Managing Quality at Haskoning India

An Instrument to adapt the Royal Haskoning Quality Management System to the Indian Business Environment

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Final Report

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SUMMARY

Haskoning India's (HI) operational quality management is not designed to fit the Indian business environment. *Quality* and *efficiency* in Architecture and Building's (A&B) Advisory Groups (AG's) processes need to improve if they are to realize 1) *autonomous and healthy continuity through sustained growth and solid returns* in 2) *the high quality market*.

An extensive Project Analysis shows that adapting operational quality management to the Indian business environment should realize these objectives and policy. Strategy and policy is operationalized through the RH Quality Management System (QMS), which in the Netherlands is considered adequate. This leads to the research question:

How should the Royal Haskoning strategy, quality policy and standards be translated into a suitable quality management system for the Indian Advisory Groups to realize healthy autonomous continuity?

This research will focus on how to adapt the current 'Dutch' RH QMS where needed and possible to the influence the Indian business environment has on *output performance* (service, quality, profit, brand name). This adapted system has to realize RH strategy, quality policy and adhere to RH standards. The research objective can be stated as:

Adapt the Royal Haskoning Quality Management System to the Indian business environment so Royal Haskoning strategy and output objectives can be realized.

First, academic theory is explored that relates quality management with operations in an engineering firm and the influence of the business environment thereon. This lead to the conclusion that primarily *interface control*, both internally and externally, and the *level of skills and knowledge in the employee base* are critical in improving output performance. These challenges can be dealt with through the *organization structure* and *HRM*. Their design is heavily influenced by influences from the business environment these aspects have to operate in.
Second, the main characteristics of the RH QMS are found and described using literature regarding organization structure and HRM and relating these to the documented RH QMS. This concluded what quality policy needs to be adhered to, how interface control is performed now and what standards and skill and knowledge levels are needed.
Third, extensive empirical research into the Indian business environment was performed. This concluded that the RH QMS at HI needs to adapt to the Indian *culture* and *practices*, *legal/political* and *international* dimensions, the *labour market*, the *local clients* and *Indian staff capabilities* and *needs*.

By searching within the boundaries set by the design parameters following these three research activities the needed adjustments in the HI QMS were developed. The following focus, based on the results of the empirical analysis of the business environment, was maintained in this development:
Adjust organizations structure and HRM to a collectivistic and masculine culture that incorporates a high power distance in structure, adapts to low uncertainty avoidance and a short term vision. The corporate culture should be process, people and long term RH orientated and normative of nature. Any adjustments should also incorporate local market demands and regulations and incorporate low levels of quality, motivation, loyalty and open mindedness of the majority of Indian staff.

The adjustments in the <u>organization structure</u> are aimed at achieving *adequate interface control* through *using self-organizing groups* (one high calibre staff member controls three to four regular staff members – these groups are controlled by the DAG) and through a *shift in the organization structure* that adheres to the focus described above.

<u>HRM</u> adjustments are based on supporting the realization of achieving adequate interface control by focussing on *finding, binding and developing young, willing and open-minded staff* and, most importantly, on *finding, binding and developing high calibre staff*. A third objective here is to *retain and develop skill and knowledge level within the employee base*.

To deploy and measure the effects of these adjustments, an easy to use instrument is developed to aid A&B and HI management's decision making process regarding effective modifications and investments in HI's operations. The methodology for this development was found using Kaplan and Norton's [1996] Balanced Scorecard theories. This instrument links cause-effect relations that depict how strategic RH objectives are to be improved through operational measures (= the objectives of the adjustments developed for the organization structure and HRM in this case).

Outcome measures and *Performance drivers* are generated based on the adjustments, which indicate the ultimate objectives of the strategy and whether near-term efforts have led to desirable outcomes. They communicate how the outcomes should be achieved and provide an early indication whether strategy has been implemented successfully.

Below the instrument is presented. The arrows depict the cause-effect relations between the objectives (underlined text) of the developed adjustments. The green and red fields indicate the success in realizing the estimated objective values determined for the outcome measures (bold text) and performance drivers. (All values are FICTIONAL.)
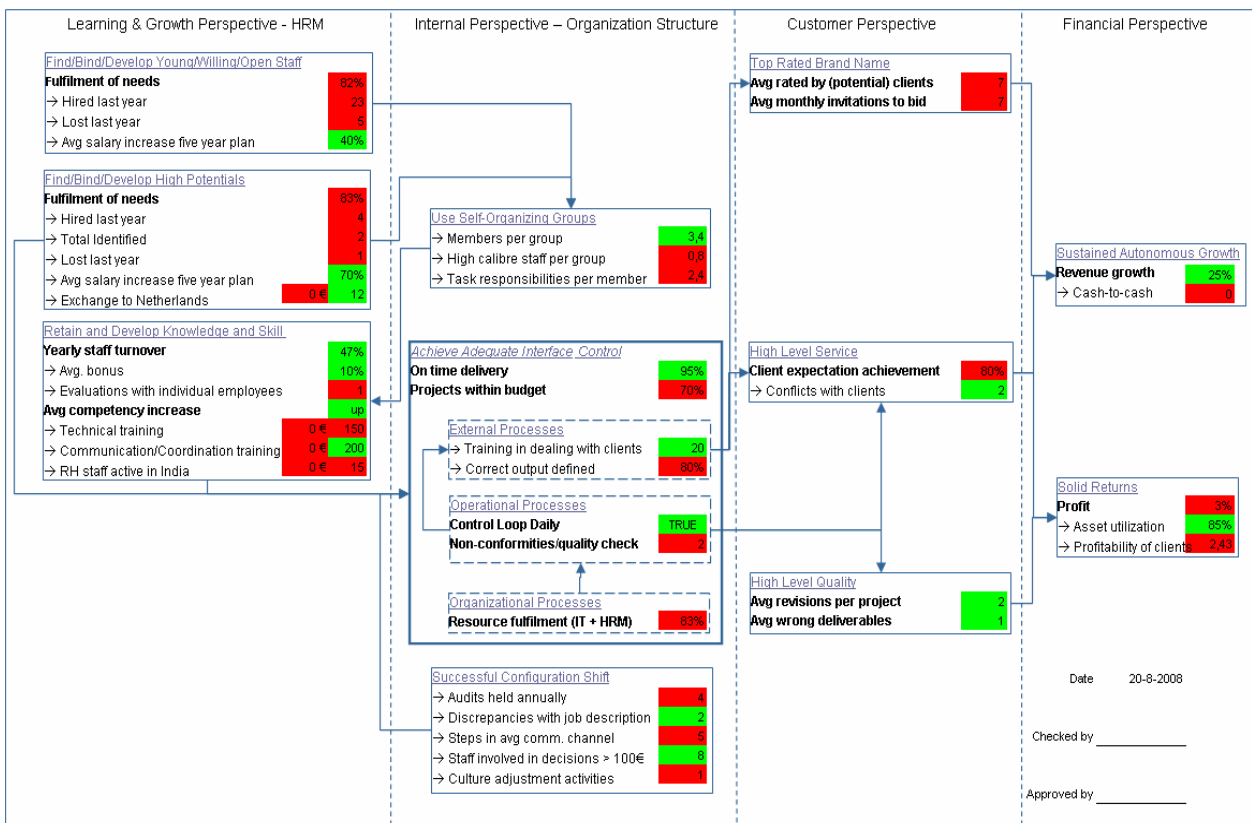
The instrument has two main functions in deciding on 'the best buttons to push' to improve output performance:

- It deploys the possible adjustments into actual measures for improvement. Estimated objective values provide direction for decisions regarding the deployment and investment strategies for A&B management.
- The actual effects of these adjustments can be documented, measured and directly related to (the success of) any stated strategic objectives using the instrument. Relating actual realized results to objective values can help determine the most effective adjustments and provides insight into the success of the deployment and investment strategy and what adjustments and operational strategy shifts might still be necessary.

CONTENTS

1. INTRODUCTION TO THE RESEARCH

1.1.   Introduction

The effective design and execution of an organization's operations are heavily influenced by its environment. For Royal Haskoning this is no different. This research will dig deeper into the challenges civil engineering firms face when branching out to countries very different from their own. An instrument is developed that underlines effective adaptation of the Royal Haskoning Quality Management System to the Indian business environment. The research will be performed for Royal Haskoning's *Architecture & Building (A&B) Division*, and especially its *Advisory Groups (AG's)* in India. This chapter covers the motivation, objective, scope and methodology of the research.

1.2.   Royal Haskoning and the Architecture and Building Division

Royal Haskoning (RH) is an engineering, consulting and architectural firm founded in 1881 in the Netherlands. Rooted in a technical background, RH's consulting services focus on the broad field of the interaction between people and their environment. RH aims at being among the top players in their market segment in regard to *services*, *quality*, *profitability* and *brand name*. It tries to ensure its *continuity* by being a profitable organization whilst achieving sustained *growth* in revenue and staff.

RH operates in 72 offices worldwide through an array of 10 divisions structured according to provided services and employs over 4600 engineers and consultants. It owns the organizational concept of 'one company operating through a network of offices which are in close contact with the clients'. The organization chart can be found in appendix 1.

The A&B division advises on planning, designing and managing buildings of all types. From within its own ranks the division can draw on most of the expertise necessary to bring any building contract to successful completion. The A&B Division performs both engineering and drafting of structural and architectural design. As an added benefit, the RH as a whole can contribute to any project requiring specialist input additional to the fields of architecture, structural engineering, installation technology, project management and facilities management in which the architecture and building division excels.

The division's objective is to solve its client's problems in an efficient and cost-effective manner with enduring solutions. Safe and pleasant working conditions and care for the world have a key place in the culture of the A&B division. To this end the division empowers its staff with a high level of autonomy and responsibility, not only to provide job satisfaction but in order to draw on a wide range of people's experiences with a view to passing these on to its clients.

[Source: Peoples Business, 2007]

1.3.   Royal Haskoning in India

In 1998 the RH *Maritime Division* took over an Indian managed and owned engineering firm in Delhi, India and started operating under the name *Haskoning India (HI)*. After having performed several projects in India, the A&B Division decided to set up a permanent branch office in Delhi in August 2007. Their two AG's took over personnel from the Maritime Division and started to expand by hiring new staff. The former Indian management was replaced by ex-pats.

Long-term prospects for A&B in India are good; improving national economy and an ever growing number of high educated (relatively inexpensive) human resources provides opportunities for expansion in this region. In order to take advantage of favourable markets the division intends to concentrate on acquiring new clients, obtaining repeat orders from existing clients and recruiting and training high-calibre staff.

Currently HI's office has a staff of proximally 70 and incorporates three of RH's divisions; A&B, Maritime and Industrial Installations (II). The A&B AG's use the facilities (office and Support Departments) of HI and fall under the executive responsibility of the A&B Division. The Support Departments are HI specific and service all divisions. The RH Quality Management System (QMS) has been centrally implemented in October 2007.

The objective is to develop HI as an *autonomous local branch office* that *conforms to RH strategy and policy* and operates *compatible with RH quality and documentation standards*. The idea behind this approach is that this creates accurate and in-house knowledge of and close involvement in the local market and business environment, which ads to competitiveness. Figure 1 presents HI's organization chart and the major forces pulling at HI's operations. Top down the HI's operations are pulled towards RH policy, strategy and compatibility to RH standards. Bottom up the HI's operations are pulled towards the Indian business environment.

The growth rate is set at 15-20% increase in staff each year to approximately 150 office staff. This number was estimated as needed to achieve healthy autonomous continuity. Revenue growth has to follow this staff growth. The objective markets are the local Indian market, the internal RH market (outsourcing) and the global market. The organization charts and general objectives for the A&B division and the Indian AG's are presented in appendix 1.
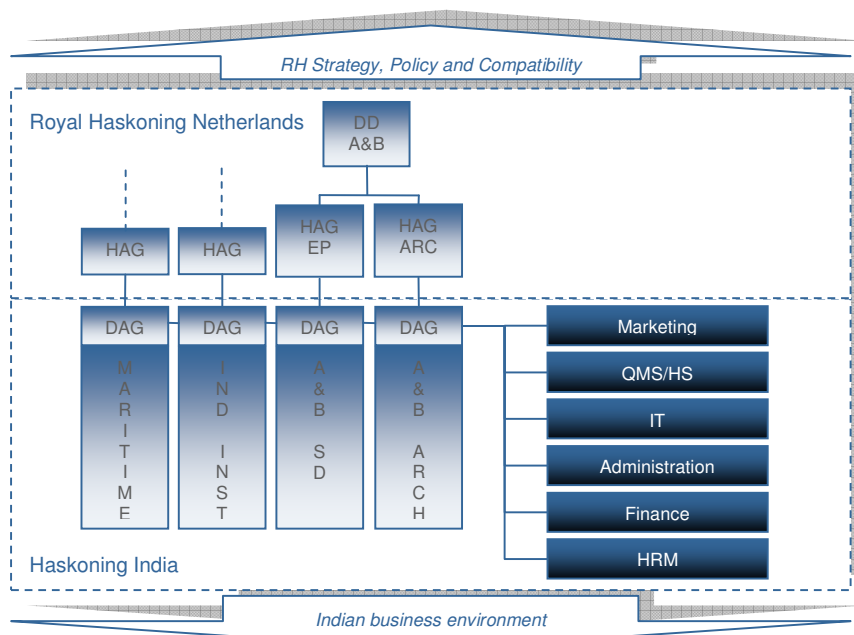
Figure 1: The HI organization chart with the A&B AG's, support departments and two major force afflicting operations.

1.4. Motivation and Research Problem

The Indian A&B AG's are in the process of finding the best way to autonomously *operate* in their *business environment* and pursue desired output performance, whilst adhering to *RH strategy and quality policy* and conforming to *RH standards*. During the execution of projects however issues with *efficiency* and *quality* performance have been

showing. Not realizing desired output performance imperils the primary objective of operating in India; healthy continuity through sustained growth and solid returns.

No definite unmitigated information or consensus exists as to where the main problems with realizing desired output lie and what cause-effect relations influence performance. This research will initially focus on unravelling these. Once a clearer picture emerges of the challenges that are to be faced, this research will focus on actually facing them. Management and staff in the AG's need to know what investments and practices are most effective and efficient in improving output performance in India; in other words '*the best buttons to push*' to realize desired output.

Any conflicts with efficiency and quality are incurred during the execution of projects. Therefore recently executed projects that represent the primary activities of the Indian A&B AG's are analyzed. This analysis is concentrated around the problems encountered and the best practices applied so far. The exact methodology used for this analysis is presented in appendix 2. The three main conclusions are:

- First, management has been deficient in their translation of clients' expectations into effective processes, structure and practices. The main inhibitors, both internally and externally, have been Indian practices and cultures.

- Second, the employee base has been inapt to provide the expected quality. Technical capabilities and process management capabilities are deficient, both internally at HI and in the labour market.

- Third, the combination of staff and the implemented RH QMS is not adequate at this moment to deal with the situational factors, primarily influences from the business environment, which influence the Indian AG's processes and output performance. Quality and efficiency are not guaranteed by this system.

The processes, structure, employee base and practices, which fall under the jurisdiction of the QMS, are not designed to adequately deal with forces in the branch office's internal and external business environment, with efficiency and quality loss as a consequence, which could eventually threaten the objective healthy autonomous continuity. This leads to the following research problem:

> How should the Royal Haskoning strategy, quality policy and standards be translated into a suitable quality management system for the Indian Advisory Groups to realize healthy autonomous continuity?

1.5. Research Objective

An intrinsically good RH QMS exists that prescribes best practices, processes and structure to realize strategic objectives and successful output performance for RH. It captures the operations, procedures and guidelines for the primary and support processes. It is designed based on the *actual operations that need to be performed* (i.e. what makes RH an engineering firm), *RH quality policy and standards* and a *Dutch business environment*.

In India this QMS has had a low degree of success. Here this 'Dutch' system has to deal with Indian staff and *an Indian business environment*. The *operations to be performed* and the *quality policy and standards* remain the same for the Indian AG's. So what A&B management needs is a method to adjust the RH QMS into a system that can adequately react to forces in the Indian business environment and can realize desired output objectives for the engineering firm HI.

This involves dividing the research subject into three levels: The QMS (level 1) which is the foundation for the design of the organizational aspects that make an engineering firm (level 2) and how these are imbedded in and moulded by the business environment (level 3).

The effect of any adjustments in the QMS and their influence on output performance need to be measurable. Information concerning cost-gains relations of adjustments is needed to decide on the 'best buttons to push' in the HI organization to adapt to the 'new' Indian business environment. These 'buttons' represent investment possibilities and possible implementation plans to adapt the RH QMS to the Indian business environment so the AG's at HI can realize RH strategy and objective output performance.

Figure 2 presents this schematically by relating analysis on three levels described above and what is to be adapted. It shows how a different (i.e. Indian) business environment results in an engineering firm that is designed around a QMS which is adapted to realizing similar (i.e. RH) output objectives and performing similar operations in this environment.
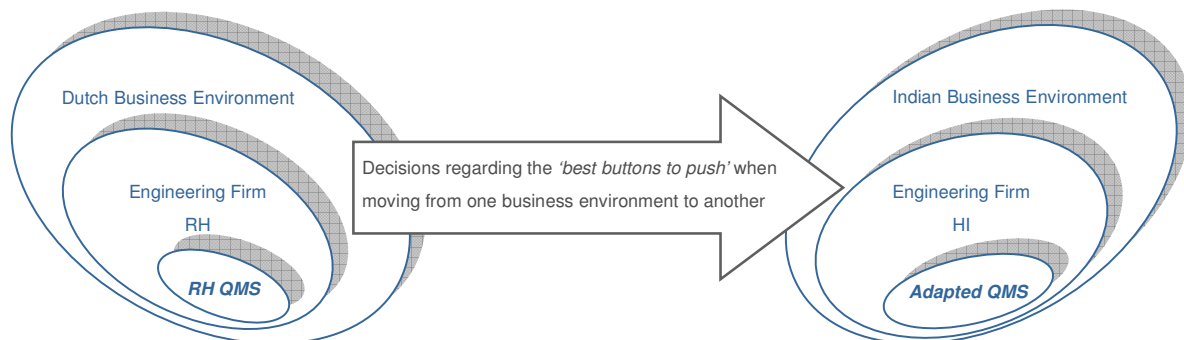
Figure 2: The QMS in relation to the engineering firm and its business environment. Moving to different environments can require adaptation of the QMS.

The research objective is stated as:

> Adapt the Royal Haskoning Quality Management System to the Indian business environment so Royal Haskoning strategy and output objectives can be realized.

1.6. Scope

1.6.1. The Engineering Firm; Tasks to be Performed

Engineering firms like RH deliver professional engineering services directly to public and private parties. Their activities are analyzable, non-routine and completely client-specific. Product specifications usually come about gradually during the different phases of the primary process trough negotiation with the client. This makes the client an integrate part of the primary process. The products have a high level of tangibility. The organization is project orientated.

HI is set up as a branch office. A RH *branch office* is part of the legal RH entity under which it operates and has its own organization and administration. It underwrites business for its assigned territory, has its own balance sheet and is subject to local regulations.

1.6.2. Output Performance

The level of *output performance* is seen as the combined level of success achieved on all of the following aspects:
- Service   -   The objective is 100% of clients expectations achieved or surpassed;
- Quality   -   The objective is 0% non-conformities and on-time delivery according to the specified price;
- Profit.   -   At least a 5% margin is required to constitute a solid return;
- Brand name -   The name 'Royal Haskoning' must be known and respected by (potential) clients.

These four output measures together can report the overall *effectiveness* of the RH organization.

The A&B Division wants to operate in high quality and profitable markets where clients expect high level performance of international engineering firms like RH. This means clients expect the A&B division to deliver their service:

1. *according to client expectations;*
2. on *time*;
3. *according to a specified price.*

The origin of these ambitions can be found in RH's belief that they can provide better quality and more comprehensive services than most Indian engineering firms, which is their main selling argument for the local and global market.

Feigenbaum's [1983] value driven definition of *quality performance* is introduced here to further define what is meant by realizing output performance through sufficient quality and efficiency. His definition was developed from an operational point of view, especially suited to the service industry. It relates the level of quality to price. He states that quality means "best for certain customer conditions. These conditions are a) the actual use and b) the price of the product."

1.6.3. The Quality Management System (QMS)

The current QMS implemented in India is copied from the QMS applied by RH in the Netherlands. This QMS incorporates the following four interrelating *organizational aspects* [RH QMS version 1.0, December 2007]:

- management responsibility (the organization structure);
- resource management (IT management and HRM);
- measurement, analysis and improvement methods (audits and development of the QMS);
- product realization procedures and guidelines (project and document management).

Given the structure of HI (figure 1) the QMS and its elements in this report concern the entire HI organization and not just the A&B AG's. The QMS is free to be designed how deemed most effective, with two restrictions:

1. The documentation needs to be compatible with RH quality standards;
2. ISO certification is eventually wanted.

The QMS prescribes the structure, practices, procedures and guidelines for the primary and support processes. The input of the primary processes constitutes varying elements and quantities of external aspects such as client demands and contracts and of internal aspects such as resources, boundaries and technical standards. The QMS should balance the input, processes, the RH quality policy and standards and the influences from the business environment in order to realize successful output performance.
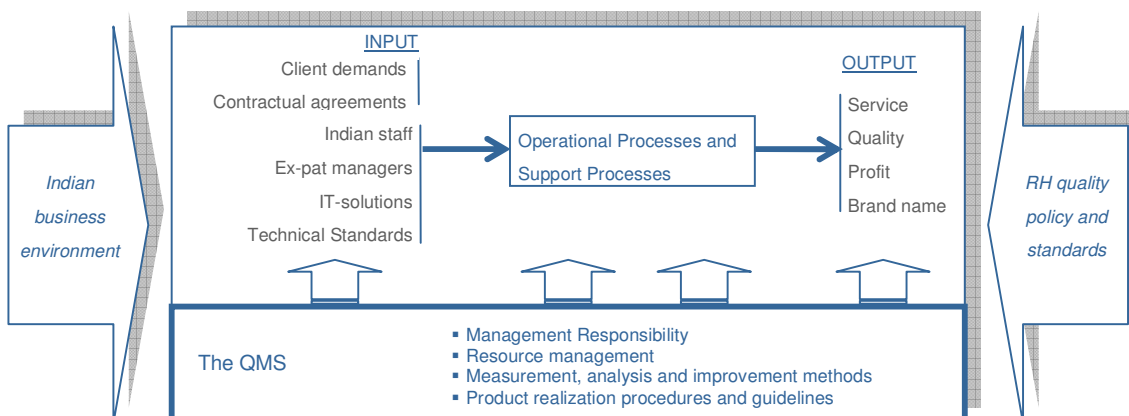
Figure 3: Processes and the main forces influencing them. The QMS should create a balance between these aspects.

1.7.   Research Questions

A set of research questions is asked here which answers provide the knowledge and information needed in adapting the RH QMS to the Indian business environment for HI.

Three levels of depth of analysis were identified during the definition of the research objective (see section 1.5):
- The role of the QMS;
- Operations to be performed in engineering firms;
- The influence of the business environment thereon.

The design parameters for the development of the adapted system need to be determined. In doing so first the three levels above need to be delineated. The first question concerns what can be learned from theory devoted to these three levels and how they are related.

1.   *What can be learned from literature about quality management in engineering firms' operations and the influence of the business environment thereon?*

The answer provides information about the actual operations that need to take place to assure quality, how to execute them under given environmental influences and the responsible organizational aspects. This should result in the first set of design parameters.

When the objective is to adapt a certain system, its underlying principles and what that system constitutes needs to be known. This way design parameters set by RH quality policy, standards and best practices can be determined.

2.   *What are the main characteristics of the RH quality policy and RH QMS that should be adhered to?*

Adapting a system to a certain business environment requires information about what that business environment constitutes needs to be known. This leads to a third set of design parameters.

3.   *What are the main elements in the Indian business environment that influence the effectiveness of the RH QMS and what are their states?*

Once the design parameters are known effective adjustments can be developed adhering to these parameters. The main question to ask here is:

4.   *What effective adjustments can be made in the RH QMS to adapt it to the Indian business environment?*

Once these adjustments are known a method or instrument is needed that can be used to effectively adapt the RH QMS to the Indian business environment. It must provide an overview of how to deploy the adjustments and the effect these adjustments have on output performance:

5.   *What instrument can be developed that can direct the deployment of the adjustments and measure their effect on output performance?*

1.8.   Methodology

A&B management's motivation to research the causes of quality and efficiency issues and how to improve output performance has led to the project analysis described in appendix 2. From the conclusions of this initial research a

research problem and objective were filtered that divided the research subject into three levels. These led to the research questions above. A research activity has been determined to find an answer to every question.

