated approach with the second view would

vote on the right side of the distribution. To embed GRC in day-to-day activities a central overview would be necessary to avoid redundancy or duplication of efforts. Only top management has these capabilities.

5.1.1 Automated internal controls

As discussed above the concept 'integrated approach' was subject to different views by the experts. The concept of 'automated internal controls' on the other hand was generally understood and accepted by the expert group and not subject to any different view. This had a positive effect on the ratings by the experts, noticing the smaller SD's. Another reason for the smaller SD's is the more unambiguous agreement on the implications of automated internal controls.

By comparing the results from this group with the first group a lot of consensus shows on the ratings of agreement. The implications of both an integrated approach and automated internal controls are generally somewhat agreed on as there is hardly any difference between the means, but due to a more unambiguous rating the SD's for this group are generally smaller.

Statement five already provided an interesting discussion based on the understanding of the previous concept, statement twelve provides one on the rating of agreement compared to the rating of agreement on statement five. These are the only two statements in the first two groups where the ratings are on the negative, disagreement, side of the distribution and where the difference between the two means is significant. The expert group mostly somewhat disagrees on the statement five and mostly somewhat or strongly disagrees on statement twelve. It can be concluded that to realize core parts of GRC the influence of top management is not unique.

5.1.2 Added value

The SD's of statement fourteen until sixteen show a good consensus on the rating of agreement. Especially the SD of statement fifteen provides good insight on an important added value of GRC according to all the experts. It is more interesting to look at the differences in the ratings of statements thirteen and seventeen. These statements have more deviated ratings resulting in larger SD's. The overall trend of the ratings in this group is comparable to the trend in the first two groups.

The voting on statement seventeen results in a discussion about what is the most important motive behind GRC programs. Experts who voted on the negative, disagreement, side of the distribution state that not legal and regulatory mandates the most important motives are, but the ability to add value to the organization by doing business more effective and efficient. During the discussion it became clear that the different functions are still often focused at the boundaries established by external forces. These compliance requirements drove the initial interest in GRC according to the literature, but include only one part of figure 2-9 as opportunity to create enterprise value. Using this information on the maturity model in figure 2-8 the focus of these experts is at the first two levels, the same state as the current market operates in. Only a couple of experts point to the

opportunities to reward risk by becoming more risk intelligent. These experts are focused at maturity level three and four of the maturity model, providing an valuable integrated approach with better RI, compliance and performance management.

5.1.3 Summarization

These statements are a summarization and combination of the previous presented statements in the first three groups. Taking the mean and SD's in notice the group of experts mostly agree on the statements. This shows a better understanding of the concepts and the positive learning curve during the workshop. The consensus, as compelled by the Delphi research method, is reached.
After explaining the concept of an integrated approach during the voting on the first group of statements the experts mostly somewhat or strongly agree to the need of improving the IT infrastructure to support the integrated approach. By improving the IT infrastructure the need for high quality information necessary for decision-making can be fulfilled. Next, by the effective use of IT and embedded GRC processes organizations can overcome a fragmented, silod approach.

Statement nineteen lines up a summarization of considered aspects during the previous statements. Looking at the ratings of agreement in the previous groups, the mean and SD of this statement join in well. The experts generally agree on the required knowledge and skills and they do this unambiguous.

5.2 Recommendations for further research

This research provides insights in the implications of integrated GRC in BIS on CPM. These implications have been validated by the use of a workshop with only experts in the field of GRC. This due to the lack of knowledge outside the initiating organizations. But the market is rapidly becoming aware of GRC. During the research at least three books on GRC are published in April and May 2008 for the public market and the first results of an integrated approach on GRC are expected. A recommendation for further research could be to test and validate the statements by the use of academics having an interface with the field of GRC and end-users of BIS with integrated GRC. One of the questions that need to be addressed then is if the statements prove to be complete.

Another recommendation for further research could be investigating on how to accomplish the integration of GRC in BIS. To read and write about possible future implications of integrated GRC is one thing, but to manage how to integrate GRC in BIS and how to take care of the implications also requires a technical point of view. The integration of GRC requires time and technical improvements due to the complexity of the systems. For example systems communicate by different means of communication and interfaces. Furthermore an integrated approach also brings along the challenge of the alignment of the GRC strategy and implementation between these various systems. Another point of interest for this extended research could be the security of an integrated approach.

6. Conclusions

The prior literature on BI, CPM and GRC showed the basics and relations between these concepts and proposed possible, future implications of integrated GRC in BIS for organizations. The results from the empirical research show a certain degree of agreement on these proposed implications.

The first two groups of statements, mainly focused at an integrated approach and on automated internal controls, show a lot of consensus on the rating of agreement. The implications of both an integrated approach and automated internal controls are generally somewhat agreed on as there is hardly any difference between the means, but due to a better understanding of the concept the SD's for the second group are generally smaller. These two groups embrace the first twelve statements. According to the scatter chart in figure 4-2 all these statements are placed between a somewhat disagreement rating and a somewhat agreement rating, with the latter containing the major group of ratings.
The third group of statements, mainly focused at the added value of integrated GRC, shows that the experts generally agree on the added value of GRC, but during discussions it became clear that the opportunities of added value are not carried by all the experts yet. They are not all looking at the possible steps in maturity for clients, for example rewarding risk by creating RI organizations. The scatter chart in figure 4-2 show that the statements embraced by the third group are placed between a neutral rating and a strongly agreement rating. Especially the added value of GRC making organizations more alert to risks and opportunities is one of the statements overall strongly agreed on.
The fourth group of statements, mainly focused at summarizing the global needs and implications of integrated GRC in BIS presented by the first three groups, shows the general agreement of the need and added value of integrated GRC and provides insight in the agreement of the required knowledge and skills when integrating GRC. This conclusion is visualized by the scatter chart in figure 4-2 where all the statements from the fourth group are placed between a somewhat agreement rating en strongly agreement rating.

It can be concluded that the present experts generally agree on the implications put forward by the current literature. The implications of an integrated approach and automated internal controls provide an organization possibilities to improve the performance of the organization by creating added value. This is mostly the result of possible improved IQ, improved quality of performed activities and more alert reactions to risks and opportunities. An integrated approach and automated internal controls are important due to the overlap in activities, controls and responsibilities, created complexity and duplication of efforts. The breadth and extent of the implementations are still under discussion.

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