1) *Develop a theoretical framework concerning the main organizational aspects of quality management in operations of an engineering firm and the influence of the business environment thereon* (Chapter 2)

   The project analysis is the onset of the framework and the research scope will provide its boundaries. Literature regarding operations in engineering firms can present the critical points in realizing desired output and which organizational aspects are responsible for their success (i.e. the tasks to be performed). These are then related to literature concerning the influences of the business environment thereon. Theories on quality management can show how the critical organizational aspects can be adapted to the business environment.

2) *Define the main characteristics of the Royal Haskoning Quality Management System that the adapted system should adhere to* (Chapter 3)

   The documented RH QMS is explored, following theories that delineate the critical organizational aspects, to determine how the main quality and value adding characteristics are designed now for RH. This leads to conclusions concerning what the RH quality policy constitutes and what practices must be adhered to in the redesign of these organizational aspects for the adapted system.

3) *Define the elements and their states of the business environment that can influence the effectiveness of the Royal Haskoning Quality Management System at Haskoning India* (Chapter 4)

   The main elements in the Indian business environment that influence operations at HI are sought. Necessary empirical research methods described in the theoretical framework will be used to determine their states.

4) *Develop effective adjustments in the RH QMS to the Indian business environment* (Chapter5)

   The three sets of design parameters above are used as the pillars on which the effective adjustments in the RH QMS are developed. Effective adjustments are those that add value and quality to the primary process and thus improve output performance.

   1. In the theoretical framework is determined where and how an engineering firm like RH can realize successful quality management and how business environments influence the design of the organizational aspects responsible for this success.
   2. The research into the RH QMS provides design parameters concerning what the added quality and value should be and what the best and mandatory practices are in realizing these at RH.
   3. The empirical research determined the parameters set by the Indian business environment HI's operations need to adhere to.

   So adjustments need to take place within the boundaries of the critical organizational aspects. These organizational aspects must be directed at RH quality policy and adhere to mandatory RH practices. The adjustments must lead the design of the organizational aspects adhering to the Indian business environment.

5) *Develop an instrument for A&B management that can deploy these adjustments and relate their effect to the actual improvement of output performance* (Chapter 6)

An instrument will be developed that directs the deployment of the possible adjustments and the measurement of their effect on output performance. Several quality policy deployment methods will be examined that can form the basis for the instrument. The best method will be chosen based on its ability to realize the research objective with the information collected during the research.

These activities can be translated into the research framework of figure 4:
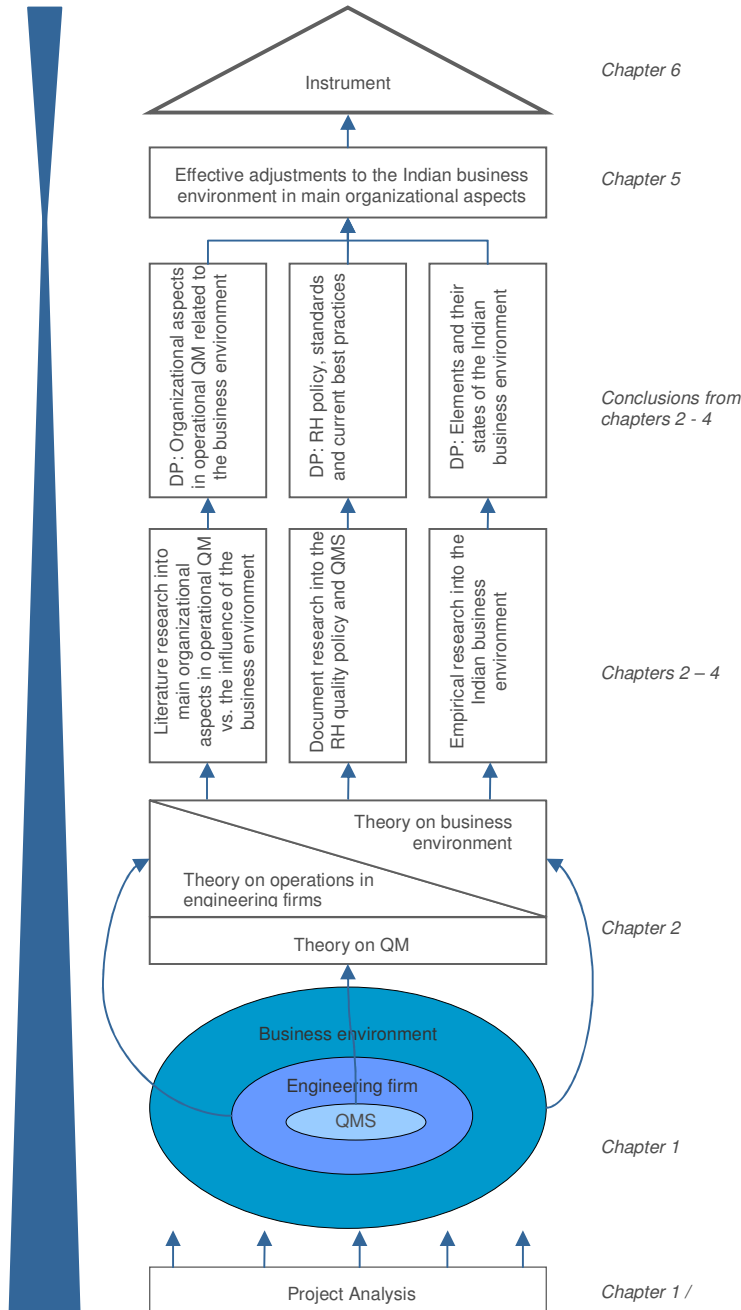
Figure 4: Research Framework

The conclusions of the research and recommendations for A&B and HI management are presented in chapter 7.

2. THE INFLUENCE OF THE BUSINESS ENVIRONMENT ON QUALITY MANAGEMENT IN ENGINEERING FIRMS' OPERATIONS

2.1. Introduction

The first research question asked: *What can be learned from literature about quality management in engineering firms' operations and the influence of the business environment thereon?*

The chapter starts in section 2.2 with explaining what the operations performed in a civil engineering firm like RH constitute. The critical points in realizing desired output performance and the organizational aspect responsible for their success are determined. From here on the chapter continuous with delineating on elements found in the business environment in section 2.3, especially those that appear to be of main influence: the cultural forces.

Theory concerning quality management in engineering firms' operations is presented in section 2.4. The primary influences of the business environment on the critical organizational aspects will then be discussed. Finally several quality policy deployment methods are covered.

2.2. The Engineering Firm's Operations

The operations in an engineering firm are regarded here as a set of activities grouped into processes and the activities performed on the interfaces in and between these processes.

2.2.1. The Processes

Davenport [1994] describes the business related processes in any organization as follows. "A *business process* is seen as a collection of contributions from each micro operation to fulfil (internal or external) client's needs. Micro operations (for example departments) reach inputs from and give outputs to other micro operations (…) A business process is a collection of interrelated tasks, which solve a particular issue. It is important to consider that a business process begins with a client's need and ends with a client's need fulfilment". He defines three types:
1. Management processes – The processes that govern the operation of a system;
2. Operational processes – Processes that constitute the core business and create the primary value stream;
3. Supporting processes – These are instituted for the support of the operational processes.

Van der Bij [1999] claims that the quality of the output or end result of the *operational processes* is influenced by:
1. The *work performed in the operational units*. This includes the actual design, calculations and drawings executed by skilled and knowledgeable employees;
2. The decisions taken on the interfaces between different stages in the process. This is called *interface control*.

In other words: quality can only be delivered when besides adequate quality realization during the different stages of the operational processes these different stages are sufficiently aligned with each other and the staff executing these stages command a certain level of *skill and knowledge*.

So primarily how interface control is performed and the level of skill and knowledge are affected by the business environment. The technology and knowledge applied in the operational units are insensitive to differentiating business environments since they are based on academic truths; moments, geotechnical survey methods and normal forces are concepts that are universally applicable.

Supporting processes are executed by support departments, which in civil engineering firms primarily incorporate HRM, IT, QMS, Finance and Marketing, of which HRM, IT and QMS have a direct influence on operational processes. Finance has a controlling function and Marketing has a public relations role to fulfil on an operational level.

Van der Bij [1999] concludes that realizing and delivering products that have the right quality level are the result of:

- good control during all primary organizational activities (operational processes);
- accompanied by supporting activities (supporting processes);
- within a framework that has been set by a sufficient quality policy (management processes).

This means management, operational and support departments are all equally responsible for successful control during the stages and interface control in the operational processes, as is shown in figure 5. The single lined arrows depict the primary interfaces in an engineering firm. Clients are involved on every interface in the operational process.
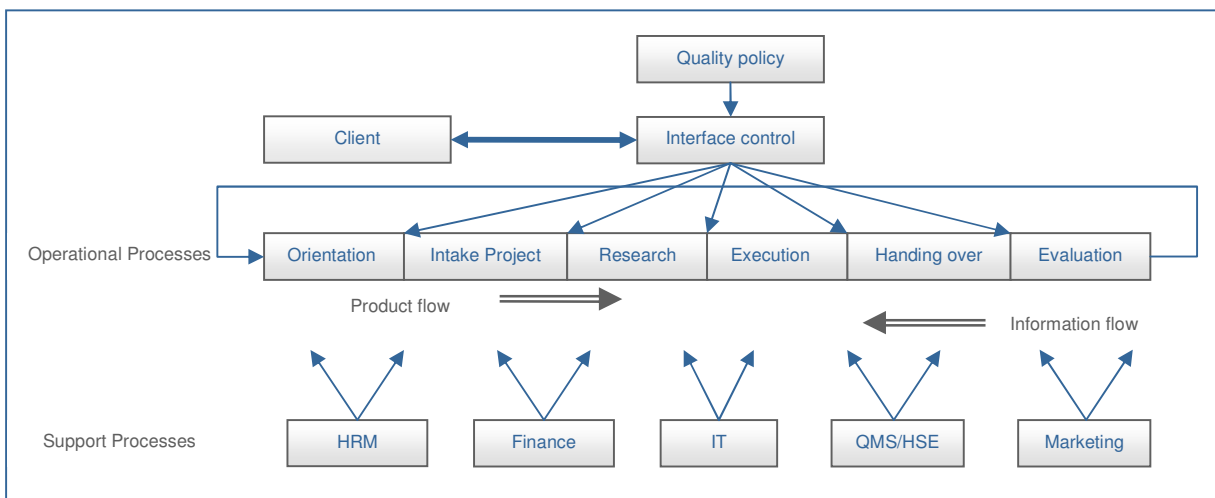
Figure 5: The interface model by Van der Bij [1999] adjusted for the processes generally found in engineering firms.

2.2.2. The Interfaces

Here the interfaces are delineated to get a better understanding of what they constitute. Because of the variety of projects, which is in the nature of engineering firms, no one exact set of interfaces can be determined. From figure 5 a generic division can be made for this research:

- *External interfaces*. Here the processes have to consult and negotiate with external parties such as clients and the labour market. Many of the specifics and parameters of tasks executed in the operational units and support department are determined here.

- *Internal operational process interfaces*: These are the interfaces between the different operational stages. Vorstman [1981] argues that regulating this sort of interfaces is composed of asking transitional questions on every interface that are directed at four important aspects:
  - *Product*: Does what has been developed conform to the specifications?
  - *Time*: Is the product being developed going to be on time?
  - *Money*: Is the end product going to be within budget?
  - *Market/client*: Is the need still the same?

- *Internal organization interfaces*. On these interfaces the necessary support for the operational process wherever is determined and provided. Consultation and negotiation between the operational units and support departments governs these interfaces.

2.3.   The Business Environment

Extensive empirical research has been performed that demonstrates the influence the business environment has on organizations by scholars such as Duncan [1972], Lawrence & Lorsch [1969, 1970], Negandhi and Reimann [1972], Hofstede [2005, 2007] and many others. Academic studies by Hofstede [2005, 2007], Pinto [2004], Trompenaars [2000], Negandhi and Reimann [1972], Ray and Chakrabarti [2006], Tayeb [1987] have already shown that 'Western' theory and logic do not always apply to an environment like India's.

Daft [2000] divides an organization's business environment in an internal and an external environment. According to him, if an organization is to be successful, the _internal organizational environment_ should be suited to deal with influences deriving from the external environment. "The internal organizational environment primarily consists of the *corporate culture*, *management* and *staff*. (…) The _external organizational environment_ includes all elements existing outside the boundary of the organization that have the potential to affect the organization". The organizations external environment can further be conceptualized in 2 layers [Daft, 2000]:

The _task environment_ is closer to the organization and includes sectors that the organization performs day-to-day transactions with:
- *Suppliers* provide the 'raw' materials the organization uses to produce its output.
- *Clients* are the entities that acquire the service of the organization.
- The *labour market* represents those people in the external environment who can be hired to work for the organization.
- *Competitors* are those organizations who are eligible to perform the same projects.

The _general environment_ is the outer layer that is widely dispersed and affects the organization indirectly:
- The *economic* dimension represents the general economic health of the region in which the organization operates.
- The *socio-cultural* dimension involves demographic characteristics as well as the norms, customs and values of the general population.
- The *legal/political* dimension includes government regulations at the local, state and federal levels as well as political activities designed to influence corporate behaviour.
- *International factors* represent events originating from foreign countries.
- *Technological factors* include technological advancements in a specific industry as well in society at large.

Most elements speak for themselves and need little further delineation. The concepts of internal environment, corporate culture, socio-cultural dimension, values and practices are however closely intertwined and their boundaries and definitions are still somewhat unclear. All that can be said so far is that they all hold some connection with culture. Therefore the next section will describe these cultural forces in more detail.

2.3.1.   Cultural Forces

Culture is an extensive concept and therefore hard to define [Pinto, 2004; Hofstede, 2005]. Many different academic fields such as sociology, anthropology and managerial studies discuss this concept at length and agreement on the

definition of culture can hardly be found. Trompenaars [2000] expressed this by stating: "It is frequently asked what aspects cannot be included in the definition of culture". So first is tried to describe what is meant by culture in this thesis, by looking at extensive research performed on the matter by three different authors. After that the cultural forces and possible effects of these cultural forces are delineated.

2.3.1.1.   Defining Culture

Hofstede (2005) defines culture as "the collective programming of the mind which distinguishes the members of one group or category from another". "Culture is always a collective phenomenon which is shared to a certain degree by people in the same social surroundings." It is argued that each individual carries patterns of thinking, feeling and potential acting which have been acquired during his or her life; this means that people are not born with culture.

Trompenaars and Hampden Turner [2000] have conducted research on national cultures for many years. According to their definition culture is "the way in which a group of people solves problems and reconciles dilemmas". Social interaction assumes common ways of processing information among people that are interacting. Mutual expectations are of crucial importance for communication to be meaningful; otherwise misinterpretations will disrupt the relation.

Pinto [2004] has been very active in the field of culture and intercultural management and communication. Pinto defines culture as "an evolving system of values, norms and rules… Culture is passed on and internalized by members who belong to a certain group. Culture often guides the behaviour of people and influences their view on the world. It is imparted on us during our lives as a socializing process, starting already in the early stages of childhood". Pinto argues that people are influenced by many more factors than merely their culture. Personal traits such as flexibility, creativity, intelligence and the degree of interior extraversion are often beyond the influence of culture.

Although all three theories formulate the concept of culture in different ways, similarities can be found in each definition. While Hofstede formulates culture as mental programming, Trompenaars and Hampden-Turner see it as a way in which people reconcile conflicts. Pinto defines it as a system of values, norms and rules. Common assumptions that underlie each of these definitions are:
1. Culture is shared by a group of people;
2. Culture affects norms and values;
3. People are culturally developed from birth;
4. Culture becomes visible through people's actions and behaviour.

The concept of culture explained by Hofstede offers the most elaborate definition and shall thus be used in this research. His theories focus on cultural differences. He argues that cultural challenges for an organization are primarily accountable to differences in <u>national</u> and <u>corporate cultures</u> and sees them as incomparable. His theories on cultural differences have been proven, elaborated on and discussed by many authors, including Tijhuis [1996], Sanders & Neuijen [1987], Negandhi and Reimann [1972], Ray and Chakrabarti [2006], Friedman [2007] and Tayeb [1987].

2.3.1.2.   National Culture: Values

The national culture level is the strongest. It is based on deeply situated *values* people acquire the first ten years of their life. Values are "broad tendencies to prefer certain states of affairs over others" [Hofstede, 2005]. Corporate culture is expressed through more practical mechanisms (symbols, heroes, stories and rituals) people can *adapt* to more easy. It is more superficial of nature.

The importance of national culture to organizational life has been stressed by Hofstede [2005]. He argues that "if multinationals want to function, they need to coordinate and control their operations through worldly practices that are inspired by the national values of their origin, but can be learned by staff from a range of nationalities".

Geert Hofstede spent over forty years developing and fine-tuning theories and data about national cultures and their differences. The information was collected through 160.000 questionnaires with at its origin the IBM studies. This multinational proved to be the perfect research subject: its personnel were equal in every way except for nationality. Statistical analyses of their answers to questions about their values, showed that their problems are common, but solutions differ from country to country on the following five dimensions [Hofstede, 2005]:

1. Power Distance;
2. Collectivism versus Individualism;
3. Masculinity versus Femininity;
4. Uncertainty Avoidance;
5. Long versus Short Term Orientation

Ad 1) Power distance

This dimension measures how subordinates respond to power and authority. In high-power distance countries subordinates tend to be afraid of their bosses, and bosses tend to be paternalistic and autocratic. In low-power distance countries subordinates are more likely to challenge bosses and bosses tend to use a consultative management style.

Ad 2) Collectivism versus Individualism

In individualistic countries people are expected to look out for themselves. Solidarity is organic rather than mechanical. Typical values are personal time, freedom, and challenge. In collectivist cultures individuals are bounded through strong personal and protective ties based on loyalty to the group during one's lifetime and often beyond (mirrored on family ties). Values include training and the use of skills.

Ad 3) Masculinity versus Femininity

Where feminine values are more important, people tend to value a good working relationship with their supervisors; working with people who cooperate well with one another, living in an area desirable to themselves and to their families, and having the security that they will be able to work for their company as long as they want. Where the masculine index is high, people tend to value having a high opportunity for earnings, getting the recognition they deserve when doing a good job, having an opportunity for advancement to a higher-level job, and having challenging work to do to derive a sense of accomplishment.

Ad 4) Uncertainty Avoidance

When uncertainty avoidance is strong, a culture tends to perceive unknown situations as threatening so that people tend to avoid them. In countries where uncertainty avoidance is weak people feel less threatened by unknown situations. Therefore, they tend to be more open to innovations, risk, etc.

Ad 5) Long-term versus Short Term Orientation

A long term orientation is characterized by persistence and perseverance, a respect for a hierarchy of the status of relationships, thrift, and a sense of shame. A short-term orientation is marked by a sense of security and stability, a protection of one's reputation, a respect for tradition, and a reciprocation of greetings, favours and gifts.

Hofstede also filtered the competitive advantages of the different cultural dimensions:

Power distance – small: Accepting responsibility	**Power distance – large:** Discipline
Collectivistic: Bond with a group	**Individualistic:** Mobility of staff and management
Feminine: Personal service	**Masculine:** Efficiency and mass production
Uncertainty avoidance – weak: Fundamental innovations	**Uncertainty avoidance – strong:** Detailed and precise
Short term orientation: Easy adjustment	**Long term orientation:** Development of new markets

Table 1: Competitive advantages of different cultural dimensions [Hofstede, 2005]

2.3.1.3. Corporate Culture: Daily Practices

Corporate culture should be seen as s*hared perceptions of daily practices,* based on the organization's leaders/founders values [Hofstede, 2005; Sanders and Neuijen, 1987]. Daft [2000] explains that "the concept of corporate culture helps understand the hidden, complex aspects of organizational life and structure". He also reports that corporate culture defines how well the organization will *adapt* to the external environment and plays a major role in the informal structure and coordination of an organization.

Sanders and Neuijen [1987] performed a detailed research that statistically examined and determined dimensions for corporate culture, following Hofstede's dimensions for national culture. They found that the dimensions termed *organizational practices* had a good capacity to differentiate among organizations, while *values* did not. Six dimensions were discovered that can be perceived as characteristic for the functioning of organizations. Scores on the dimensions are also related to a number of other 'hard' characteristics of organizations, which lead to conclusions about how organization cultures can be and cannot be managed. These six are:

1. Process orientated vs. Result orientated;
2. People orientated vs. Task orientated;
3. Organization bound vs. Profession bound;
4. Open vs. Closed;
5. Tight vs. Loose control;
6. Pragmatic vs. Normative.

Ad 1) Process orientated vs. Result orientated

Process orientated means formalized and risk-avers. In result orientated organizations, colleagues feel comfortable in high risk unknown circumstances. Challenges are more than welcome.

Ad 2) People orientated vs. Task orientated

People orientated organizations first take care of the emotional state of their employees. Group work is normal and committees are used in decision making. Task orientated companies stress completion of the task at hand and are governed by deadlines. Individuals take decisions.

Ad 3) Organization bound vs. Profession bound

The identity of the employee of an organization bound company is determined by his or her membership of that organization. They think the job situation is equal to their home life situation and colleagues are preferred to be from a certain class or region. Employees have a short term vision.

In profession bound companies the employees profession determines his or hers identity. Job and home life are perceived as separated and a long term vision is implied.

Ad 4) Open vs. Closed

An open organization welcomes new colleagues and few secrets exist. Closed organizations are hard to penetrate and only certain types of people fit in.

Ad 5) Tight vs. Loose control

Tight organizations have strict behavioural patterns and are characterized by discipline and control. Costs and appointments are very well adhered to. In loose organizations costs are not important. Employees joke about the company and what they do.

Ad 6) Pragmatic vs. Normative

Pragmatic organizations put clients' needs first. Results are more important than following procedures. In normative organizations employees follow strict procedures and high ethical standards.

2.3.1.4.   Several Effects of Cultural Differences

In this section several important studies of effects cultural differences can have on organizations are covered that demonstrate the influence these differences can have on designing organizations and their operations.

Hofstede wrote an article in 2007 in which he specifically targets Asian versus western management practices as being not comparable. He stipulates that their values and objectives are hardly comparable or compatible in pursuing effectiveness. He notes that "the nature of management skills is such that they are cultural specific: a management technique that is appropriate in one national culture is not necessarily appropriate in another."

Kirkman and Shapiro [2001] have, based on Hofstede's cultural dimensions, statistically shown that interpreting and including cultural differences is of vital importance to determine and process resistance to empowerment and western management methods. They also show that participative and self development management methods do not work in countries with a high power distance index. Their data on cultural value differences suggest that employees do resist management initiatives when these clash with their cultural values.

Neelankavil, Mathur and Zhang [2000] showed, by comparing managerial performance in four countries (including India), that culture has a significant impact on managerial practices and that managers of international businesses should take note of the differences between countries. They claim ex-pat managers must understand what drives and motivates their subordinates if they want to effectively utilize them. Ex-pats must also understand what constitute effective managerial practices in a particular cultural context and what is considered acceptable work behaviour.

Negandhi and Reimann [1972], *Tayeb* [1987] and *Hofstede* [2005] performed extensive research on the influence the business environment has on organization structure. They concluded that cultural traits of employees have a profound influence on the optimum organization structure.

2.4. Quality Management in Engineering Firms' Operations

Quality management on an operational level is often captured in a quality management system (QMS). This paragraph starts with delineating on what constitutes a QMS. Following, the main value and quality adding aspects in this QMS for engineering firms are described. Last, several methods for the effective operational deployment of quality policies in engineering firms are discussed.

2.4.1. The Quality Management System (QMS)

According to *ISO* the definition of a *QMS* is 'the whole of the organization structure, responsibilities, procedures, processes and facilities for the execution of quality assurance' [ISO 8402, 1986].

Feigenbaum [1983] defined it as 'the agreed companywide and plantwide *operating* workstructure, documented in effective, integrated technical and managerial procedures for guiding the coordinated actions of the workforce, the machines and the information of the company in the best and most practical ways to assure customer quality satisfaction and economical costs of quality'.

Van der Bij defined a QMS as 'the organization structure and techniques concerning quality control' [1994] and as 'the whole of management and control, monitoring and improvement activities dealing with the aspects or characteristics of quality, as well as the organization of those activities' [1998].

Van der Bij [1999] argues that the context the QMS is used in determines the most useful definition. In the context of this thesis *a QMS integrates the various internal processes within the organization and intends to provide a process approach for project execution. A QMS enables organizations to identify, measure, control and improve the core business processes that will ultimately lead to improved performance.*

The QMS describes how to translate client demands, perform quality checks and achieve quality performance. It also holds the specific set of standards and formal procedures that describe the business processes in detail. It is responsible for [Van der Bij, 1999]:

- *Quality Control* - Process control concerning the agreed upon and realizable service characteristics.
- *Quality Management* - Management of standardization issues concerning quality control.
- *Quality Assurance* - The maintenance of quality control and quality management.

In this view of a QMS and the view on processes and interfaces from section 2.2, the assumption rises that *organization structure* and *Support Departments* are the organizational aspects that are responsible for realizing adequate quality and value in an engineering firm's operations. From the conclusions of the Project Analysis (appendix 2) it is clear that of these support departments *HRM* is the most critical. All engineering firms operations are primarily executed by staff, the only value adding assets, who perform tasks structured, standardized and formalized in a certain manner.

Schematically HRM and organization structure relate to what has been defined as critical characteristics in realizing quality and value in engineering firms' operation: adequate interface control and a certain level of skill and knowledge in the employee base, as follows:

Good Interface Control	+	Skill and Knowledge in the Employee Base

overlap

Which are covered by:

Organization Structure	HRM
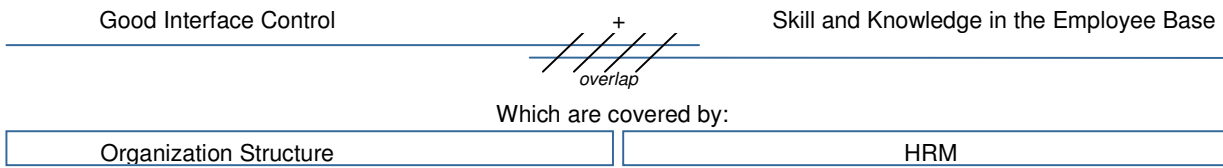
Design of the organization structure and HRM is coordinated by the QMS and must react to the influences from the business environment. What these two aspects constitute and how they are influenced by the business environment is covered in the next two paragraphs.

2.4.2. Organization Structure

An organization structure is defined as "the sum total of the ways in which an organization divides its labour into distinct tasks and then achieves coordination among them" [Mintzberg, 1999]. Henry Mintzberg is one of the foremost academic authorities on organizational structuring in western literature [Hofstede, 2005; Walker 2007]. Hofstede [2005] concluded that: "Structure has to follow culture". Mintzberg [1999] agreed by stating: "Formal structures and informal structures are intertwined. (…) Formal structures evolve over time and formalise changes in the informal structure".

2.4.2.1. The Elements of Organizational Structure

Mintzberg synthesised organizational design literature into five ideal organizational forms or *configurations* that do not exist in the real world, but provide a framework to understand and design organisational structures. The elements of organizational structuring, which show a curious tendency to appear in five's, include:

1. five basic parts of the organization: *operating core*, *strategic apex*, *middle line*, *techno-structure*, and *support staff*;
2. five basic mechanisms of coordination: *mutual adjustment*, *direct supervision*, and the *standardization* of *work processes*, *outputs*, and *skills*;
3. the design parameters: *job specialization*, *behaviour formalization*, *training and indoctrination*, *unit grouping*, *unit size*, *action planning* and *performance control systems*, *liaison devices* (such as integrating managers, teams, task forces, and matrix structure), *vertical* and *horizontal decentralization*;
4. contingency factors: *age*, *size*, *technical system*, *environment*, and *power*. They shape the organization structure.

These are delineated here using tables 2 – 5.

Ad 1) Five basic parts of the organization

Basic Parts of the Organization	
Operating core	the people directly related to the production of services or products
Strategic apex	serves the needs of those people who control the organization
Middle line	the managers who connect the strategic apex with the operating core
Techno Structure	the analysts who design, plan, change or train the operating core
Support Staff	the specialists who provide support outside of the operating core's activities

Table 2: The basic parts of the organization [Mintzberg, 1999]

Figure 6 presents the five basic parts and their general configuration:
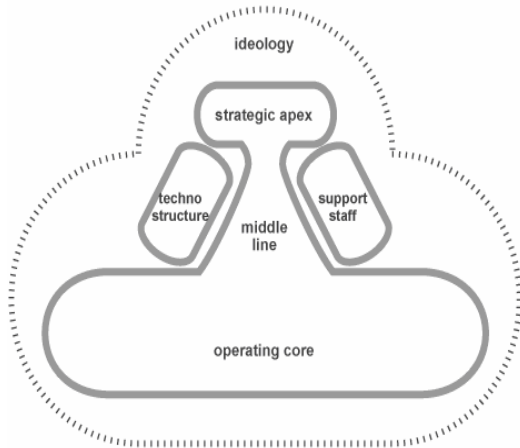
Figure 6: Five components of an organization [Mintzberg, 1999]

Ad 2) Five basic mechanisms of coordination

Basic Mechanisms of Coordination	
mutual adjustment	Work is coordinated through simple informal communication
direct supervision	One employee is responsible for the tasks performed by others. This employee instructs the others
standardization of work processes	The work content is specified and programmed
standardization of skills	The training and competencies of the staff that has to perform the tasks is specified
standardization of output	The desired results of the tasks are specified

Table 3: The basic mechanisms of coordination [Mintzberg, 1999]

Ad 3) Design parameters of the organization structure

The organization's structure depends on the organisation itself, its members, the distribution of power, the environment and the technical system. Design decisions can be grouped into:

1. *design of positions*: Covers the interdependency between specialization, formalization and training and indoctrination;
2. *design of superstructure*: Covers the grouping and size of the different units needed to achieve effective coordination in the organization ;
3. *design of lateral linkages*: Covers the planning and control systems that standardize output and the linkages that ensure subtle mutual adjustment;
4. *design of decision making system*: Covers the decentralization of decision making in the organization.

Design Parameters of the Organization Structure		
1.	*Job specialization*	The amount of diversity in the tasks individual employees have to perform and the depth of control they have
	Formalization	The way the organization prescribes employee behaviour and freedom of action
	Training	The process where task specific skills and competencies are learned
	Indoctrination	The process where staff incorporates corporate culture
2.	*Unit grouping*	A basic method to coordinate the tasks in an organization
	Unit size	The number of staff in each determined unit
3.	*Action planning*	Determination of a specific set of actions and decisions that are to be executed at different time intervals
	Performance control systems	Measurement of the overall performance of a specific unit
	Liaison devices	Means to stimulate and guide contact between the different individuals in organizations
4.	*Vertical decentralization*	Delegation of formal authority to lower levels in the organization
	Horizontal decentralization	The measure in which non-managers control decision processes

Table 4: The design parameters of the organization structure [Mintzberg, 1999]

Ad 4) Contingency factors

Contingency Factors	
Age	The age of the organization
Size	The size of the organization
Technical System	The complexity of the means used in the operating core to transform input into output
Environment	As described in section 2.2
Power	The organization specific power aspects that influence the organization structure outside of the general (logical) conditions described above

Table 5: The contingency factors [Mintzberg,1999]

2.4.2.2. Configurations in Organizational Structuring

Mintzberg states that an effective organization will favour some sort of configuration as it searches for harmony in its internal processes and consonance with its environment. Each of his five configurations relies on one of the five coordinating mechanism and tends to favour one of the five parts. A configuration represents a force that pulls organizations in different structural directions. For example, operators want to professionalize in their drive to control their work. Therefore, they favour a professional bureaucracy based on the standardization of skills. The five configurations:

1. Simple Structure;
2. Machine Bureaucracy;
3. Professional Bureaucracy;
4. Divisionalized Form;
5. Adhocracy.

Ad 1)

In *Simple Structure* (entrepreneurial setting), the key part is the strategic apex, which coordinates by direct supervision; the structure is minimally elaborated and highly centralized; it is associated with simple, dynamic environments and strong leaders and is found in smaller, younger organizations or those facing severe crises.

Ad 2)

The *Machine Bureaucracy* (large organizations) coordinates primarily by the imposition of work standards from the techno-structure; jobs are highly specialized and formalized, units functional and very large (at the operating level), power centralized vertically at the strategic apex with limited horizontal decentralization to the techno-structure; this structure tends to be found in simple, stable environments, and is often associated with older, larger organizations, sometimes externally controlled, and mass production technical systems.

Ad 3)

The *Professional Bureaucracy* (the services firm) relies on the standardization of skills in its operating core for coordination; jobs are highly specialized but minimally formalized, training is extensive and grouping is on a concurrent functional and market basis, with large sized operating units, and decentralization is extensive in both the vertical and horizontal dimensions; this structure is typically found in complex but stable environments, with technical systems that are simple and non-regulating.

Ad 4)

In the *Divisionalized Form* (multiple divisions), a good deal of power is delegated to market-based units in the middle line (limited vertical decentralization), whose efforts are coordinated by the standardization of outputs, through the extensive use of performance control systems; such structures are typically found in very large, mature organizations, above all operating in diversified markets.

Ad 5)

Adhocracy (project organizations) coordinates primarily by mutual adjustment among all of its parts, calling especially for the collaboration of its support staff; jobs are specialized, involving extensive training but little formalization, units are small and combine functional and market bases in matrix structures, liaison devices are used extensively, and the structure is decentralized selectively in both the vertical and horizontal dimensions; these structures are found in complex, dynamic environments, with highly sophisticated technical systems.

Hofstede [2005] statistically proved that Power Distance and Uncertainty Avoidance are the cultural dimensions that have the most influence on organization structure. He projected Mintzberg's five configurations in the Uncertainty Avoidance (UAI) x Power Distance (PDI) matrix (figure 7):
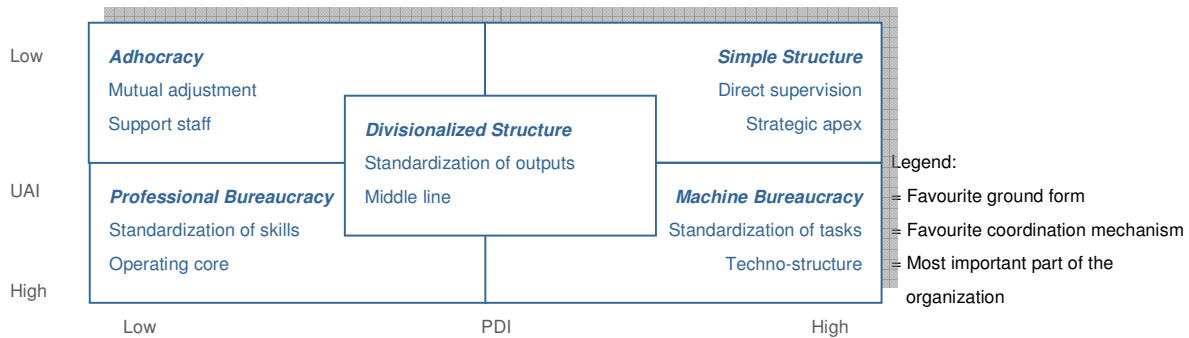
Figure 7: Organizational configurations, related to Power Distance and Uncertainty Avoidance [Hofstede, 2005].

Structure and *culture* are two concepts that are not totally orthogonal. Clearly there is a relationship between the two. For example, machine bureaucracies are characterized by high formalization of rules and procedures, and thus by tight control, one of the dimensions of culture. Also, because a machine bureaucracy is rather formal, it tends to be process-oriented, whereas informal organizations as adhocracies tend to be result-oriented. So, several dimensions of culture tend to reflect themselves in the structure of organizations.

2.4.3. Human Resource Management

Khandelar and Sharma [2005] statistically proved that effective international HRM is positively related to financial performance when expanding an organization's operations to India. *Hofstede* [2005] states that "often there is a formal performance assessment program available which periodically provides management with written or verbal assessments. The export of these programs to other countries desires adjustment".

Effective interface control can only be carried out when the right resources are in place. The only accountable resource of any engineering firm is its staff, which is primarily influenced by cultural aspects. Here the concepts of finding, binding and developing are related to influences from the business environment, especially the cultural forces.

Finding, binding and *developing staff* are seen as a primary challenges in the HRM field. Following Daft [2000],

- *Finding* involves HR planning and staff selection and directly deals with labour market influences;
- *Binding* involves compensation practices;
- *Developing* involves different HR roles such as training, promotion and assessment.

2.4.3.1. Finding: Labour Market Influences

An organization enters the labour market when a deficiency is noticed between the performance of the current employee base and demands put on this employee base to successfully execute business processes. The labour market is organization, field and region specific [Daft, 2000].

The main resources for any engineering firm are its employees. They perform the major part of the workload and are the only value adding assets. The influence of the labour market on branch offices' operations is twofold:

- The quality, quantity and cost (capability and value adding traits) of available employees. These factors influence the possibilities for hiring and training needs that seem most effective.

- Moral, motivation, loyalty (cultural traits) of available employees. These factors influence the binding and methods of developing staff. The region the labour market is positioned determines the cultural characteristics of the employees.

2.4.3.2. Binding: Compensation Practices

Schuler and Rogovsky [1998] wrote an article that examines the relationship between cultural dimensions and specific HR practices of firms: They showed that to achieve effective *compensation practices*, management needs to incorporate national culture aspects and proved correlations between Hofstede's dimensions and certain compensation practices. Their suggestions for multi-national corporations (MNC's) were as follows:

- MNC's operating in countries with high levels of UAI may be advised to offer more certainty in compensation offers (seniority and/or skill based offers). MNC's operating in countries with low levels of UAI may be advised to offer compensation that has more risk and can have better returns (stock ownership).
- Individual incentives have better results in countries with high levels of Individualism and vice versa.
- In countries with high levels of Masculinity there is less use of flexible benefits, child-care programs, etc.
- High levels of Individualism and low UAI and PDI make stock-ownership and option plans more congruent.

2.4.3.3. Developing: HR Roles

Barry Friedman [2007] described the globalization implications for HRM roles. He cites a range of academic research studies that prove globalization and the transcendence of cultures that accompany globalization have profound influence on how to perform successful HRM. He explores actions that increase HR value and competencies that increase HR effectiveness by relating HR roles to Hofstede's cultural dimensions. These are described in table 6.

	Strategic partner	Change Agent	Administrative Expert	Employee Champion
Deliverable	*Align HR activities and results with company goals*	*Renew organization that is more competitive*	*Increase efficiency of HR service*	*Maximize employee contribution*
Uncertainty Avoidance (UAI)	Leaders in high UAI cultures may require detailed plans of how to align HR activities with business objectives	Cultures with low UAI may require greater formal structure	When UAI is high, communicate new administrative procedures and investments in detail to increase comfort levels	In high UAI employees may resist may resist career development due to anxiety from new tasks and responsibilities
Masculinity vs. Femininity	Tailor the leadership style to the culture. Hard and autocratic in masculine and soft and democratic in feminine cultures	Plan to overcome resistance in high masculine cultures	Leadership style should focus on results in masculine and on collaborative in feminine cultures	Difficulties with creating new role patterns and promoting woman in Masculine cultures
Individualism vs. Collectivism	Incentives and assessment should be individualistic or group wise depending culture	Select individual and/or team intervention depending on culture	Make incentives for achieving administrative improvements on an individual or group basis depending on culture	Structure employee training and development programs on individual or group basis depending on culture
Power Distance (PDI)	Focus partnering and strategic proposals at top segment in high PDI cultures	Change agents should focus their energy at the top in high PDI cultures. Resistance can grow against equalitarian measures	Superiors in high PDI may resist participation in low status tasks	Providing career development and advocating rights of employees thought to have low status may be problematic in high PDI culture
Short/Long Term Orientation	Link strategic proposals to short or long term culture. Short term benefits might not work in long term cultures	Organizations with long term focus might better accept complex change	Technology investments should have a long term or short term ROI depending on the culture	Consider time perspectives when conducting career development and analyzing HR needs

Table 6: Human Resource Roles: Deliverables and cultural implications [Friedman, 2007]

2.4.4. Quality Policy Deployment Instruments

Adapting the QMS requires, besides effective adjustments, a method to deploy these adjustments. For this purpose a number of instruments has been developed through the years, of which Van der Bij [1999] covers several of the most prominent in academic literature. These instruments are designed to translate the quality policy into actual processes. The main differences between the instruments described by Van der Bij [1999] are the principles that underlie their design. The principles behind four of these instruments are suited to fit the operations an engineering firm performs. Their measurement and deployment is (at least) aimed at providing services. The four instruments presented in the next four paragraphs are:

1. Benchmarking;
2. Management by Objectives;
3. Policy Deployment;
4. The Balanced Scorecard.

2.4.4.1. Benchmarking

Benchmarking can be defined as a continuous and systematic process for evaluating services and operational processes of organizations that are regarded as the best in the world with the objective to improve the own organization as such. Many types of benchmarking have been developed. A prerequisite to benchmarking is information about best practices in the field the organization operates in.

2.4.4.2. Management by Objectives

Management by Objectives (MBO) is a form of leadership wherein operational objectives take a central role. These objectives are determined in consultation between managers and executive personnel. MBO encompasses the organization of tasks, resources and responsibilities as agreed upon to achieve the desired output.

Important to the implementation of MBO is the preposition that employees are more productive when:
▪ The demands put to them are clear;
▪ They participate in determining these demands;
▪ They have a certain freedom in the execution of tasks to realize these demands;
▪ Feedback mechanisms are in place that timely informs them of their results so they have the opportunity to adjust.

There are many ways to implement MBO. No specific set of demands or steps for its implementation is determined.

2.4.4.3. Policy Deployment

Policy Deployment refers to methods used to be sure that everyone in the enterprise is working effectively towards the same ends. It is a top down method where top management writes the main objectives after which the responsibility for realizing these objectives and the means necessary are determined by lower levels in the organization. Characteristic for policy deployment is the control of the interdependence between objectives and resources of the different parts of the organization.

Efficient deployment of policies requires not only that the policies be communicated without ambiguity, but also that the policies be workable and understandable by those who should carry them out. It is not enough that a policy be written

in clear, understandable language. What is clear and understandable to one person is not always clear and understandable to another [Hofstede, 2005; Pinto, 2004].

2.4.4.4. The Balanced Scorecard

According to Kaplan and Norton [1996], "*the Balanced Scorecard (BSC)* is a framework, which can be best characterized as a strategic management system that claims to incorporate all quantitative and abstract measures of true importance to the enterprise. (…) It provides managers with the instrumentation they need to navigate to future competitive success".

The BSC is a *performance management tool*. It helps focus managers' attention on strategic issues and the management of the implementation of strategy. It is a simple and easy to use aid to monitor and control the progression of the critical operations. The essence of the BSC is the search for balance and interdependence between different perspectives on *operations* and *output performance* of these operations.

2.5. Concluding

The quality and efficiency realized in operational processes in an engineering firm is influenced by *interface control* and the level of the *skill* and *knowledge in the employee base* executing the tasks in the operational units.

A number of internal and external business environmental forces exist. National culture is the strongest element in the *business environment* influencing the operations. National and corporate cultures can be associated, measured and analyzed through theories provided by Hofstede [2005] and Sanders and Neuijen [1987].

The *QMS* describes how to operationally translate client demands, perform quality checks and realize desired output performance. It also holds the specific set of standards and formal procedures that describe the different business processes in detail. *Organization structure* and *HRM* are the two primary organizational aspects for engineering firms that should react to the organization's business environment. Their design is captured in the QMS.

Structure, official procedures, process design and interface control are captured in the *organization structure*. This primarily relates to *interface control*. Organization structure should follow corporate culture and vice versa. National culture also has a strong influence on how an organization is most effectively structured. Legislation, the international and technological dimensions can also influence the design of formalization and (de)centralization. The task environment directly influence the tasks to be performed and thus the structure and processes behind these tasks.

Finding, binding and development of staff are captured in *HRM* and for the largest part relates to the level of *skill and knowledge in the employee base*. A certain level of skill and knowledge is needed to achieve adequate interface control and high level quality in products.
Culture has a strong influence on HRM through the labour market and corporate culture. What constitutes adequate finding, binding and developing methods (HRM roles and compensation practices) depends strongly on the norms, values and practices of the environment and motivation, moral, specifics and practices of the organization's employees and available staff in the labour market. Another important influence is the quality and quantity of staff and their costs.

How organization structure and HRM are exactly influenced depends on the situation.

3. THE ROYAL HASKONING QUALITY MANAGEMENT SYSTEM

3.1. Introduction

This chapter covers the second research question: *What are the main characteristics of the RH quality policy and QMS that should be adhered to?* The main characteristics are sought for the following purposes:

1. Determine the goal of the QMS. The RH quality policy is presented in section 3.2, which should be the goal of the RH QMS. The quality policy is a leading parameter in the design of the quality management system.
2. The main characteristics of the QMS will be covered in section 3.3 according to the main organizational aspects defined in chapter 2. This way the current system can be delineated.
3. The main conditions these organizational aspects and QMS should adhere to, despite influences of different business environments, must be determined if effective adjustments are to be made.

The information in this chapter was found using the documented RH QMS [The Royal Haskoning Quality Management System, accessed through Royal Haskoning Bridge (Intranet), accessed on several occasions since January 18th, 2007] and has been verified by A&B management and staff.

3.2. The Royal Haskoning Quality Policy

Below the official RH quality policy statement is presented. Little further delineation is necessary.

Royal Haskoning Quality Policy

We provide quality products and services that meet our clients' needs and add value to their businesses. In doing our work, we adhere to professional and legal standards. We seek a high level of client satisfaction and our clients' feedback is used for our continual improvement.
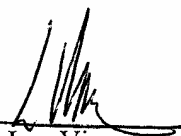
We endeavour to use this quality policy and the resulting client satisfaction feedback to optimise our services with the aim of ensuring a profitable business.

Staff will follow this quality policy and they will apply the processes laid down in our Quality Management System. The QMS has been established to optimise the primary processes and to provide guidelines for the proper execution and control of our business. Staff will provide feedback about the QMS to ensure its continual improvement. An annual company improvement plan will be established.

We will ensure the proper resources to achieve the development of our staff through training and education.

All the above should establish the continuity, stability and long term success of the company.

Nijmegen, 29 May 2002

Leo Visser
Management Representative

3.3. Main Characteristics of the Royal Haskoning Quality Management System

Achieving adequate interface control and creating an effective employee base is coordinated through the organization structure and HRM. In this section the main characteristics for both these aspects are determined for the RH QMS.

3.3.1. Organization Structure

In tables 7 – 10 the RH organization structure is described. The information is structured using theories provided by Mintzberg as described in section 2.4 and covers accordingly:

1. Basic parts of the organization;
2. Coordination mechanisms;
3. Design parameters;
4. Contingency factors.

Ad 1)

Basic Parts of the Royal Haskoning Organization	
Operating core = Most important	Engineers and draftsman
Strategic apex	Divisional Director (DD) and Head of Advisory Group (HAG)
Middle line	Director of Advisory Group branch office (DAG)
Techno Structure	HRM and QMS staff
Support Staff	ICT staff, Administrative staff

Table 7: The basic parts of the RH organization, structured following Mintzberg [1999]

Ad 2)

Coordination Mechanisms in the Royal Haskoning Organization Structure	
Standardization of skills = Most important	Competency assessment and role model are leading
Standardization of outputs	The QMS prescribes documentation standards and output measures

Table 8: The coordination mechanisms in the RH organization, following Mintzberg [1999]

Ad 3)

Design Parameters of the Royal Haskoning Organization Structure	
Job specialization	Depends on skills of individual employee. Draftsmen are very specialized. Engineers have field of expertise.
Formalization	▪ Operating core has to follow documentation standards and quality measures. ▪ Authority to sign off on contracts is limited. ▪ Individual performance indicators for every member of the organization.
Training	Options are handed to staff and staff has to indicate a need for training and follow their personal development plan.
Indoctrination	Hardly
Unit grouping	Organization charts as portrayed in appendix 1. Groups are made fitting the needs of the tasks to be performed
Unit size	AG's commonly have 15-25 staff. Project teams may vary depending on the project.
Action planning	None
Performance control systems	Checks by colleagues, Evaluation with clients, Internal audits

Liaison devices	Teams for projects and taskforces in the techno structure
Vertical decentralization	Many responsibilities are diverted down the chain of command. Signing authority remains with management
Horizontal decentralization	Much control over decisions within the staff.

Table 9: The design parameters of the RH organization, structured following Mintzberg [1999]

Ad 4)

Contingency Factors for Royal Haskoning	
Age	125 years. The last 2 years restructuring the organization has been a main policy item of the Board of Directors
Size	The past five years RH has seen a impressive growth from around 2600 engineers to round 4600 engineers
Technical System	Activities are analyzable, non-routine and client-specific
Power	Primary power lies with the Board of Directors. On AG level power lies first of all with the HAG

Table 10: The contingency factors for the RH organization, structured following Mintzberg [1999]

The organizational configuration of RH, following Hofstede [2005], can be positioned as follows:
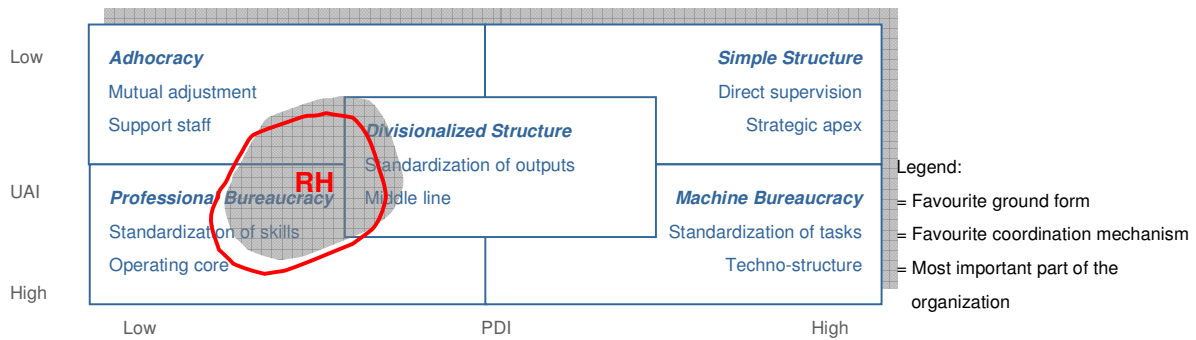
Figure 8: Organizational configuration of RH related to Power Distance vs. Uncertainty Avoidance, after Hofstede [2005]

3.3.2. HRM

Here the main *finding*, *binding* and *development* characteristics regarding the creation of an effective employee base fitting the organization structure are presented as determined in the RH QMS.

Finding

- The Human Resource (HR) department is the main recruitment office. The HAG will determine a shortage of staff in its AG and report this shortage to the HR department.
- The HR department focuses on the Dutch and UK labour markets. Its policy is based on these markets and follows the trends in these markets.
- The quality and cost of potential staff is good. The availability of qualified staff is very low.
- The moral, loyalty and motivation in potential staff are perceived as adequate.

Binding

- Individual growth incentives are used.
- Certainty in the job is offered.
- Good working circumstances, both physically as socially, are regarded as essential.

- ▪ (Social) benefits are good.
- ▪ Loyalty and motivation are promoted and searched for in new staff.
- ▪ Clear communication between management and staff is promoted.
- ▪ Pay-for-performance measures are in place.

Developing

- ▪ Employee training and development is solely structured on individual basis.
- ▪ Competency assessment and improvement in agreed upon areas is spearheaded.
- ▪ Growth and added value of employees for the RH organization on the long term is the main directive.
- ▪ Promotion and pay raise is based on achieved personal targets.

3.4.   Concluding

This chapter set out to determine the main characteristics of the RH quality policy and RH QMS with three objectives:

1. Define the objective a RH QMS must adhere to;
2. Describe the current RH QMS;
3. Define conditions that must be adhered to at all times and in all business environments.

Ad 1)

The quality policy implies the desire of RH to operate in the top market segment of their field when it comes to quality and service. RH also strives for continuous improvement in its staff and its processes and has made the staff responsible in realizing this.

Ad 2)

The main quality and value adding characteristics in the 'Dutch' RH QMS are the competencies in the employee base and the documentation procedures. The main control mechanism and quality management practice is quality checks performed by colleagues.

RH's configuration is positioned on the border between Mintzberg's professional bureaucracy and adhocracy. It also has a small overlap with the divisionalized form. It is open, fairly flexible, fairly formalized, decentralized and specialized. Standardization of skills is the main coordination mechanism. The super structure has been restructured recently.

HRM practices and competency assessment systems are developed to fit the Dutch and UK labour market and Dutch and UK staff. They are orientated individualistic, social and towards improvement of staff. The development of staff is orientated on developing the competencies they are lacking or must excel at to fit their job descriptions. The underlying idea here is to lift every employee to a higher level.

Ad 3)

- ▪ Staff needs to be able to find the right skill and knowledge and other resources that can help ensure quality.
- ▪ Most standards are concerned with documentation to aid cooperation and efficiency in the operations. These documentation standards must be adhered to when cooperating with Dutch offices.
- ▪ ISO certification is eventually wanted.

4. THE INDIAN BUSINESS ENVIRONMENT

4.1. Introduction

The important elements in the business environment defined in the theoretical framework and their states are determined for the Architecture & Building Advisory Groups (A&B AG's) operating in India. This provides an answer to the third research question: *What are the main elements in the Indian business environment that influence the effectiveness of the RH QMS and what are their states?*

In section 4.2 the situational factors of prime influence defined in the Project Analysis are allocated to any of the defined elements of the business environment to determine which of these elements are of profound influence on the business processes. Once this is done the state of these elements are determined in section 4.3.

4.2. Determining the Main Elements of the Indian Business Environment

Listed below in table 11 are the main situational factors and the projects where these factors challenged output performance as defined in the Project Analysis presented in appendix 2.

Situational factors	A: Indore	B: Goa Harbour	C: PSE	D: Heineken
1. Indian practices and culture	X	X	X	X
2. Local clients' demands	X			X
3. Available staff	X	X	X	X
4. Different IT solutions and technological standards			X	X

Table 11: The situational factors with profound influence on operational performance for the four projects

These situational factors can be directed to the different elements in an organization's business environment (see table 12) accordingly:

Ad 1)

Indian practices and culture have a direct connection with *corporate culture*, *socio-cultural dimension*, conflicts with *clients* and the *labour market*. Also a direct connection exists with management, since these are primarily ex-pats with a different cultural back ground.

Ad 2)

Local client's demands have a direct connection with conflicts with *clients* and norms and values in the *socio-cultural dimension.* Doing business in India is unlike doing business with the internal RH market with cultural differences as a main cause.

Ad 3)

Available staff is captured by *staff* and the *labour market*.

Ad 4)

Different IT solutions and technological standards can be directed to the *international dimension.*

The definitions presented in section 2.3 have been related here to information found during the Project Analysis, which leads to the major elements of the business environment and their influences on operations. This relation is presented in table 12. The table shows which elements are important to focus on during the empirical research into the business environment and which elements do not have to be researched:

Business Environmental Element		Influences
Internal environment	Staff	Quality of staff is too low
	Management	Background of ex-pats
	Corporate Culture	Priorities, loyalty, motivation and daily practices of staff
Task environment	Suppliers	*NO INFLUENCE* (HI has no suppliers that can hold influence over their operations)
	Clients	Demands and values of local clients of a branch office
	Labour Market	Quality, cost, and availability of potential staff.
	Competitors	*NO INFLUENCE* (Competitors have no direct influence on the operational process)
General environment	Economic	*NO INFLUENCE*
	Socio-cultural	Values regarding work, performance and doing business
	Legal/political	Legislation regarding exchanging staff
	International	Differencing technological standards and IT solutions
	Technological	*NO INFLUENCE*

Table 12: The main elements in the Indian business environment influencing operational performance of the AG's

4.3. Differentiating the Indian Business Environment

The states of the different elements indicated above as a main influence on the Indian AG's operations and eventually their output performance are discussed in this section. For every element a different research method was used. The following elements are treated:

1. Corporate culture;
2. National culture;
3. The legal/political dimension;
4. The international dimension;
5. The labour market;
6. The (local) clients.

4.3.1. Corporate Culture

The *corporate culture* has been determined using methodologies developed by Sanders and Neuijen [1987]. They developed a questionnaire through which, once filled out by staff, the dominant organizational practices in the corporate culture can be identified. The questions they developed have been filled out by HI 52 staff members and analyzed. Table 13 presents the results. For the complete results see appendix 3.

Orientation	Effect
Result	Chasing Challenges
Task	Professional decisions
Profession bound	Long term vision and high moral when it comes to the employee's profession
Open	Welcoming new employees and few secrets between staff
Tight control	Strict behaviour patterns and discipline in staff
Balance between normative and pragmatic	Balance between following procedures and achieving results

Table 13: Corporate culture and its effect on HI practices

4.3.2. National Culture

Hofstede [2005] provides individual country score on his five dimensions for 74 countries which indicate the relative position of a national culture. He also analyzed the differences between the extremities in and the relations between these dimensions. For every dimension he dives deeper into situational areas such as family, school and work. In figure 9 and table 14 the Indian and Dutch cultures and their implications for organizations are determined:
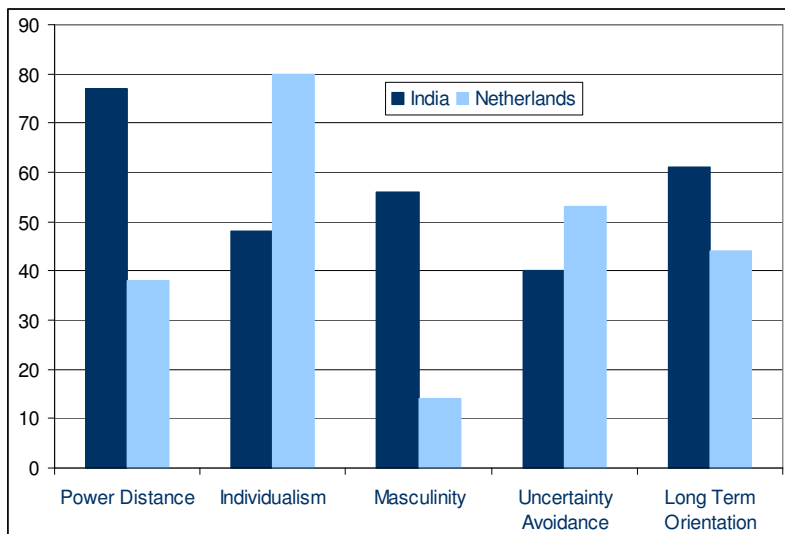
Figure 9: Hofstede's dimension scores for India and the Netherlands

Power Distance	Score	Ranking
India	77	17/18
Netherlands	38	61
India's score of 77 indicates a relative large power distance whereas for the Netherlands this is relatively low.		
Collectivism versus Individualism	Score	Ranking
India	48	31
Netherlands	80	4/6
These scores indicate that Dutch people are very individualistic orientated, whilst in India they are medium collectivistic.		
Masculinity versus Femininity	Score	Ranking
India	56	28/29
Netherlands	14	72
The Netherlands have a relatively feminine culture. The Indian culture is situated in the middle of this dimension. Dutch organizations are more nurturing and equality orientated. Also the Dutch are more service orientated, whilst for India the score implies a more mass production orientation.		
Uncertainty Avoidance	Score	Ranking
India	40	64
Netherlands	53	53
The Netherlands and India have almost equal scores on this dimension. Hofstede regards them uniformly in his analysis. This means consensus on this dimension can fairly easy be achieved. India probably does have less rules and regulations.		
Long-term versus Short-term Orientation	Score	Ranking
India	61	8
Netherlands	44	13/14
Although not very different in their scores and both close near the average, this dimension still holds some important differences when following Hofstede's analysis. In Indian culture the family perspective is very important in business decisions, whereas in the Netherlands family perspectives are hardly incorporated. Free time is more important in the Netherlands than it is in India. Indian staff is more disciplined and feels individually accountable. This accountability however covers their own small part of the operations. In the Netherlands accountability covers a larger scope.		

Table 14: Hofstede's dimensions scored for Dutch and Indian cultures – organization related analysis

Following Hofstede [2005], the Dutch culture underlying the RH QMS is individualistic, has a low PDI and average UAI, is very feminine and has a long term perspective. The main differences between Dutch and Indian culture can be found in power distance, in collectivism versus individualism, the masculine character of the Indian culture and some implications caused by differences in long/short term orientation.

Hofstede realized that these dimensions are a general reflection of a nationality and values in any nationality are not homogeneous, but a profound insight can be gained. In chapter 2 several authors have been discussed that proved Hofstede's theories as an adequate presentation of reality. Tijhuis [1996] delineates, "the dimensions cannot be directly translated into practices, but gaining a good understanding of direction of behaviour is headed is very well possible".

Therefore a questionnaire (see appendix 3) has been submitted to the Indian staff at HI to test if Hofstede's theories hold for HI and where they need adjusting, which was constructed using questions from Hofstede's IBM research. Analysis of the questionnaires shows that most of Hofstede's theories about Indian culture and its impact on organizations are correct. A large part of Hofstede's theories concerning work related values in India hold. The following items were not in line with Hofstede's [2005] analyses:

▪ What stands out is the high score on *challenge*, which is an individualistic work value. Working conditions, a collectivistic work value, is not important.

▪ HI has a pretty masculine culture. What stands out here is the very high score on the importance of *cooperation*, which is a feminine work value.

▪ A high power distance does exist between superiors and staff, but this distance has been demeaning, especially because of efforts by ex-pat management. This is reflected in the A&B division where this has been an active task of management. In the A&B division the power distance is lower than in the Maritime division.

The following table of work related values can be drawn:

Dutch work values		Indian work values	
- self-reliance	- democratic leadership	- reliance on group	- discipline
- challenging jobs	- quality of life	- cooperation	- emotional relations with
- awarding individual skills and	- continuous improvement	- status and salary as motivational	management
social working environment as	- thinking for your self	factors	- rejecting responsibility
motivational factors	- shared responsibility	- hierarchy and inequality are important	- focus on own part of the process
- flat structures	- comprehensive service	- realistic leadership	- focus on personal needs and wants
- openness	- anticipating clients needs	- 'the boss will tell me what to do'	

Table 15: Dutch and Indian work related values after Hofstede [2005] and adapted to HI by author

4.3.3. The Legal/Political Dimension

Legal boundaries inviting extra costs and infeasible situations following normal RH QMS protocol were searched in documents provided by the Netherlands-Indian Chamber of Commerce and Trade (NICCT):

▪ Operating in India in itself holds no high boundaries in the legal/political environment. No strikingly different from or more severe regulations exist in the Netherlands.

▪ The Indian government is protective of its civil engineers and has made investment in civil engineering offices that participate in outsourcing and off-shoring activities for European and American organizations relatively expensive.

▪ Bringing in ex-pats by European and American companies is being deterred through strict visa regulations. This is done to protect and promote the Indian engineers. Sending ex-pats to India for short term (several weeks) conference and educational purposes is very well possible, but actually deploying ex-pats full-time is difficult.

▪ The Indian legal system differs strongly from that in the Netherlands when it comes to contractual agreements and arbitrations.

4.3.4. The International Dimension

Information about the *international dimension* is known from the Project Analysis (see appendix 2). The technical standards and IT solutions used at HI are not always compatible with RH and international clients. Differences in technical standards and IT solutions can lead to efficiency and quality loss. The Indian AG's tend to adapt to new standards and technology slower then staff in the Netherlands.

Another facet in the international dimension influencing operations in India is the distance that exists between the Netherlands and India. This distance is a cause for extra costs incurred. At RH exchange of staff between different offices and teams is promoted to exchange knowledge and skills. Exchanging staff between the Netherlands and India is expensive.

4.3.5. The Labour Market

The state of the *labour market* has been determined using benchmarking reports [Compensation Benchmarking for the Engineering Industry, 2007] and by using the information found in the analysis of the national culture and during the Project Analysis. The general consensus in relation to the Dutch labour market is:

- Hiring and staff development needs issues:
  - Average quality of available staff is low;
  - Average quantity of available staff is high;
  - Average cost of high calibre (Indian) staff is relatively high in comparison with young staff.

- Binding and staff development issues:
  - Much willing staff can be found that is motivated to work for international western organizations with a relatively open mind, especially the young staff in the labour market and at HI;
  - Old staff appears to be less willing and prone to change, both in the labour market and at HI;
  - Loyalty of available staff is low;
  - Salary is the primary binding and motivational element.

4.3.6. The (Local) Clients

Information about the *clients* is known from the Project Analysis (see appendix 2). Challenges deriving from international clients and internal RH clients are already incorporated in RH's operational processes. Local clients have had demands and have provided pressure which were more difficult to deal with than average Dutch and international clients' demands and pressure. When demands are not feasible/realistic, conflicts on price, time and brand name can arise. When client pressure is not feasible/realistic, conflict on quality perception and performance can arise.

4.4. Concluding

The following elements were of main influence on the business processes of the Indian AG's:

1. Corporate culture;
2. National culture;
3. The legal/political dimension;
4. The international dimension;
5. The labour market;
6. The (local) clients.

Below the main conclusions about their states have been presented:

Ad 1 and 2)

The *corporate* and *national* cultures at HI are different from the cultures at RH the Netherlands. These differences have a great impact on the work values, motivation, practices, structuring and procedures applicable to both situations. These cultural differences also influence other elements in the business environment.

Ad 3 and 4)

The *legal*/*political* and the *international dimension* restrict the competitive advantage of sending ex-pats to India and have an impact on contractual agreements with different clients need to made.

Ad 5)

Few HI staff and potential staff in the Indian *labour market* are high calibre, whilst the quantity of possible staff is high in India. Hiring and firing staff is without many restrictions. Large differences in salary exist between high calibre and other staff. There are many young and willing and open minded staff available. Loyalty to the organization is low.

Ad 6)

Operating on the local market and operating in an internal RH market are influenced by different environments. The RH QMS is accustomed to the international and the internal RH markets. Indian staff however isn't. The RH QMS is not accustomed to deal with Indian *clients*. The way of doing business and contractual agreements differ severely and the RH QMS does not acknowledge this difference.

Overall it can be concluded that normal RH operations and performance measurement are not realistic in an environment that is this different from the environment that was a primary design parameter for the RH QMS. The RH QMS must be adjusted to the Indian market and Indian staff (capabilities) and Indian culture. Indian staff needs to be trained in working with a suitable QMS and this QMS should constitute this development need.

5. ADJUSTING THE ROYAL HASKONING QUALITY MANAGEMENT SYSTEM TO THE INDIAN BUSINESS ENVIRONMENT

5.1. Introduction

This chapter sets out to find an answer to the fourth research question: *What effective adjustments can be made to the RH QMS to adapt it to the Indian business environment?* The previous three chapters explored the design parameters for these adjustments. These parameters were:

- The actual tasks the organization structure and HRM should be able to perform (i.e. interface control and tasks in the operational units);
- Demands set by the Indian business environment;
- The RH quality policy, standards and eventual ISO certification to be upheld.

Section 5.2 discusses the focus during the search for adjustments in the QMS to the business environment and how to adjust the corporate culture to be effective in this environment, following the demands determined in the design parameters. Section 5.3 discusses effective adjustments in the formal organization structure within this focus. Section 5.4 explores the adjustments needed in HRM.

5.2. Focus during the Search for Adjustments

The business environment is, together with the actual activities and policy that need to be executed, one of the main defining parameters in the design of the organizational aspects of a QMS. When adapting these to a different business environment, this 'new' environment is therefore a main defining parameter when searching for effective adjustments to the organizational aspects that need to de adapted.

This section will delineate on this design parameter by introducing the focus during the search for effective adjustments. This focus directly follows the results from the empirical research on the Indian business environment. The elements of influence are treated in the following order:

1. Corporate culture;
2. National culture;
3. The legal/political dimension;
4. The international dimension;
5. The labour market;
6. The (local) clients.

The focus is also fixed realizing adequate interface control and creating an effective employee base so the RH quality policy can be maintained and guaranteeing RH documentation standards and ISO certification.

5.2.1. The Corporate Culture

The corporate culture should be:
- *Process orientated*. This creates structure and a better insight into what to do and how to perform interface control;

- *Open* and welcoming. Thus creating better understanding and communication between current staff, new staff, staff in the Netherlands and clients;
- *People* and *long term* RH *orientated*. This creates involvement in the organization;
- *Normative.* The important value and quality adding procedures must be followed more precise.

The corporate culture can be slowly adapted by introducing a formal structure that adheres to this focus and by indoctrinating staff through activities and informal talks.

5.2.2. The National Culture

Individualistic vs. Collectivistic Dimension – Focus on:
- open group performance, group assessment, group effectiveness and group bonus;
- concealed individual assessment of staff;
- collaboration;
- challenge and increased pay for staff with high potential.

Power Distance Dimension – Focus on:
- reducing power distance, but acknowledge its existence;
- using the existing power distance to improve the execution of quality control.

Masculinity vs. Femininity Dimension – Focus on:
- creating an organization that is less feminine than RH the Netherlands;
- cooperation between staff;
- hard measures (i.e. easily letting staff go that is unwilling or unmotivated) are very well possible;
- the impact and importance of salary structure and recognition of staff (status);

Uncertainty Avoidance Dimension – Focus on:
- formalizing value and quality adding procedures. Other procedures should be dropped since these can cause confusion and focuses staff on little value adding activities;
- introducing high risk to staff in case of non-compliance with these important procedures;
- striving for compliance with the RH QMS and standards only when dealing with the internal RH market.

Long term vs. Short term Orientation – Focus on:
- short term resource needs and firing and hiring of staff;
- long term employee base development;
- long term client relations;
- creating long term employee relations.

5.2.3. The Legal/Political Dimension

Focus on:
- Short trips of ex-pats to India for training and consultation purposes;
- Long term (several months) exchange programs where Indian staff is sent to RH the Netherlands. This will introduce Indian staff to the 'Dutch way' and can induce motivation and challenge and improve the employee's skills and knowledge.

5.2.4.   The International IT Solutions and Technical Standards

IT solutions and technical standards and the implementation of new IT solutions and technical standards should be synchronized internally and with offices in the Netherlands. The different markets the Indian AG's operate in have different demands in this regard. Staff from the Netherlands can easily be flown in to confer and educate the new IT solutions and technical standards when necessary. Training Indian staff in the Netherlands for a period of several months is also very well possible. Do not let the effective implementation of these wither in India.

5.2.5.   The Labour Market

Focus on:
- cost effective staff exchange programs with offices in the Netherlands. Staff can be trained in the Netherlands. The Netherlands (or other parts of the world RH operates) also provide a good source of (temporary) employees for HI;
- the quantity of engineers in the Indian labour market;
- finding Indian staff with high potential;
- hiring many staff that appears motivated to develop themselves within an international organization;
- hiring young, willing and open-minded staff. These employees are less affected by cultural implications.

5.2.6.   The (Local) Clients

Focus on the fact that local client demands and pressure are not always feasible and rational. Incorporate this possibility in the planning, coordination and execution of projects and negotiations with clients. Also focus on dealing with clients in an informal manner instead of contractual agreements (which hardly exist).

5.3.   Adjustments in Haskoning India's Organization Structure

The organization structure should fit the capabilities in the employee base, the demands set by the business environment and of course the operations that need to be executed successfully. This means more group work, less accountability in and expectations from the operating core, strict coordination mechanisms and more emphasis on the high calibre staff and incorporate RH documentation standards.

The adjustments developed in this section are supported by results from the questionnaire covered in appendix 3. Besides national and corporate culture, this questionnaire also covered preferred working methods and staff's opinion about motivation and development issues that need to be taken into account in the design of the organization structure.

The following concepts are treated:
1. Important parts of the organization;
2. Coordination mechanisms;
3. Design parameters;
4. Configuration.

5.3.1.   Important Parts of the Organization

The RH middle line (DAG's) should form the strategic apex at HI and be the most important part of the organization. They are the primary resources that can improve performance and create change in the organization and are very likely to have the best technical capabilities and have the best interface control capabilities at HI.

The different support department heads should form the middle line a HI. This should place a greater focus on the techno structure. The impact of these (especially HRM and QMS) have not been fully appreciated. They still need to find the best way to operate and conquer their position in the organization.

5.3.2. Coordination Mechanisms

The main coordination mechanism should be a combination of *standardization of output* and *direct supervision*. The results can be measured on the internal process interfaces and be controlled by high calibre staff. When the output is standardized for every stage in the process better interface control is possible. More attention is paid this way to the input and output of the individual steps that have to be taken and to the entire process as a whole.

The main coordination mechanism for the support departments should also be the standardization of outputs. Clear and measurable standardized deliverables and procedures for HRM will make quick and accurate reaction to circumstances possible and assist in actively defining and realizing resource needs. The QMS department can react more convincingly when is known when and where interface control is lacking.

5.3.3. Design Parameters

Adjustments in the Design Parameters of the HI Organization Structure	
Job specialization	▪ Less horizontal specialization and more focus on group compatibility for every project and stage ▪ More vertical specialization on individual basis
Formalization	▪ Formalize the main quality procedures (i.e. quality checks by colleagues) ▪ Focus on value adding performance indicators aimed at small self-organizing group performance ▪ Strict documentation
Training	Prescribe technological and quality training.
Indoctrination	Strong focus on corporate culture, formalization, communication, standardization and openness
Unit grouping	Small self organizing groups which members have compatible skills and knowledge to complete a stated narrow objective and which outputs are under strict control by management/high calibre staff.
Unit size	Groups of 2-5 staff
Action planning	Structured set of actions and plans for the execution of every phase of a project.
Performance control systems	▪ Standardized quality checks by colleagues / managers ▪ Control loops based on employee base needs
Liaison devices	Task groups in projects. Direct supervision for the support departments
Vertical decentralization	▪ Low! Signing authority protocol remains. ▪ Strict control from higher layers in the organization on lower
Horizontal decentralization	Only within the boundaries of the different phases of a project where managers believe this is possible

Table 16: Adjustments in the design parameters of the HI organization structure, following Mintzberg [1999]

5.3.4. Configuration

The configuration of the organization should be an overlap between Mintzberg's *Simple* and *Divisionalized Structure*. Figure 10 presents the shift necessary in the organization structure from the RH configuration to the adjusted HI configuration. It also shows how the organization structure should be less wide-spread and more focussed than it is in the Netherlands (smaller area).
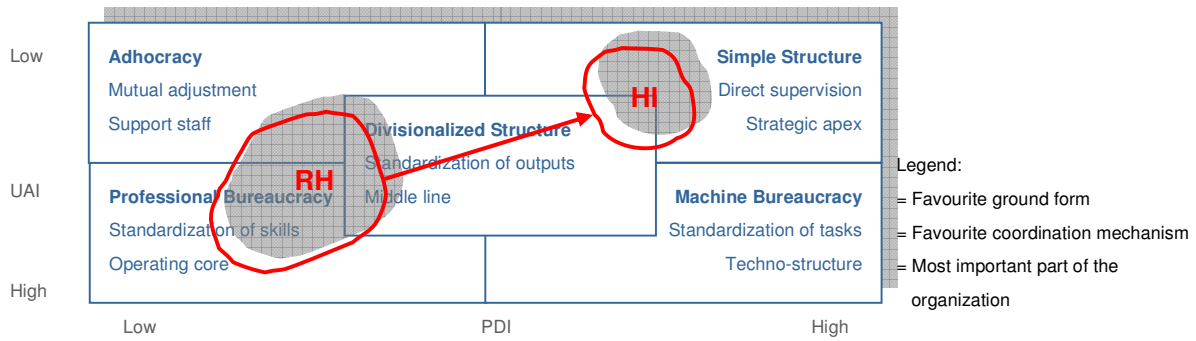
Figure 10: Organizational configuration shift from the current RH to an adjusted HI configuration after Hofstede [2005].

5.3.5. Superstructure

The possible adjustments above lead to the superstructure described in figure 11. It comprises the position of the Self-Organizing Groups (SOG) lead by high calibre staff, the ex-pats (Director Advisory Group, DAG), the support departments and the influence from RH and A&B divisional management (HAG). The arrows in the Self-Organizing Groups box indicate the direction of control.

The Self-Organizing Groups are controlled by high calibre staff members who in turn are controlled by the DAG. The AG controls all the Groups in his or her AG. The DAG still reports directly to his or her HAG. The (heads of the) support departments directly converse with the DAG's and with the high calibre staff where needed.
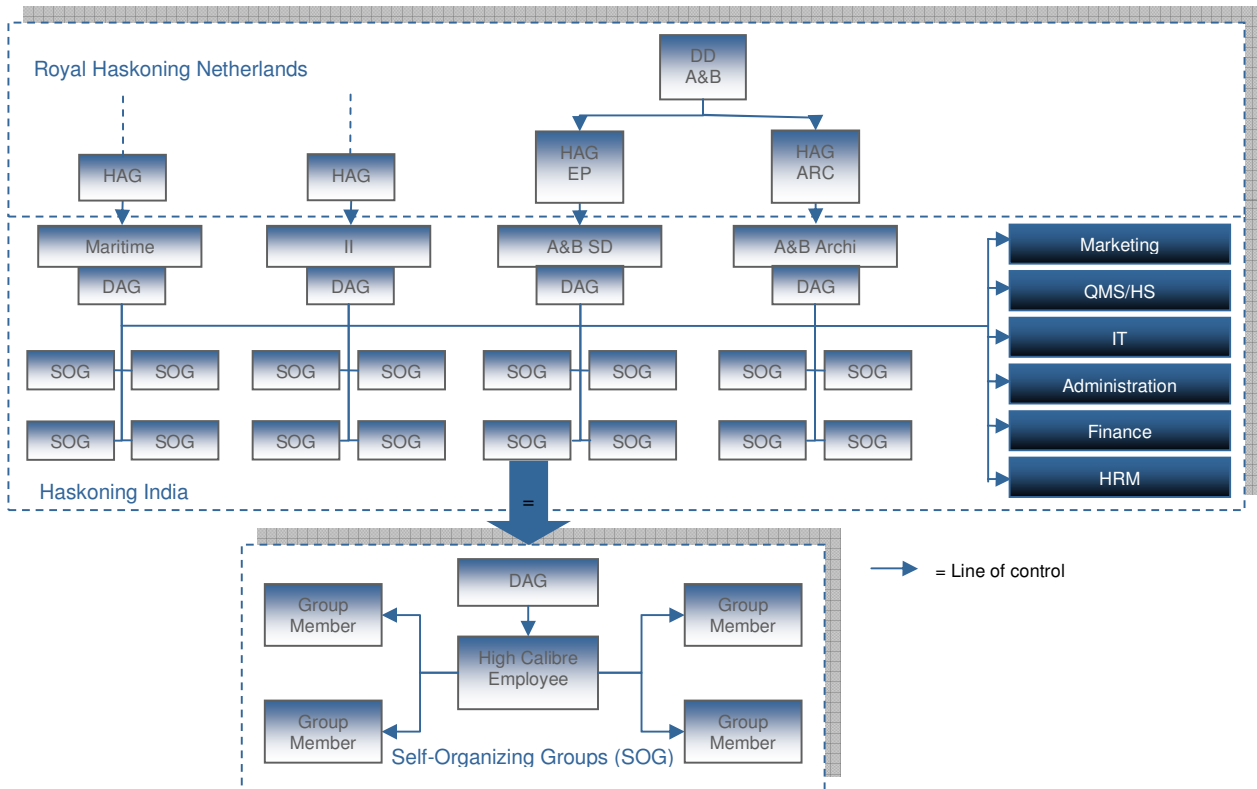
Figure 11: The adjustments translated into a superstructure for HI.

5.4.   Adjustments in Haskoning India's HRM

The adjustments in HI's HRM are concerned with creating an effective and a relative to India high calibre employee base with high level skills and knowledge on interface control and technical capabilities. A link exists between the adjustments determined for the organization structure and the adjustments in HRM that still need to be determined. This link is concentrated around the need for developing adequate interface control.

First of all the development of staff capable of performing adequate interface control and direct supervision is required. Second, unit grouping must be facilitated. For this purpose capable staff must be found en developed. Corporate culture needs to be adapted, so young, willing and open minded staff that is committed to adapting is wanted. Another important aspect is binding developed knowledge and skills to the organization.

5.4.1.   Finding

- Within the RH employee base high calibre staff can be found for the training of Indian staff or dealing with staff and capability shortages in India on high profile projects;
- The Indian labour market holds staff that is motivated, young and willing to learn and work for an international organization;
- Staff momentarily working for competitors;
- Attempt a quantitative approach to hiring new staff and let go which ever staff eventually appears not qualified;
- Hire staff that can easily be trained in certain skills and competencies and is open minded.

5.4.2.   Binding

The major issues are the high turn-over and low loyalty of staff. For staff the possibilities, given the cultural factors and labour market issues, are (partially based on *Schuler and Rogovsky* [1998]):
- Long term orientated increase in compensation and incentives;
- Promise of increase of value on the labour market on the long term;
- Incorporate the social position of the employee in decisions regarding his or her assessment and position in the organization;
- Provide challenge and education;
- Promise of exchange programs and working with high calibre ex-pats;
- Monitor individual staff members' wishes and actual opinions;
- Let go of staff that do not fit the competency demands.

5.4.3.   Developing

The major issues are low quality staff and lacking interface control. The major possibilities here are (partially based on *Friedman* [2007], see section 2.4):
- Use capable Netherlands based staff for technical training;
- Predominantly train technical, communication and coordination skills;
- Focus development and activities around effective interface control;
- Group bonding and social workshops have proven to have little effect in India;
- Induce a long term orientation in staff;
- It is very expensive to actively deploy ex-pats in India for long term periods. Bringing Indian staff to the Netherlands and putting them to work there for a short term (several months) is not expensive for Dutch standards.

5.5. Concluding

The states of the elements in the Indian business environment provide, together with the actual operations that need to be performed, the focus for how to adapt the RH QMS. Especially culture, the local market and employee capabilities, character and values have proven to be a major influence on effective execution of value and quality adding activities.

The focus maintained in the search for adjustments is the following: Adjust organizations structure and HRM to a collectivistic and masculine culture that incorporates a high power distance in structure and adapt to low uncertainty avoidance and a short term vision. The corporate culture should be process, people and long term RH orientated and normative of nature. The adjustments should also incorporate local market demands and local regulations and incorporate the low quality, motivation, loyalty and open mindedness of Indian staff.

Adjustments in the Organization Structure:
The organization structure should be directed at:

- small self-organizing groups lead by a high calibre staff member
- working towards successful interface control on each stage in the operational processes (internal operational process interface control). Management should be responsible for the overall control of performance on projects (internal and external interface control) and of these self-organizing groups. Support departments should be dedicated to the direct needs of the operational processes (internal organization interface control).
- This should all take place structured following the configuration defined in this chapter: an overlap between the *Simple* and *Divisionalized Structure.*

Standardizing the output of each stage of a project and of the support department activities should create possibilities for adequate interface control in respect to the lower level of employee skills in India than RH is used to. Formalization should encompass a simple, small and effective set of procedures that are directed at quality adding activities. Continuous improvement procedures are not a priority at this moment.

Adjustments in HRM:
Staff development should be focussed on developing and retaining technical skills and knowledge and strong interface control, primarily communication and coordination. The knowledge imbedded in the Netherlands can be used more extensively in this respect and is a competitive advantage for the development of the Indian AG's. High staff turn-over and cultural influences force HI to divert from individual orientated development and assessment practices to group orientated development practices.

HRM should focus on finding and developing high potentials, backed by groups of young, willing and open-minded staff.

Decisions regarding compensation and positioning of staff should imbed the cultural values of staff, group performance, singling out and binding of high potentials and the importance of status and salary in binding staff to the organization.

A quantitative approach to hiring eligible staff and letting go of staff that doesn't fulfil requirements should be maintained. High calibre staff should be bound to and retained within the organization (via extra compensation).

6. AN INSTRUMENT FOR ADJUSTING THE QUALITY MANAGEMENT SYSTEM TO THE INDIAN BUSINESS ENVIRONMENT

6.1. Introduction

This chapter provides an answer to the last research question, *what instrument can be developed that can direct the deployment of these adjustments and measure their effect on output performance?* For this purpose an operational instrument will be developed for A&B and HI management that assists in deciding on *'the best buttons to push'* to improve output performance.

In section 6.2 an evaluation is made which deployment method is the most effective in realizing the objective of this research, given the information found so far. Section 6.3 will delineate on the best deployment method for realizing the research objective. This method will be underlying for section 6.4 in which the instrument will be designed. Section 6.5 discusses how to use the instrument.

6.2. Evaluating Instruments for the Deployment of the Adjustments in the Quality Management System

Four instruments were discussed in section 2.4 that can actually deploy a quality policy in an engineering firm. Their pros and cons in regards to realizing the stated research objective are discussed here. Based on these pros and cons a preferred method is chosen. The four instruments discussed were:

1. Benchmarking;
2. Management by Objectives (MBO);
3. Policy Deployment;
4. The Balanced Scorecard.

Ad 1) Benchmarking

Pro: This method can be a very accurate and valuable method since it searches for practices and policy that have already proven their worth.

Con: No accurate and exhaustive benchmarking material can be found, so benchmarking is not an effective option for the Indian AG's.

Ad 2) Management by Objectives (MBO)

Pro: MBO is a comprehensive method for the deployment of a quality policy. It creates opportunities for actualizing objectives in operational targets.

Con: It however lacks a clear cut method to integrally measure the realization of these targets and performance of the organization.

Ad 3) Policy Deployment

Pro: Policy deployment is an early stage quality policy development method that is focussed on the internal organization. It is a top-down method for translating organization policy into operational quality objectives.

Con: The quality policy for the Indian AG's has however already been developed. The objectives for the AG's have been stated. What is needed is a deployment method for the realization of these objectives and an integral view on output performance, including the business environment.

Ad 4) The Balanced Scorecard (BSC)

Pro: The BSC provides a framework that incorporates both financial and non-financial indicators and combines internal and external performance indicators that measure operational performance. It allows for combining input in the different business processes with the different forces that influence the operational success of the QMS and directly relating these to output performance in one easy-to-use instrument.

Con: *No real down side to using this method*

Concluding, the <u>BSC</u> is regarded as the most effective method for realizing the objective of this research. The needed information is available and it provides the needed deployment and performance measurement solutions. In the next sections an instrument is developed based on BSC principles, but first these principles are delineated.

6.3.   Winning Method: The Balanced Scorecard

"The BSC should translate a business unit's (branch office's) mission and strategy into tangible objectives and measures. (…) The scorecard is *balanced* between objective, easily quantified outcome measures and subjective, somewhat judgemental performance drivers of the outcome measures. (…) It provides management with a comprehensive framework that translates an organization's strategy into a coherent set of performance measures". [Kaplan and Norton, 1996]

6.3.1.   Four Perspectives

The grouping of performance measures in general perspectives aids in selecting the appropriate measures. Four general perspectives have been proposed by Kaplan and Norton [1996]:

1.   Financial perspective;
2.   Customer perspective;
3.   Internal business process perspective;
4.   Learning and growth perspective.

Ad 1) The financial perspective

This perspective examines if the organization's implementation and execution of its strategy are contributing to the bottom-line improvement of the company. It represents the long-term strategic objectives of the organization and thus it incorporates the tangible outcomes of the strategy in traditional financial terms. The three possible stages as described by Kaplan and Norton are rapid growth, sustain and harvest:

▪   Financial objectives and measures for the growth stage will stem from the development and growth of the organization which will lead to increased sales volumes, acquisition of new customers, growth in revenues etc.

▪   The sustain stage on the other hand will be characterized by measures that evaluate the effectiveness of the organization to manage its operations and costs, by calculating the return on investment, etc.

▪ Finally, the harvest stage will be based on cash flow analysis with measures such as payback periods and revenue volume. Some of the most common financial measures that are incorporated in the financial perspective are EVA, revenue growth, costs, profit margins, cash flow, net operating income etc.

Ad 2) The customer perspective

This perspective defines the value proposition that the organization will apply in order to satisfy clients and thus generate more sales to the most desired (i.e. the most profitable) markets. The measures that are selected for the customer perspective should measure both the value that is delivered to the customer (value position) which may involve time, quality, performance and service and cost and the outcomes that come as a result of this value proposition (e.g., customer satisfaction, market share). The value proposition can be centred on:

▪ Operational excellence;

▪ Customer intimacy;

▪ Product leadership, while maintaining threshold levels at the other two.

Ad 3) The internal business process perspective

This perspective is concerned with the processes that create and deliver value and quality. It focuses on all the activities and key processes required to excel at providing the value expected by the clients both productively and efficiently. These can include both short-term and long-term objectives as well as incorporating innovative process development in order to stimulate improvement. In order to identify the measures that correspond to the internal perspective, Kaplan and Norton propose clusters that group similar value creating processes in an organization:

▪ Operations management (by improving asset utilization, supply chain management, etc);

▪ Customer management (by expanding and deepening relations);

▪ Innovation (by new products and services);

▪ Regulatory & social (by establishing good relations with the external stakeholders).

Ad 4) The learning and growth perspective

This perspective is the foundation of any strategy and focuses on the intangible assets of an organization, mainly on the internal skills and knowledge that are required to support the value-creating internal processes:

▪ Jobs (human capital);

▪ Systems (information capital);

▪ Climate (organization capital) of the enterprise.

These three factors relate to what Kaplan and Norton claim is the infrastructure that is needed in order to enable ambitious objectives in the other three perspectives to be achieved. This of course will be in the long term, since an improvement in the learning and growth perspective will require certain expenditures that may decrease short-term financial results, whilst contributing to long-term success.

6.3.2. Linking Multiple Measures with Strategic Objectives

According to Kaplan and Norton [1996] "a strategy is a set of hypotheses about cause and effect. The measurement system should make the relationships among objectives in the various perspectives explicit so that they can be managed and validated. (…) The chain of cause and effect relations should pervade all four perspectives of the BSC." Every measure selected for a BSC should be an element in a chain of *cause-effect relations* that communicates the strategy to the organization through tangible performance indicators.

The perspectives permit a *balance* between short- and long term objectives, between desired outcomes and the performance drivers of those outcomes, and between hard objectives measures and softer, more subjective measures. This *multiplicity of measures* and perspectives is structured following one integrated strategy and should consist of a linked series of objectives and measures that are both consistent and mutually reinforcing. The linkages should incorporate both *cause-effect relations* and mixtures of *outcome measures* and *performance drivers*.

<u>Outcome measures</u> are elements in a chain of cause-effect relations that communicates the meaning of the business unit's strategy to the organization. They are the lagging indicators which signal the ultimate objectives of the strategy and whether near-term efforts have led to desirable outcomes.

<u>Performance drivers</u> communicate how the outcomes should be achieved and provide an early indication whether the strategy has been implemented successfully. They are the leading indicators. Outcome measures without performance drivers do not communicate how the outcomes are to be achieved.

6.4. Design of the Instrument

The instrument is developed for use in the decision making process of most important part of the adjusted HI organization: the strategic apex. The design of the instrument is based on the BSC as developed by Kaplan and Norton [1996]. The following steps are taken:

1) Determine the cause-effect relations in the instrument that link the (strategic and operational) objectives to the multiple measures;
2) Determine the outcome measures;
3) Determine the performance drivers;
4) Position the objectives, outcome measures and performance drivers into the instrument.

6.4.1. Cause-Effect Relations

The cause-effect relations were found relating the theory in section 2.4 and the objectives of the adjustments from chapter 5. They have been determined on two levels:
1) First, the relations between the different perspectives were found;
2) Second, the relations of the objectives and how these are linked within the different perspectives was uncovered.

The onset of finding the cause-effect relations are the strong interface control and high level skill and knowledge capabilities in the employee base that have been declared essential in improving output performance.

Ad 1)

In the case of the Indian AG's the following cause-effect relations exist between the different perspectives:
The learning and growth perspective is basically governed by HRM and the *internal business process perspective* by the organization structure. These perspectives both integrally rally to improve outcomes on the customer perspective, with the understanding that the purpose of HRM is to support the internal business processes. *The customer perspective* defines the measure of success on *the financial perspective*; without satisfied clients, there can be no successful financial results. The internal business perspective determines a large part of the success in the customer perspective.

Ad 2)

The objectives for the different perspectives and their cause-effect relations are determined here. These are the primary objectives of the adjustments from chapter 5 for HRM and the organization structure and the output performance objectives described in the research scope (section 1.6):

HRM objectives are (1) to find, bind and develop high potentials as leading figures and (2) to find, bind develop young, willing and open-minded staff to complete a solid employee base. Another HRM objective is (3) to retain and further develop the knowledge and skill in the employee base. Young staff is needed to fill the self-organizing groups. High potentials are needed to be developed as high calibre staff that leads these groups. The HRM priority is to retain these high potentials in the organization and develop their skill and knowledge.

The first *organization structural objective* is (1) to use self-organizing groups of about 4 to 5 staff, lead by a high calibre staff member. The second objective is (2) to realize a successful configuration shift described in chapter 2. Both these objectives must, with the help of a skilled and high knowledge employee base, lead (3) to achieving adequate interface control, the third objective.

Clients are attracted by a good brand name and will be satisfied through high levels of service and quality. External interface control relates directly to brand name and service levels. Internal organizational interface control (operational processes) relate directly to quality levels. *The financial perspective* presents the performance on the strategic objectives set by RH: (1) solid returns and (2) healthy continuous growth. Financial objectives can only be satisfied when quality has been delivered and when customers are satisfied and willing to pay. This is realized when (1) high level service, (2) high level quality and (3) a top rated brand name are achieved.

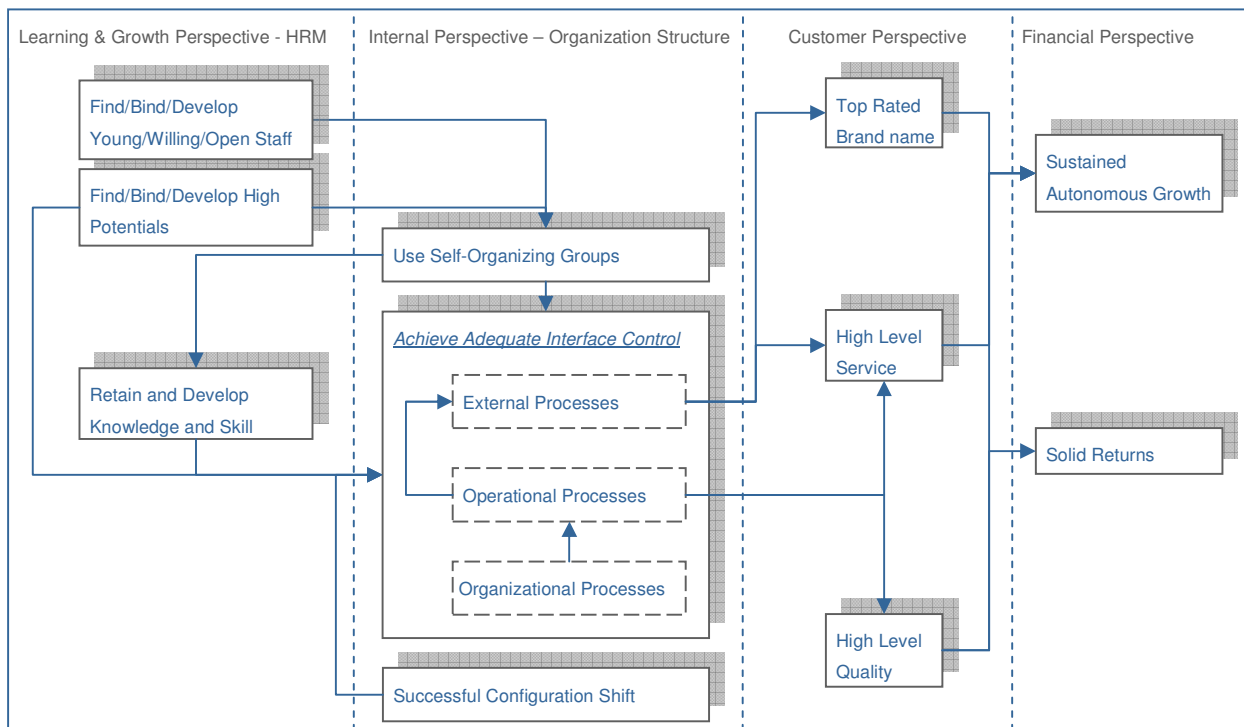These relations are presented schematically in figure 12:

Figure 12: The cause-effect relations that link HI's strategic objectives to multiple measures.

6.4.2. Outcome Measures

The outcome measures are designed following three criteria:

1. Present an objective in a linked series of cause-effect relations determined earlier;
2. Signal the strategic objectives and the success of these objectives;
3. Deploy (any of) the adjustments determined in chapter 5 in case of the *internal business process* and *learning and growth perspective*. Present output performance in case of the *financial* and *customer perspective.*

The way these are measured and their ideal objectives are also determined.

- *The financial perspective*

This perspective is first of all presented through the outcome measure *Profit (%)*, which depicts the harvest stage and through *Revenue Growth (%)*, which depicts the growth and sustain stages. Success on these has been indicated by A&B management as the main objective for the development of AG's in India. Both should be as high as possible.

- *The customer perspective*

This perspective deals with acquiring work and realizing client expectations. Operational excellence, customer intimacy and product leadership are presented by the RH output performance measures:

- High Level Service - *Client Expectation Realized (%)*;
- High Level Quality - *Average Revision per Project (№)* and *Average Wrong Deliverables per Project (№)*;
- Top Rated Brand Name – *Average Rate by (Potential) Clients (score of 1 – 10)* and *Average Monthly Invitations to Bid (№)*

- *The internal business process perspective*

This perspective deals with the organization and structuring behind the activities that must realize objectives in the customer and financial perspective. This means the outcome measures should be directed at the organization structure behind realizing output performance which in turn means realizing quality, time and cost expectancies. These are thus directly related to Vorstman's [1981] interface control aspects of time, quality, cost and market from section 2.2.

Quality performance in the operations can first be measured through *Control Loops for Group Members (days)* and *Control Loops for Groups (days)*. The objective here is that group members are checked daily by high calibre staff and groups are checked weekly by ex-pats, so the staff is used to its best capacity. In the problem analysis and chapter 4 was determined that that the capabilities of the average staff in India require short time spans in the control of their activities. These control loops also add to the self-organizing group structure.

Non-Conformities in Average Quality Check (№) presents how good the actual delivered quality is of every group (member). This measure can help determine where staff members are lacking and where extra training and/or control is needed. Naturally the ideal value here is 0.

On Time Delivery (%) and *Projects within Budget (%)* respectively measure performance on time and budget, as prescribed by Vorstman [1981]. A last measure that can present whether the organization is sufficiently equipped to perform the operations is the level of *Resource Fulfilment (%)*. This measure forms a last and defining control element for assuring enough resources are available to successfully execute activities. Ideally all values will be 100%.

- *The learning and growth perspective*

This perspective deals with learning and growth of (intangible) assets and knowledge. The outcome measures in this perspective have to represent the HRM aspects of finding, binding and developing staff. Respectfully these are represented via *Fulfilment of Resource Needs High Potential* and *Regular Staff (%)* which should be as high as possible*, Yearly Staff Turnover (%)* which should be as low as possible, and *Average Employee Base Competency Increase (scale up/down)* which should show an (preferably steep) upwards trend.

6.4.3. Performance Drivers

The performance drivers are designed following three criteria:

1. Stimulate the deployment of the adjustments from chapter 5;
2. Communicate and indicate the success of the deployment of any adjustments;
3. Present the costs or effect of the adjustments.

The way these drivers are measured and their ideal objectives are also determined.

- *The financial perspective*

A first performance driver has to deal with *efficiency*. Efficient use of funds and resources is important for realizing solid returns. It also directs sound investment behaviour. This can be measured as *Asset Utilization (%)*, which presents the costs and time usage of assets (staff) in regard to the highest possible usage, which should be as high as possible.

A second financial perspective performance driver is the *Cash-to-Cash Cycle (€)*, measured as the sum of cost-of-sales in accounts receivable and the sum of work-in-process. This cycle should be as short as possible. Both these drivers have been identified by Kaplan and Norton as generally applicable drivers for realizing good performance here.

From the project analysis it is clear that the Indian AG's experience issues with clients which results in loss of profit on projects. The *Profitability of Clients (bad, average, good, excellent)* can measure whether the AG's client portfolio contains the correct mix to realize desired profits. At least a *good* is desired.

- *The customer perspective*

The main performance drivers in this perspective have been identified by Kaplan and Norton [1996] as value = product/service attribute + image + relation. This relates the following indicators:

- Product/service : Client Expectancy Achievement and Revisions/Errors
- Image : Top Rated by Client
- Relation : Conflicts with Client

The first three are already covered by the outcome measures defined earlier. So what is still missing is an indicator for how the AG's perform on maintaining relations with their clients. A good driver here would be the number of *Conflicts with Clients (№)* the AG's experience on a monthly basis, which ideally is 0. HI should aim for a low score here.

- *The internal business process perspective*

This perspective is primarily concerned with the organization structure. The following performance drivers were developed in light of deploying the adjustments determined in section 5.3.

- Formalization:
  → *Audits Held Annually (№)* – The best performance overview and control is provided when every project is internally audited. This may be too intensive for the HI organization. However at least the possibility should exist to audit (evaluate) every project executed.

- Standardization:

→ *Correct Output Defined in Specifications (%)* – Standardizing output requires methods to ensure the right type of output is specified. This driver can direct behaviour to that end. The realized percentage ideally is 100.

→ *Average Discrepancies with Job Description in Daily Employee Tasks (№)* – Direct supervision, control methods determined earlier and standardization is strengthened when tasks for the Indian staff are (following average staff capabilities and realistic expectancies management should have regarding these capabilities) strict, well defined and narrow. This means as few as possible discrepancies with staff's tasks.

→ *High Calibre Staff per Self-Organizing Group (№)* – Standardizing output and direct supervision is realized for a large part through high calibre staff members daily controlling activities executed by the self-organizing groups. Every group should hold at least one of these high calibre staff members.

- Communication:

→ *Steps in Average Communication Channel (№)* – Communication has been indicated as an issue in the Project Analysis from appendix 2. Besides providing extra training in communication, a different approach is to eliminate as much communication needs as possible. The best way to realize this is to cut as many steps in the needed communication channels as possible. This reduces static and miscommunication threats.

→ *Training in Dealing with Clients (Hrs and €)* – The AG's clearly experience issues with (local) clients. Investing in training in this regard can be very fruitful in achieving better dealings with clients.

- Specialization:

→ *Task Responsibilities per Employee (№)* – Direct supervision, control methods determined earlier and standardization is strengthened when tasks for the Indian staff are (following average staff capabilities and realistic expectancies management should have regarding these capabilities) strict, well defined and narrow.

- Indoctrination:

→ *Corporate Culture Adjustment Activities (№)* – This driver is designed for inducing the change in the corporate culture described in chapter 5. Activities for this purpose need to be organized regularly every year.

- Grouping:

→ G*roup Members per Self-organizing Group (№)* – This drives the need for and successful performance of the self-organizing group approach for the execution of projects. 4 to 5 members is the ideal size.

- Centralization:

→ *Staff Involved in Decision Making > 100 € (№)* – This driver is designed to encourage the new organization structure, by accounting for the capabilities of staff and the self-organizing group approach. The control is thus kept in the hands of a few and enforced when everything has to be checked by those few.

▪ *The learning and growth perspective*

This perspective is primarily concerned with HRM. The following performance drivers were developed in light of deploying the adjustments determined in section 5.4:

- Finding:

The first two of the three drivers below are directed at both young, willing and open-minded staff and high potentials. The combination of these drivers directs and measures successful finding of the required staff for improving quality management and output performance.

→ *Hired Last Year (№)* – This number should as high as possible with an upper bound set by the resource requirements felt by the DAG.

→ *Lost Last Year (№)* – Ideally this number consists only of those staff who did not meet the requirements.

→ *High Potential Staff Identified (№)* – More is better.

- Binding:

The following drivers were based on staff's motivation and work values as defined in chapter 4. The main values and motivational factors were cooperation, training, salary, challenge and recognition:

→ *Average Salary Increase in Five Year Plan (%)* – The average salary increase should be in line with the market standard for the young, willing staff and above market standard for high calibre staff.

→ *Annual Group Bonus (%)* – The height of a bonus can form a motivation as well as an appreciation incentive for staff. Basing the bonus on group performance is fair and promotes the shift to unit grouping.

→ *Evaluations with Individual Employees (№)* – Staff's motivation and values are best discussed one on one between the DAG and the individual employees. Best practice, from A&B management experience, is to create a two way discussion in which both sides inform each other of their wishes and expectations. At least two of these meetings should be held with every employee each year.

- Developing:
  → *Average Technical Training per Employee (Hrs)* – This indicator drives the development of the technical capabilities of staff. The budget should decide the amount of training that can be realized. The number of hours should be as high as possible.

  → *Average Communication and Coordination Training per Employee (Hrs)* – This indicator drives the development of the interface control capabilities of staff. The budget should decide the amount of training that can be realized. The number of hours should be as high as possible.

  → *Exchange Indian Staff (№ Months and €)* – This indicator drives the development of the high potential staff. The budget should decide the amount of months that can be realized. The number of months should be as high as possible.

  → *RH Staff Active in India (№ Days and €)* – This indicator drives the development of the young staff and integrating them with RH standards and technical solutions. The budget should decide the amount of days that can be realized. The number of days should be as high as possible.

6.4.4.   Relations, Objectives and Measurements Combined

Table 17 presents the objectives, outcome measures and performance drivers, structured following the four perspectives described by Kaplan and Norton [1996]. Figure 13 presents the cause-effect relations between the objectives and their accompanying outcome measures and performance drivers.

Objectives per Perspective	Measurements	
	Outcome Measures (Lag Indicators)	**Performance Drivers (Lead Indicators)**
Financial Perspective F1 – Solid Returns F2 – Sustained Autonomous growth	Profit (%)	Asset Utilization (%)
		Profitability of Clients (bad, average, good, excellent)
	Revenue Growth (%)	Cash-to-Cash Cycle (€)
Customer Perspective C1 – High Level Service C2 – High Level Quality C3 – Top Rated Brand name	Client Expectations Realized (%)	Conflicts with Client (№)
	Average Revisions per Project (№)	
	Average Wrong Deliverables per Project (№)	
	Average Rated by (Potential) Clients (scale 1-10)	
	Average Monthly Invitations to Bid (№)	
Internal Perspective I1 – Achieve Adequate Interface Control I2 – Use Self-Organizing Groups I3 – Successful Configuration Shift	Control Loop for Group Members (days)	Audits Held Annually (№)
	Control Loop for Groups (days)	Correct Output Defined in Specifications (%)
	Non-Conformities in Average Quality Check (№)	Discrepancies with Job Description in Daily Tasks (№)
	On Time Delivery (%)	High Calibre Staff per Group (№)
	Projects Within Budget (%)	Steps in Average Communication Channel (№)
	Resource Fulfilment HRM (%)	Training in Dealing with Clients (Hrs and €)
		Average Tasks per Employee (№)
		Corporate Culture Adjustment Activities (№)
		Group Members per SO Group (№)
		Staff Involved in Decision Making > 100 € (№)
Learning & Growth Perspective L1 – Finding/Binding/Developing High Potentials L2 – Finding/Binding/Developing Young/Willing/Open-Minded Staff L3 – Retain and Develop Knowledge and Skill	Fulfilment of Resource Need High Potentials (%) and Fulfilment of Resource Need Regular Staff (%)	Hired last year (№)
		Total Identified Last Year (№)
		Total Lost Last Year (№)
		Exchange Months Indian Staff (№ and €)
		Average Salary Increase 5 Year Plan (%)
	Yearly Staff Turnover (%)	Average Group Bonus (% of salary)
		Evaluations with Individual Employees (№)
	Employee Base Competency Increase (up/down)	Technical Training per Employee (Hrs and €/Hr)
		Communication/Coordination Training per Employee (Hrs and €/Hr)
		Dutch RH Staff active in India (days № and €)

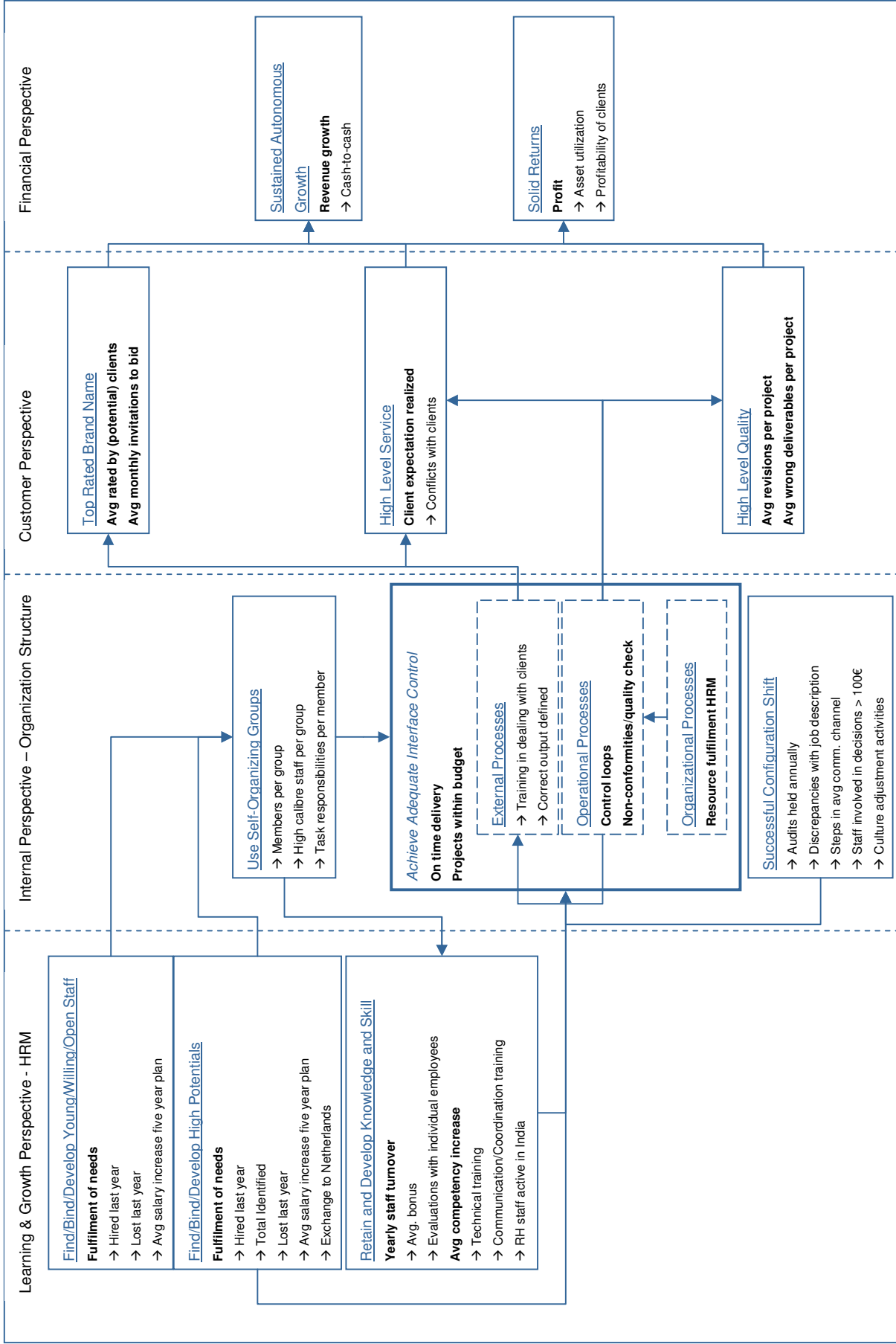***Table 17: The objectives, outcome measures and performance drivers combined***

Financial Perspective

Sustained Autonomous Growth
Revenue growth
→ Cash-to-cash

Solid Returns
Profit
→ Asset utilization
→ Profitability of clients

Customer Perspective

Top Rated Brand Name
Avg rated by (potential) clients
Avg monthly invitations to bid

High Level Service
Client expectation realized
→ Conflicts with clients

High Level Quality
Avg revisions per project
Avg wrong deliverables per project

Internal Perspective – Organization Structure

Use Self-Organizing Groups
→ Members per group
→ High calibre staff per group
→ Task responsibilities per member

Achieve Adequate Interface Control
On time delivery
Projects within budget

External Processes
→ Training in dealing with clients
→ Correct output defined

Operational Processes
Control loops
Non-conformities/quality check

Organizational Processes
Resource fulfilment HRM

Successful Configuration Shift
→ Audits held annually
→ Discrepancies with job description
→ Steps in avg comm. channel
→ Staff involved in decisions > 100€
→ Culture adjustment activities

Learning & Growth Perspective - HRM

Find/Bind/Develop Young/Willing/Open Staff
Fulfilment of needs
→ Hired last year
→ Lost last year
→ Avg salary increase five year plan

Find/Bind/Develop High Potentials
Fulfilment of needs
→ Hired last year
→ Total Identified
→ Lost last year
→ Avg salary increase five year plan
→ Exchange to Netherlands

Retain and Develop Knowledge and Skill
Yearly staff turnover
→ Avg. bonus
→ Evaluations with individual employees
Avg competency increase
→ Technical training
→ Communication/Coordination training
→ RH staff active in India

Figure 13: The objectives (underlined text), outcome measures (bold text), performance drivers (indicated by a →) and the cause-effect relations (indicated by the arrows)

6.5. Using the Instrument

The instrument developed above is used as an aid in the decision process concerning '*the best buttons to push*' in improving output performance. It:

- provides an dynamic and elementary overview of adjustments to adapt the organization structure and HRM to the Indian business environment and how to actively implement these and measure their effects;
- describes short- and long term effects;
- follows RH and A&B strategy;
- is easy to use for all A&B and HI management.

This section discusses:

1. The values used in the instrument;
2. The different functions of the instrument;
3. How the instrument and its functions and values should be presented and interpreted;
4. An user manual that presents how to effectively use and maintain the instrument.

6.5.1. The Values Used

Two different sets of values are used and related to each other in order for the instrument to provide any information:

1. *Estimated objective results:*

   Fixed <u>objective values</u> for the outcome measures need to de determined by A&B and HI management that act as a threshold between success and failure. These values should be maintained dynamically, which means they need to be revised on fixed time intervals or whenever a revision is deemed necessary.

   <u>Target values</u> need to be determined by A&B and HI management for the performance drivers that are linked to the objective values for the outcome measures. Realizing performance driver targets should lead to realizing outcome objectives. These objectives must be dynamic as well.

2. *Actual realized results:*

   The <u>actual realized values</u> of the outcome measures and performance drivers can be determined through *project audits*, *administrative audits* and *HRM audits*.

The values are either continuous (the percentages) or focussed on a yearly cycle (the numbers and the averages).

6.5.2. The Functions

The instrument has two different functions that complete each other:

1. *Deployment of the Adjustments:*

   It provides an integral overview of how to formally deploy the adjustments and the costs and estimated effect of deploying these adjustments. This aids decision making regarding possible investment and implementation strategies for HI. Adhering to the objectives should automatically lead to realizing better output performance.

The estimated objective values provide direction for decisions regarding the deployment and investment strategies. Actual realized results can be entered into the comparison to determine the most needed adjustments.

2. *Measurement after Certain Deployment has taken place:*

It can be used as an integral evaluation tool after deployment of any adjustments. The effects of this deployment are easily related to its cost. This aids decision making concerning which adjustments were eventually most effective and which missed their desired effect. Thus the instrument constitutes a learning tool for the organization.

Regular evaluation aids in deciding what adjustments need to be deployed which have not been deployed so far. It can also aid in decision making concerning the most effective additional investment strategy in adapting the organization structure or HRM or in altering existing investment strategies.

Relating the actual realized results to the objective values and performance driver targets provides insight into the success of the deployment and investment strategy and what alterations might still be necessary.

6.5.3.   The Presentation

Here is determined how the instrument should be presented to provide the most use:

- Two of the main strengths of the instruments are its simplicity and the general and integral overview it can provide. These strengths should therefore be emphasized in the presentation of the instrument.
- The layout should be based on *figure 13* and *table 17*, since these present its main elements and the relation between them.
- The instrument has to display both functions it has to perform.

One simple sheet containing the objectives, measurements and the cause-effect relations should relate:

estimated objective values of the outcome measures   +   estimated target values of performance drivers

versus

actual realized results on these outcome measures and performance drivers

Success on each measure is presented by indicating the difference between actual and objective results through two colours:

- *Green* if successful, the actual results are equal to or better than the objective values;
- *Red* if the objective value has not been realized.

This way an instant overview is provided that links actual output performance with the adjustments that were designed to realize improvement in the output performance.

6.5.4.   User Manual

Following the stated objectives and adhering to the objective values stated in the instrument direct operations at HI towards the adjustments defined as effective in realizing desired output performance in the Indian business environment. To do so first the objective values and actual values need to be determined. Second, the success of these adjustments and success on realizing the stated objective values need to be interpreted.

6.5.4.1. Determining the Values in the Instrument

The objective values are to be determined through discussion and negation between A&B management and the AG DAG's on an annual basis. Every year the outcome measures, performance drivers and objectives need to be reevaluated to determine their continuing worth for the Indian AG's. Circumstances may have altered or such levels of success realized that the conditions under which these objectives, measures and drivers were developed no longer apply. The methodology used in this research can be used to determine possible new objectives, measurement and relations between these.

The actual values of the different measures and drivers are updated accordingly:
- The HR manager should update data in the learning and growth perspective;
- The QMS manager should update data in the internal business perspective;
- The marketing manager should update data in the customer perspective;
- The financial manager should update data in the financial perspective;
- AG managers (DAG) should be responsible for the overall presentation of the instrument.

This way objective measurement is facilitated.

6.5.4.2. Interpreting the Instrument

Because of the simplicity and integral overview no long periods of time need to be spent on analyzing the instrument and interpreting the values it presents. It is a <u>dynamic</u> instrument. Every month evaluation has to take place of the progress made and any further necessary adjustments in operations, investment or measures.

'Green' means success and 'red' means failure when interpreted in their strictest sense. However the world is not that 'black and white'. The different outcome measures and performance drivers are tools for *representing* reality. There are circumstances possible wherein their confidence is declined or reliability may fail. Not all circumstances that exist in reality can be taken into account. Therefore it is important to remember that the instrument should be used as a means and does not constitute a goal in itself. It is not enough to note whether an objective value has been realized or not; also the 'why?' or the 'why not?' need to be examined.

→ Examples and overview of the active instrument are provided in appendix 4!

6.6. Concluding

The cause-effect relations in realizing desired output performance through adjustment objectives for the organization structure and HRM have been determined using the BSC methodology. The output performance objectives in the instrument were derived from RH and A&B strategic objectives and quality policy and concern the financial and customer perspectives. The operational measures were directed at deploying the adjustments found in chapter 5 and concern the internal perspective (organization structure) and the learning and growth perspective (HRM).

Outcome measures that communicate the meaning of the business unit's strategy to the organization were determined. They present elements in a linked series of cause-effect relations between the adjustments and signal the strategic objectives.

Performance drivers that depict how the outcomes should be achieved and provide an early indication whether the strategy has been implemented successfully have been determined. They communicate and indicate the success of the deployment of any adjustments, stimulate the deployment of the adjustments and present their costs and effect.

Two sets of values are needed:
1. Estimated objective and target values determined by A&B and HI management;
2. Actual realized results, found through audits and updated by the support department responsible.

The instrument can be used by A&B management as a solid foundation for decision making regarding deploying adjustments and investment strategies and measuring, evaluating and altering these adjustment strategies where deemed necessary. For this purpose the instrument should present an immediate and easy to use overview of the success on the measures and drivers through a simple sheet. A&B and HI management with must be able to interpret the overview with ease and link success on output performance objectives to possible adjustment measures.

The instrument provides the following opportunities for A&B and HI management:
- It can direct (untrained/inexperienced) manager's attention to where it is truly needed;
- It drives best practices for (untrained/inexperienced) managers;
- It provides an understandable and concrete overview of a complex and abstract situation;
- It can measure and relate success on output and operational performance;
- It is easily adjusted to variations in the business environment;
- It is easy to use and oversee;
- It represents an independent set of values that are updated independently. This stimulates objectivity in the values;
- It provides opportunities for organizational and personal learning and growth.

The instrument has the following limitations for A&B and HI management:
- It is situation specific. Situations can change and reality is hard to be model when such complex environments and quantities of variables exist. This means some notion of the situation and environment is desired when operating the instrument to make sure the presented information is interpreted correctly;
- The threat of labelling specific operations, departments and staff members either too negatively or too positively exists when the cause-effect relations are not fully understood.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. Introduction

This chapter provides the final conclusions of the research and the recommendations that can be made based on these conclusions.

Section 7.2 covers the main 5 conclusions that can be drawn from the research. These conclusions provide answers to the research questions from sections 1.7. Section 7.3 discusses several recommendations for Architecture and Building (A&B) and Haskoning India (HI) management that are directed at increasing the effective use of the instrument and dealing with a unknown business environment.

7.2. Conclusions

Conclusion 1:
Strategy and quality policy are determined, thus the improvement of output performance must be made in the operational processes. The first question asked what can be learned from academic theory devoted to quality in operations of engineering firms and the influence of the business environment thereon.

> *Primarily the skill and knowledge level of the employee base and interface control determine the success of the quality management on an operational level. Organization structure and HRM are responsible for performance in these area's.*

The organization structure and HRM practices are directly influenced through the internal and external business environment. This includes elements such as cultural forces, the labour market, local clients, regulations and differences due to location and distance.

Conclusion 2:
The second question asked what the main characteristics of the Royal Haskoning quality policy and Royal Haskoning Quality Management System (RH QMS) are that should be adhered to.

RH tries to develop a high calibre employee base. The skill and knowledge level is maintained and improved through continuous development of all individual employees via an elaborate competency assessment program. These employees work following a QMS that is devoted to realizing good interface control. Using strict standards and adhering to a fairly flexible, open, informal, horizontal and decentralized structure, the main pillar of quality management for RH is the quality checks executed by colleagues.

> *RH is devoted to realizing high level quality and service for a high quality market.*
> *RH has strict documentation standards that should be adhered to.*
> *RH's best quality check practice is the colleague check.*

Conclusion 3:
The third question asked what the main elements in the Indian business environment are that influence the effectiveness of the RH QMS.

Based on the project analysis the main elements of the Indian business environments that influence quality management in operations at the Indian AG's have been determined:

➢ *The corporate culture, the socio-cultural dimension, the legal/political dimension, the international dimension, the labour market and the clients are of main influence on the effectiveness of the QMS. The organization structure and HRM should be designed adhering to the demands set by the states of these different elements.*

Especially the cultural differences between the Netherlands and India have a stringent influence on operations. Also the quality of the staff available in India and the local clients appear to have a great impact on operations. The Indian environment does not allow for the Dutch practices and performance measurement methods used by RH.

Conclusion 4:

The fourth question asked what adjustments can be made to adapt the RH QMS to the Indian business environment.

For this purpose the design parameters that can be filtered from the answers to the previous three questions are used. Within the focus that must be maintained following the demands set by the Indian business environment adjustments are sought that create opportunities for successful interface control and creating a high calibre employee base that can assure adhering to the RH quality policy. These adjustments must fall within the boundaries of the organization structure and HRM (mainly finding, binding and developing).

➢ *Organization structure adjustments are aimed at (1) achieving adequate interface control through (2) using self-organizing groups and through (3) a shift in the organization structure.*

➢ *HRM adjustments are focussed on (1) finding, binding and developing young, willing and open-minded staff and, most importantly, on (2) finding, binding and developing high calibre staff. A third objective here is to (3) retain and develop skill and knowledge level within the employee base.*

For the organization structure the following adjustments were determined:

- The most important part of the organization is the strategic apex, followed by the high calibre staff in the middle line;
- The structure should be directed at organizing staff into small self-organizing groups that are coordinated by one high calibre employee. The different groups, in turn, are coordinated by the DAG;
- The support departments should, on the short term, focus their attention and priorities on fulfilling resource demands needed for realizing desired output performance and output control;
- The primary coordination mechanisms for staff is standardization of output and the primary coordination mechanism wielded by management and high calibre employees is direct supervision;
- A simple and effective set of formal procedures that directly affect output is necessary, other procedures should be dismissed;
- The configuration of the organization structure should be influenced by Mintzberg's Simple Structure and Divisionalized Structure;
- Keep knowledge bound to the organization through group training and creating a work situation wherein leave of one staff member has no impact on group performance.

For HRM the following adjustments were determined:

- Keep knowledge bound to the organization through binding important and high calibre/potential staff with promises of high salary, challenge and recognition;
- Intensively develop any high potentials that can be found;
- Hire primarily young, willing, open-minded staff;
- Develop coordination and communication;
- Train technical capabilities;
- Use Dutch RH staff for the development of Indian staff.

Conclusion 5:

The fifth research question asked what instrument can be developed that can direct the deployment of these adjustments and measure their effect on output performance?

➢ *Decision making regarding investment and implementation strategies for improving output performance is aided by the instrument developed in this thesis.*

➢ *The instrument's characteristics make it a valuable and easy-to-use management tool for creating a simple and concrete model to present the complex and abstract situation, especially for inexperienced and untrained managers.*

This instrument, which is based on Kaplan and Norton's Balanced Scorecard, can translate the adjustments developed whilst answering research question 4 into actual measures to assure operational quality management. It can also measure the performance on different objectives and relate these to actual output performance.

7.3. Recommendations

The first recommendation deals with the results this research produced. The last three are based on notions that gradually developed during the research concerning effectively operating in an unknown environment.

Recommendation 1:

➢ *Use the instrument and understand its interdependencies.*

HI and A&B management are recommended to use the instrument developed in this research. No shortcuts must be taken, since all objectives and measurements are heavily interrelated. The instrument must be used with all its facets and restraints and all activities must be executed to realize the objectives set in the instrument.

Recommendation 2:

➢ *HI and A&B management must promote recognition and reading of environmental influences.*

Business environments are grey areas that cannot be easily understood or explained one-sided. Managers must learn to deal with their complexity and instability.
If HI management, or A&B management for that matter, fail to recognize the influence of the environment or its complexity and changeability, the instrument will be interpreted in erroneous ways and therefore loose its worth. The objectives can be determined incorrect, actual results can be read or interpreted wrong, etc.

Recommendation 3:

➢ *Look for and use benchmarking information*

While studying the deployment instruments it became clear that *benchmarking* can be a very effective tool in developing best practices. Now no benchmarking information exists which renders it useless. HI management could exchange information with competitors in open discussion. Not all information needs to be exchanged, but good lessons can be learned from each other. The odds are good that competitors, especially other international engineering firms, face many of the same challenges HI faces.

Open friendly discussion can also help with the issues surrounding competitors stealing staff from each other. It seems unlikely that a high turnover in (high calibre) staff is a competitive advantage for any of HI's competitors.

Recommendation 4:

➢ *Train managers in recognizing and reading the business environment and the influences it has on operations.*

Many of the managers in the Asian A&B AG's are educated as engineers and have little training and experience in managing employees and organizations. A decent level of management skills and knowledge (like the recognition and reading of environmental influences from recommendation 2) is equally valuable to the technological and communication and coordination training for the Indian staff, determined in chapter 5.

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ABBREVEATIONS

A&B	-	Architecture & Building Division
AG	-	Advisory Group
BOSQAI	-	Branch Office Specific Quality Assurance Instrument
BSC	-	Balanced Scorecard
DAG	-	Director Advisory Group
DD	-	Division Director
EP	-	Energy Projects
II	-	Industrial Installations
IT	-	Information Technology
HAG	-	Head of Advisory Group
HI	-	Haskoning India
HRM	-	Human Resource Management
HSE	-	Health, Safety and Environment
MBO	-	Management by Objectives
MNC	-	Multi-National Corporation
PDI	-	Power Distance Index
PSE	-	Protected Storage Engineering
QMS	-	Quality Management System
RH	-	Royal Haskoning
SD	-	Structural Design
SOG	-	Self-Organizing Group
UAI	-	Uncertainty Avoidance Index

EPILOGUE ON BROADER POSSIBILITIES OF THE DEVELOPED INSTRUMENT

Introduction

This epilogue covers the delineation of results of the research that were not fully anticipated at the start of this research and are therefore not found in the methodology or objective. Unforeseen possibilities arose for RH and the A&B Division that deserve to be discussed here. These possibilities are constructed from the foundations laid by the development of the instrument from chapter 6 and are concerned with its broader deployment.

First the idea of broader deployment opportunities is presented. Second, if this broader deployment is possible and how to do this are briefly discussed. Finally the foreseen end results are described.

Broader Deployment Opportunities of the Developed Instrument

During the research the notion gradually formed that the challenges caused by the influence of the business environment are not just India specific. Especially discussions with A&B and HI management lead to believe that more RH branch offices face similar challenges. RH and the A&B Division are involved in more business environments than just the ones in India through a number of branch offices.

The underlying principle of the research (the business environment influences operational quality management through HRM and organization structure), is true for all RH branch offices. The strategy, quality policy and standards are set by RH and thus are the same for all branch offices. The similarities this will provide in the research question, objective and scope when one would be performing this research for other RH branch offices lead to believe that the developed instrument is applicable to a broader range than just HI.

If and How the Developed Instrument can be Applied to Different Branch Offices

If this instrument is widely applicable, then A&B management does not have to 'reinvent the wheel'; the developed instrument just requires some adjusting. The methodology used in this research can probably be used in the development of the same type of instrument for other RH entities as well. First the question if the instrument is applicable to other entities needs to be answered. Second, the question if the methodology used in this thesis holds for other entities. Both these questions are discussed here.

Can it be applied to Different RH Branch Offices?

The different branch offices in Asia, at first glance, appear to be fairly similar to HI in their operations and their quality management practices are based on the same RH QMS. The same layers of management are involved and the strategic objectives are those of HI and its AG's. According to A&B management, even similar challenges with realizing desired output performance exist for the other Asian AG's.

The only real differences between HI and other entities are the internal and external business environment their operations have to adhere to. Their operations, strategy and quality policy are exactly alike. Since the influence of the business environment forms the basis of the research objective and methodology used in this thesis, the same basis can be used for research on other branch offices facing similar challenges in realizing desired output performance.

How can it be applied to Different Branch Offices?

Different business environments can lead to different adjustments and outcome measures and performance drivers and maybe even to different cause-effect relations for the instrument. These are thus branch office specific. The underlying assumptions, theories and methodology however remain the same and have proven to be effective.

The scope (Chapter 1), Academic Theories (Chapter 2), the RH QMS (Chapter3) and the methodologies in researching the specific environmental forces and their states (Chapter 4), determining effective adjustments (Chapter 5) and designing the instrument (Chapter 6) remain the same when performing this research for other entities.

Where this Broader Application should lead to

The instrument is developed specific for every branch office. The developed instrument should assure effective quality management for the branch office it is deployed at. It is thus a Branch Office Specific Quality Assurance Instrument or *BOSQAI*. For every branch office it should have the same opportunities and limitations as defined in section 6.6.

The main defining characteristic of the specific branch offices is their business environment. The decentralization of RH is based on the geographical location of business opportunities and on the specific service that RH provides. The services provided are all alike as far as the development of the BOSQAI goes.

This means a BOSQAI's development is only different from the development of the HISQAI because they operate in a different business environment. This is thus the only design parameter that needs to be redefined. The other parameters (actual tasks to be performed and the RH quality policy and documentation standards) remain the same.

When compatible management instruments are used in different branch offices, lessons can be learned from intrinsic and striking differences in their outcomes through *benchmarking* the results generated through these instruments:

- First, through comparing similar instruments testing their effectiveness is possible. This way the best value adding adjustments and best practices can be learned from other branch offices; knowledge and information is shared.
- Second, multiple test cases can provide insight and general lessons into realizing RH's strategy and quality policy. This prospect lies well within the boundaries of the RH Talent Development Program (this program is incorporated in the RH QMS as a continuous improvement instrument).

Concluding

Important questions gradually arose during the research and the development of the instrument for assuring better quality management at the A&B AG's in India, regarding possible broader application of this instrument. These questions were *if* and *how* this instrument is applicable to other autonomous branch offices and AG's in the A&B Division and RH. The answers here are presumed to be 'yes' and 'using the same methodologies, theories and objectives used in this research'.

Applying the ESQAI in a broader perspective can create several opportunities for RH:

- It has the same imbedded opportunities as defined in section 6.6;
- The instrument can be very effective in improving quality and efficiency and in improving output performance;
- It is easily applied to different entities;
- The broader it is applied, the more effective it can be developed;
- It can provide valuable lessons in quality management and the best practices therein for RH.

Appendix 1: Description of the Organization

- Royal Haskoning
  - Architecture & Building Division
    - Haskoning India Private Ltd.
      - Structural Design (Energy Projects) Advisory Group
      - Architecture Advisory Group

APPENDIX 1 – DESCRIPTION OF THE ORGANIZATION

In order to get a better perspective on RH, A&B and HI this appendix covers more detailed information about their structure and strategy. First the RH legal structure and organization charts for RH, A&B and its Indian AG's are given. After that their goals and strategy will be briefly discussed.

Royal Haskoning
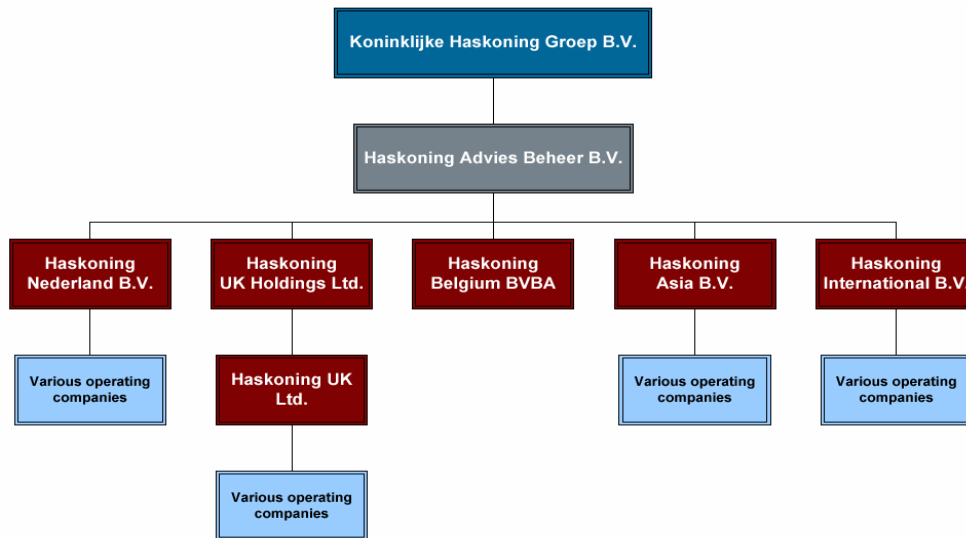
Figure 14: RH Legal Structure (Intranet – 1 January 2005)
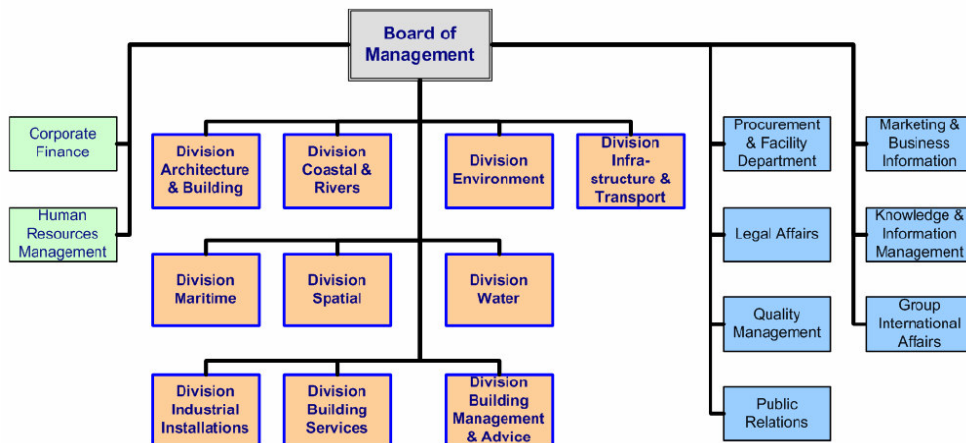
Figure 15: RH Organization Chart (Intranet - 1 January 2005)

The Architecture & Building Division

The A&B division advises on planning, designing and managing buildings of all types. From within its own ranks the division can draw on most of the expertise necessary to bring any building contract to successful completion. As an added benefit, the RH as a whole can contribute to any project requiring specialist input additional to the fields of

architecture, structural engineering, installation technology, project management and facilities management in which the architecture and building division excels.

The A&B division undertakes work for a wide range of government, industrial, commercial and non-profit clients. The services offered comprise the whole construction process from feasibility and development studies through to construction supervision and maintenance programmes.

The division's objective is to solve its client's problems in an efficient and cost-effective manner with enduring solutions. Safe and pleasant working conditions and care for the world have a key place in the culture of the A&B division. To this end the division empowers its staff with a high level of autonomy and responsibility, not only to provide job satisfaction but in order to draw on a wide range of people's experiences with a view to passing these on to its clients.

Long-term prospects for A&B in India are good; improving national economy provides opportunities for expansion. In order to take advantage of favourable markets the division intends to concentrate on acquiring new clients, obtaining repeat orders from existing clients and recruiting and training high-calibre staff.

[Source: Peoples Business, 2007]
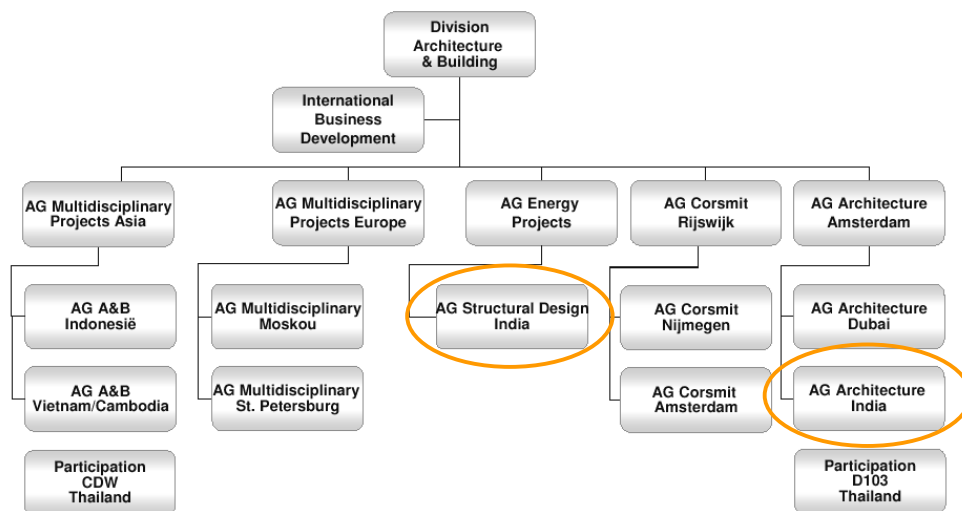
Figure 16: A&B Divisional Organization Chart (Provisory - Not approved yet)

Haskoning India Private Ltd.

The Indian RH operations are undertaken as Haskoning India Private Limited with the head office in NOIDA, Uttar Pradesh, a regional office in Chennai and project offices at Mumbai, Goa and Gandhinagar. In 1998 RH took over an Indian engineering firm, mainly involved in maritime projects. Since then it has evolved to a multi-disciplinary engineering and consultancy organization. At the moment HI has a staff of around 120, of which 70 are situated in the HI head office in NOIDA.

At HI 3 RH divisions are represented through 4 AG's:
- Maritime AG – active in India since 1998 and approximately 25 staff strong at head office (site staff is hired on project basis and shall not be covered), led by a UK ex-pat.

- Structural Design AG (A&B Division) – active in India since middle 2007 and approximately 15 staff strong at head office, led by a Dutch ex-pat.
- Architecture AG (A&B Division) – active in India since end of 2007 and approximately 8 staff strong at head office, led by a Dutch ex-pat.
- Industrial Installations AG – not yet active (in March 2008). 8 engineers were just hired and are expected to start operations in April 2008.

Support staff covers the fields of HRM (1 staff), QMS (1 staff), Health & Safety (1 staff), Administration (4 staff), Marketing (1 staff), IT (1 staff) and Finance (3 staff). The support departments' costs are consolidated on basis of employee numbers of the different AG's. Decisions regarding support departments are made by the HI management team. This team consists of the 4 DAG's and the Finance and HRM managers. The organization chart looks like figure 13.
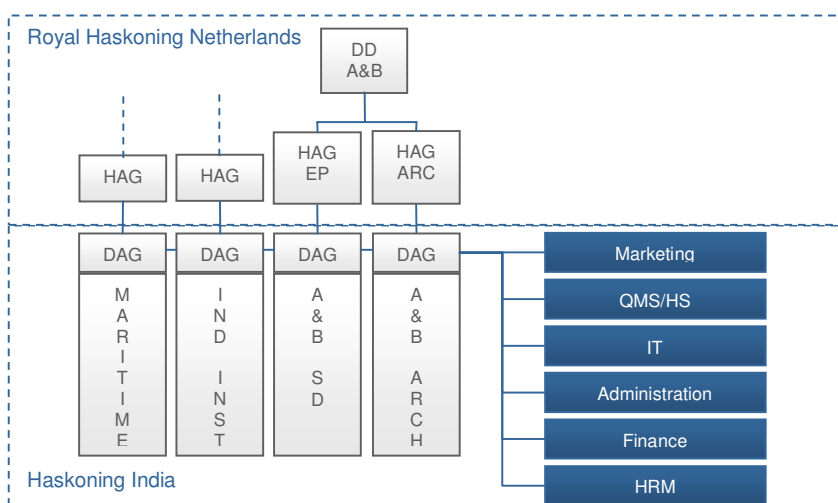
Figure 17: HI Organization Chart

Structural Design (Energy Projects) Advisory Group

"The AG for Energy Projects is to provide end clients and EPC contractors reliable independent knowledge on project development, client representation, multidisciplinary consultancy and design and engineering for the generation, transportation and storage of multiple forms of energy to sustain the continuity of RH by increasing profit and employment levels as a result of an increase in sales and profit of the AG." [Business Plan AG Energy Projects]

Architecture Advisory Group

The AG's focus is on high quality architecture, with an eye for structural disciplines. The common theme will be energy and sustainability. The goal is to sustain the continuity of RH by increasing profit and employment levels as a result of an increase in sales and profit of the AG. The international cooperation between the RH architect offices throughout the world (Netherlands, UK, Dubai, India and Thailand) should increase the opportunities to achieve that aim. [From: Jaarplan Architectuur 2008]

(All information as of early March 2008)

Appendix 2: Project Analysis

- Methodology
- The Projects
  - Project A: Indore
  - Project B: Goa Harbour
  - Project C: PSE
  - Project D: Heineken
- Results of the Analysis
- Concluding

APPENDIX 2 – PROJECT ANALYSIS

Methodology

Four projects are analyzed from an A&B divisional perspective. Starting point for the analysis is that the current operations do not lead to successful output performance in India because of lacking quality and efficiency levels. To find out where the system is lacking, this analysis will take an operational view. It will focus on the actual difficulties, where and if any improvements have been showing, and what situational factors were of influence.

Situational factors are those factors that are institutional and a given for the AG's operations. They define the situation in which the AG's have to operate. Since the QMS works properly in the Netherlands the assumption is made that the situation in India is a source for why the system isn't working properly in India. The main difference between the Netherlands and India is the situation the different offices have to operate in.

The objective of this analysis is to:

1. define any basic difficulties with executing operations and determine their cause;

2. define the actual improvements in the operations that have been showing so far. (The research objective is aimed at improving operational processes. Any improvements made so far are of equal importance to achieving this objectives as defining what needs to be improved);

3. determine if any and what situational factors had a profound influence on output performance.

The analysis was performed using available project information, input from staff and management active in these projects and from available quality audits performed on these projects (see table 18). In table 19 the results of this analysis are presented. Several steps are taken in the analysis of these projects:

1) The primary issues that caused conflicts with clients, quality and objectives are indicated for every project.
2) The primary positive effects (improvements) on process performance are indicated for every project.
3) Finally the underlying main situational factors that influenced process performance are determined.

Table 18: Personnel and audits used in performing the Gap-analysis

Project	Staff	Management	Audit available?
A: Indore	1 Architect from Architecture AG, India	DAG Architecture AG, DAG SD AG	NO
B: Goa Harbor	1 Engineer from SD AG, India	DAG Architecture AG, DAG SD AG	NO
C: PSE	▪ 3 Engineers from SD AG, India ▪ 2 Engineers from EP AG, the Netherlands ▪ 1 draftsman from EP AG, the Netherlands	DAG SD AG, Project Manager EP AG	NO
D: Heineken	▪ 1 Engineer from A&B, the Netherlands ▪ 2 Architects from Architecture AG, India	DAG SD AG, Divisional Director A&B	NO

The Projects

Four projects have been selected that fulfil the following demands:

▪ The project needs to be complex; multiple staff involved in multiple stages of the project.
▪ The project provides an accurate representation of the core business of the AG's.

- The client represents one or more of the objective markets.
- The project encountered performance issues.

Project A: Indore

This project involves the A&B AG's handling project management for the construction of 400 homes in Indore, India. The project is performed for a local client and originally managed by former Indian management.

Very little is effectively defined in contracts. Hardly any administration of the project is available. The client is not happy with the quality provided, there is a definite gap between the client's expectations and experiences which has led to a lot of conflict with the client. It should be noted here that clients' expectations are not always realistic. Nonetheless several other complications in the operational process are reported: The quality of deliverables is too low, unclear objectives regarding quality and tasks, complex project structure and poor administration.

Project B: Goa Harbour

The A&B AG's are responsible for the structural and architectural design of several harbour offices. Guiding and judging the tender process of contractors bidding for the project also falls under their responsibility. The project is performed for the Maritime division, which means it is an internal client.

Recently installed HI management has concluded that the quality checks of the structural drawings have not been performed. No documentation exists of where and when these had to be checked and by whom. The drawings have already been sent out to contractors bidding on the project. No one knows why the deliverables haven't been checked. Hardly any administration of the project is available.

Project C: PSE

PSE (Protected Storage Engineering) is a joint venture between DHV and RH. PSE delivers services for tender designs, basic designs, detailed designs and site supervision of pre-stressed concrete protection structures for the cryogenic storage of liquefied gasses up to a storage capacity of 170.000 m3 of liquefied gas.

A part of the work load is performed by the SD AG in India, which means that PSE is an internal client (off-shoring). The quality that is delivered is sometimes lower than expected; especially the work produced by the draftsmen has been known to be of low quality. Different standards and IT solutions are used which causes inefficiency.
This project has seen some promising results in the development of staff. The way this project has been managed by ex-pats and the training given to staff involved created awareness amongst staff about opportunities for development of the operational processes.

Project D: Heineken

The A&B AG's were responsible for part of the design and project management of the construction of a brewery for the joint venture between Heineken and a local Indian brewery. This project was performed before the quality system now operational at HI was introduced, which many staff at the AG's see as he main problems with quality performance on this project. The project was originally performed on former Indian management.

The project saw many conflicts with the different clients. The main conflicts were about accountability, different notions about the project organization and arguments about which party was responsible for which deliverables. Also the quality of the deliverables produced by the AG's was lacking in the eyes of the clients. Again clients' expectations were not always realistic. No administration or documentation of the project is available.

After the project was finished awareness grew amongst staff about the importance of standardization, coordination and structure in projects.

Results of the Analyses

Table 13 presents a short listed overview of the results from the project analysis. It describes the activities performed during the project, the market the client is located in and issues and improvements in the operational processes. Last, the situational factors as defined by the staff involved are presented.

Table 19: Results from the project analysis

Project	A: Indore	B: Goa Harbour	C: PSE	D: Heineken
Activities	Project management	(Structural) Design of buildings and Management of the tendering process	Structural design and drawing	Structural design and project management
Market	Local developer	Local client	Internal market – Off-shoring	Internal RH market and local client
Issues with performance	• Quality in deliverables • Project complexity • Unclear project objectives • Administration and documentation	• Lack of quality checks • Unclear project objectives • Administration and documentation • Standardization and formalization • Communication and coordination	• Standardization and formalization • Lack of quality checks • Quality in deliverables • Communication and coordination	• Project complexity • Communication and coordination • Quality in deliverables • Lack of quality checks • Administration and documentation • Standardization and formalization
Noticeable improvements	• Management style and commitment	• Management style and commitment	• Staff development • Standardization and formalization • Communication after exchange programs • Awareness of opportunities	• Awareness of structure and standardization • Management style and commitment
Situational factors with profound influence on performance	• Indian practices and culture • Local clients' demands • Available staff	• Indian practices and culture • Available staff	• Indian practices and culture • Available staff • Different IT solutions and standards	• Indian practices and culture • Local clients' demands • Available staff • Different IT solutions and standards

Concluding

The general conclusion of the analyses is presented here:

▪ No audits are available. The QMS prescribes these as essential, yet non are at hand.

- The suitability of staff is lacking, primarily when it comes to checking the quality of the deliverables and managing the processes. This is the case internally and externally in the labour market. The PSE project has shown that staff can be effectively trained, when management/ex-pats is/are committed to train them.

- Controlling quality is inadequate. The execution of quality procedures has proven to be insufficient.

- Dealing with Indian clients (unrealistic expectations, informal and complex project organizations) is very much unlike dealing with 'Dutch' or western clients and requires a different approach than ex-pats are used to.

- Coordination, communication, standardization and formalization have possibilities for improvement. The implementation of the QMS has shown improvements but is not functioning as intended or as it is functioning in the Netherlands.

- Different standards and IT solutions compromise efficient processes and quality performance.

- Indian practices and cultures are not sufficiently integrated in the QMS.

- HI evolved out of an older Indian engineering firm that was taken over by RH. Integrating the staff of these engineering firms into RH has been very difficult because of the differences that exist in the corporate culture, organization structure, practices and competency assessment methods.

Three main conclusions can be filtered from the analyses:

- First, management has been deficient in their translation of clients' expectations into effective processes. The main inhibitors, both internally at HI and externally with clients, have been Indian practices and cultures.

- Second, the employee base has been inapt to provide the expected quality. Technical capabilities and process management capabilities are deficient, both internally at HI and in the labour market.

- Third, the combination of staff and the implemented RH QMS is not adequate at this moment to deal with the situational factors, primarily environmental forces that pull at the A&B AG's processes and operations in India. Quality and efficiency are not guaranteed by this system.

Elements from the RH QMS are not designed to adequately deal with the branch office's internal and external environmental forces, with efficiency and quality loss as a consequence.

Good opportunities exist for the AG's in India. Positive changes have been noticeable in different areas:
- Staff has been slowly adapting to several of the RH 'ways';
- Successful training has been achieved;
- Ex-pats are learning to operate in the Indian environment;
- The implementation of the RH QMS has shown an improvement of quality.

Appendix 3: Questionnaire for Haskoning India Staff - Culture and Preferred Working Methods

- Part 1: Corporate Culture
- Part 2: National Culture
    - o   Individualistic vs. Collectivistic
    - o   Masculinity vs. Femininity
    - o   Long Term vs. Short Term Orientation
    - o   Power Distance
    - o   Uncertainty Avoidance
- Part 3: Preferred Working Methods
- Part 4: Motivation and Development

APPENDIX 3 – QUESTIONAIRRE FOR HASKONING INDIA STAFF: CULTURE AND PREFERED WORKING METHODS

For every part of the questionnaire a different method for analysis is used. Which method is used and why is described more thoroughly during the discussion of the individual parts. From the analysis several conclusions could be drawn which are presented here.

Part 1: Corporate Culture

Methodology

For every orientation (see table 20) when scored a number one this orientation was given a value of 1, number two a value of 0,75, the number three a value of 0,5 (average), the number four a value of 0,25 and the number five a value of 0. The average percentage of marks every number received (= times the number got marked divided by the total number of filled out questionnaires) was multiplied with this score. The outcomes of these multiplications were then added up. Now a percentage of how strong the staff in the organization leans towards one concept is presented. For instance, a 68% score on *open organization* indicates that the corporate culture of HI is positioned on 68% of the way from a *closed organization* (represented in figure 10 by 0%) to a 100% open organization.
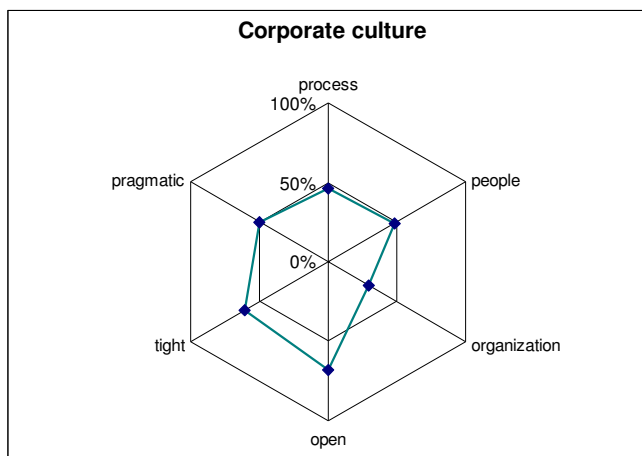
Figure 18: Reflection of the HI corporate culture after Sanders & Neuijen [1987]

process	46%	54%	result
people	48%	52%	task
organization	29%	71%	profession
open	68%	33%	closed
tight	61%	39%	loose control
pragmatic	50%	50%	normative

Table 20: Results on part 1: Corporate Culture.

Conclusion

HI is a fairly open organization, which means new personnel is welcomed and opportunities exist for effective communication channels. HI is also a tight organization which means it is focused on costs and takes itself and its structure very seriously. The last important observation from figure 10 is that HI is very profession bound. This means staff is more focused on and indulged in his or her profession ad not so much impressed by the organization. Excelling in their own profession is much more important to staff than the organization they work for.

Part 2: National Culture

Methodology

The goal of these questions was to relate the culture at HI to the cultural dimensions developed by Hofstede and determine how good a fit exists. For every cultural dimension the same questions were asked that Hofstede [2005] used in his IBM research. He defined, for every dimension, several work values or indicators that can be used to determine which direction within every dimension the researched culture takes. Hofstede already proved the correlations that exist between the questions individually and the questions and dimensions in general. For more detailed analysis is referred to Hofstede [2005].

Individualistic vs. Collectivistic

HI staff marked the importance of the work values on a scale from 1 to 5 (second column). They also marked which of the work values they found to be most and second most important (third to fifth column). The total score on the individual work values was computed by adding the multiplications of the times staff marked a 1 to 5 with the cohering score on that mark. (For instance 11 marks of a score of 2 adds 22 points to the total score of that work value.)

The importance of the work values in general was determined by providing a score of 3 to every mark that stated it as most important and a score of 2 to those that were marked second most important. These scores were then added up.

Work value	score	importance of work value	marked nr 1	marked nr 2	a high score here Indicates:
personal free time	170	13	3	2	Individuality
freedom	170	10	2	2	Individuality
challenge	221	92	24	10	Individuality
training	220	55	9	14	Collectivism
working conditions	188	8	0	4	Collectivism
using talents	221	27	3	9	Collectivism

Table 21: Scores on the Individualistic vs. Collectivistic dimension for HI
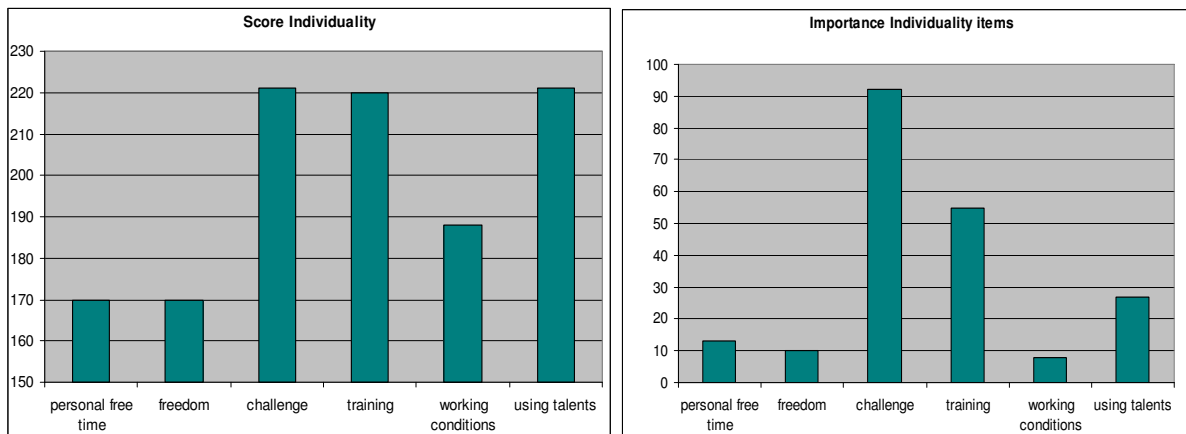
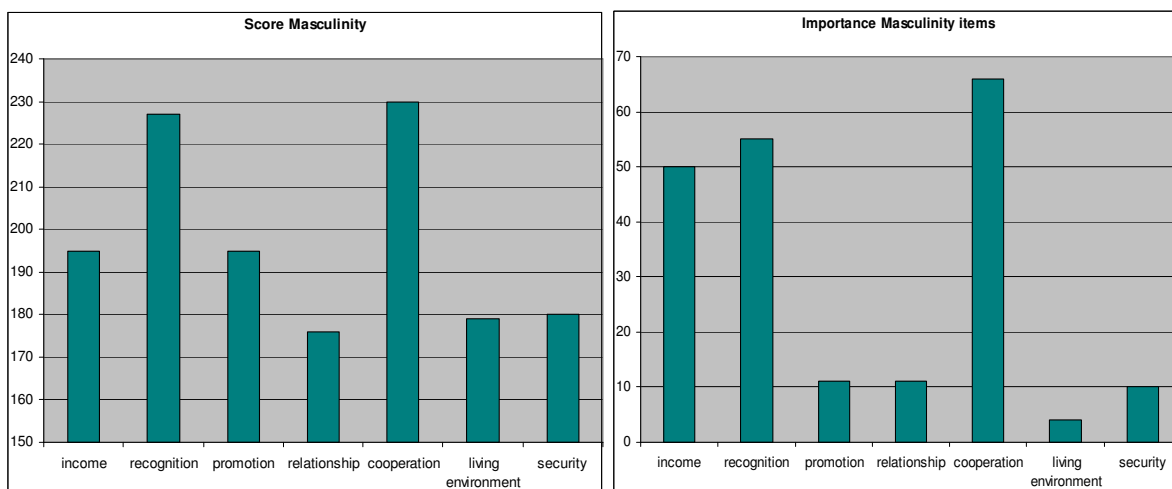**Figure 19: Scores on the Individualistic vs. Collectivistic dimension for HI**

Conclusion

HI has a collectivistic culture, which is in line with Hofstede's [2005] analysis. What stands out is the high score on *challenge*, which is an individualistic work value. Working conditions, a collectivistic work value, is not important.

Masculinity vs. Femininity

Work value	score	importance of work value	marked nr 1	marked nr 2	a high score here Indicates:
income	*195*	50	14	4	Masculinity
recognition	*227*	55	11	11	Masculinity
promotion	*195*	11	1	4	Masculinity
relationship	*176*	11	1	4	Femininity
cooperation	*230*	66	14	12	Femininity
living environment	*179*	4	0	2	Femininity
security	*180*	10	0	5	Femininity

Table 22: Scores on the Masculinity vs. Femininity dimension for HI

Figure 20: Scores on the Masculinity vs. Femininity dimension for HI

Conclusion

Hofstede defined *challenge* as a very masculine trade as well as an individualistic work value. The HI score on the *challenge* work value is taken into account in this conclusion. HI has a pretty masculine culture. What stands out is the very high score on *cooperation*, which is a feminine work value. Although success (salary, recognition) are very important, HI staff wants to work together in a social environment.

Long Term vs. Short Term

Work value	score	importance of work value	marked nr 1	marked nr 2	a high score here Indicates:
finishing tasks	*168*	33	9	3	Long term
protecting reputation	*190*	52	12	8	Short term
savings	*200*	25	5	5	Long term
status	*191*	18	4	3	Long term
balance	*183*	35	7	7	Short term
respect for tradition	*202*	16	2	5	Short term
making sacrifices	*175*	16	0	8	Long term

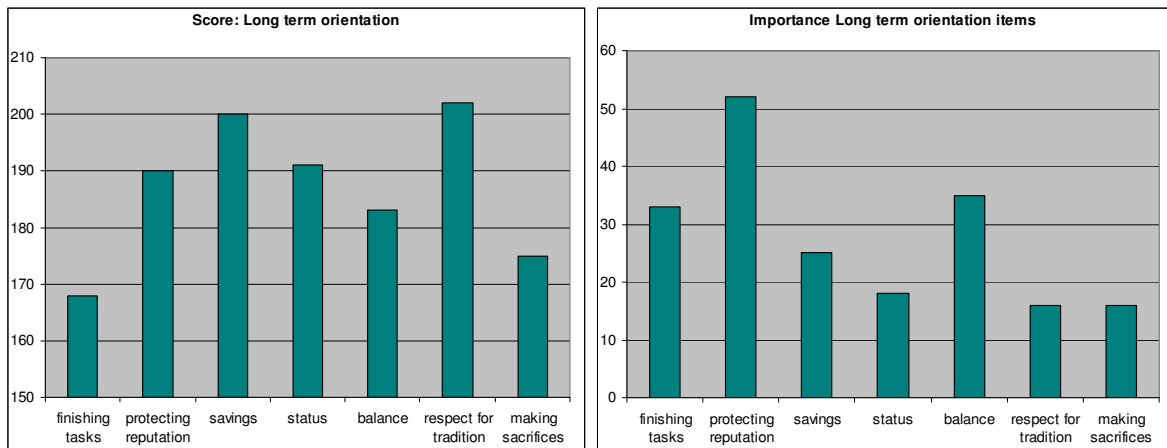*Table 23: Scores on the Long term vs. Short term dimension for HI*

Figure 21: Scores on the Long term vs. Short term dimension for HI

Conclusion

Both long term and short term orientation do not have a real upper hand. What is surprising when looking at the scores for the individual A&B and Maritime divisions is that A&B staff is long term orientated and Maritime staff is short term orientated. In the total HI analysis they fade each other out. Why these scores are different for the different divisions can not be explained here.

Power Distance

This dimension was analyzed for HI by asking staff two questions:

▪   'How often does staff openly disagree with superiors?'
▪   'What is the preferred leadership style?'

Together with information from the problem analysis a good idea of the power distance between superiors and staff can be assessed. For both questions the average was taken and the distribution of the answers was analyzed.
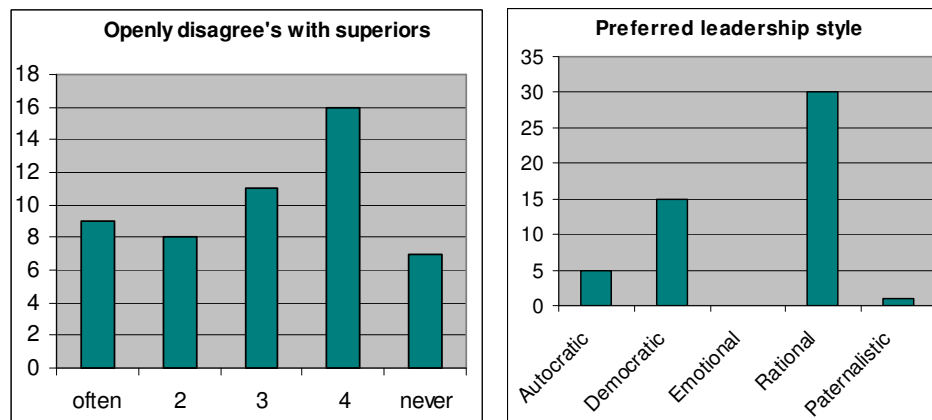

Figure 22: Scores on the Power Distance dimension for HI

Conclusion

According to Hofstede's analysis in India there is a high *power distance*. Staff hardly ever disagrees with superiors and leadership styles are paternalistic. At HI staff does disagree with superiors from to time to time, but the average notion is that it does not happen often. The preferred leadership style is rational, which is not in line with the paternalistic leadership style Hofstede concluded as preferred.

A relatively high power distance exists between superiors and staff, but this distance has been demeaning, especially because of efforts by ex-pat management. This is reflected in the A&B division where this has been an active task of management. In the A&B division the power distance is lower than in the Maritime division. According to statements made by the experienced and higher staff during the interviews in the problem analysis a shift to a lower power distance is noticeable.

Uncertainty Avoidance

The placement of HI on this dimension was determined via three questions. The first two dealt with staff's opinion about the following two statements:

- "I perceive my job as being to stressful"
- "Corporate rules cannot be dismissed in any case, even if you think doing so would be better for the organization"

The third question asked how long staff sees themselves working at HI.

The analysis of the answers is based on the average score and the distribution of the scores.
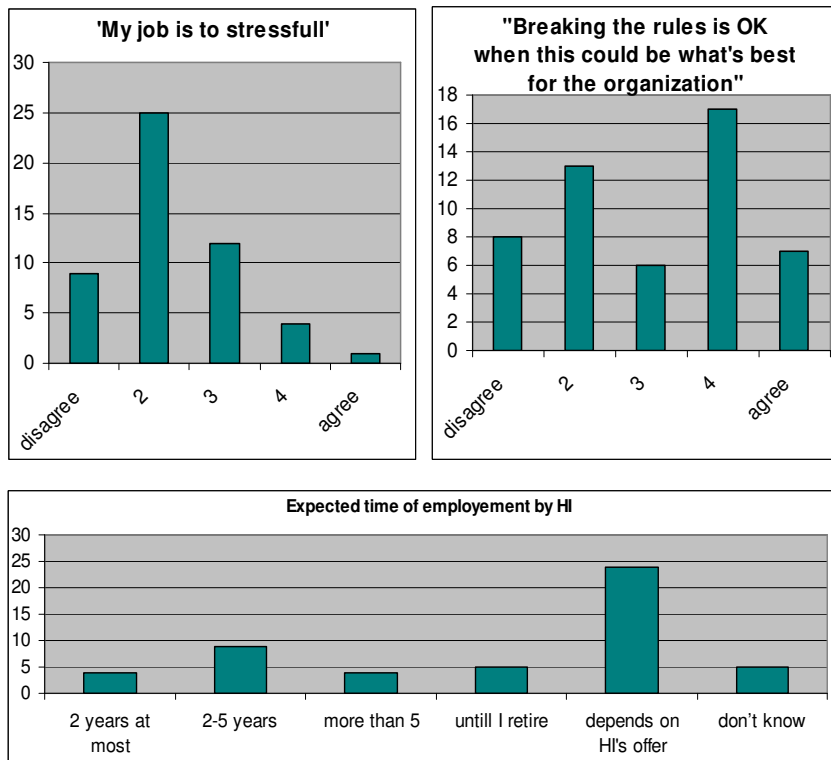

Figure 23: Scores on the Uncertainty Avoidance dimension for HI

Conclusion

Low stress levels, according to Hofstede [2005], indicate a low level of uncertainty avoidance.

Agreement on the second statement indicates little need for strict rules and procedures and thus low uncertainty avoidance. Staff at HI fluctuates between agreement and disagreement, which is caused by differences in the answers by staff in the A&B and Maritime divisions. In the A&B division staff there is more agreement and thus lower uncertainty avoidance than there is in the Maritime division staff.

The answers on the third question indicate low uncertainty avoidance. High uncertainty avoidance cultures change employment fewer times. At HI staff is willing to change (save) employment because elsewhere they might be better off. This indicates risk seeking behaviour.

Overall the conclusion is that uncertainty avoidance is relatively low, which is in line with Hofstede's conclusions.

Part 3: Preferred Working Methods

The goal of this part was to get a better sense of how staff at HI prefers to work. This objective is based on the idea that staff is the most important resource and a main source of challenges that needs to be tackled in this research. It can help relate culture to actual practices.

Of course the analysis only provides the preference of the staff at HI and not the best overall conclusion for RH. The analysis can however very well assist in eventually finding the mechanisms, structure and procedures that are the most effective for HI, since it assists in combining the staff wishes and culture at HI with actual operations. Also the HI staff was asked about their opinions towards the newly implemented 'Dutch' quality system. This was done to get a sense of how well such a Dutch quality system is received at HI.

Methodology

The methodology used is the same as described in *Part 1: Corporate Culture*. This research defined six important orientations for HI, which are derived from works on organization structure by Mintzberg [1999] and from theories on quality systems by Van der Bij [1999].

Orientations on working methods			
formalized	54%	46%	flexible
standardized	76%	24%	open for own interpretation
centralized	65%	35%	decentralized
horizontal coord	50%	50%	vertical coordination
working in groups	63%	37%	working alone
individual accountability	61%	39%	group accountability
Opinion about the quality system (QS)			
QS provides learning	42%	58%	avoid mistakes
QS is easy to use	52%	48%	takes some getting used to
QS aligns with experience	53%	47%	completely new to me

Table 24: Results on part 3: Working Methods.
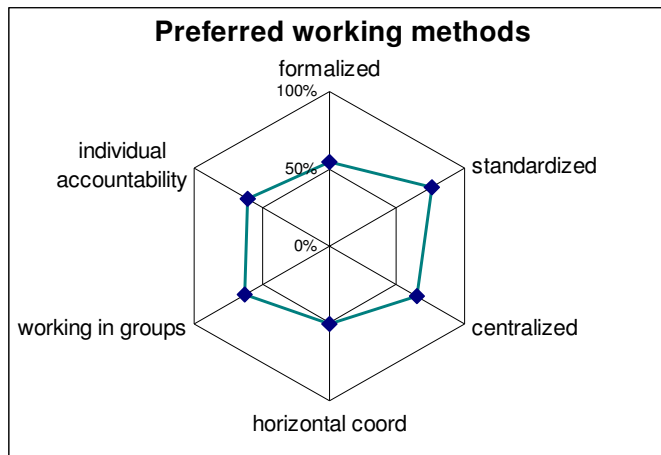
Figure 24: Perception of preferred working methods for HI

Conclusion

The emphasis is on formalized, standardized and centralized operations with individual accountability. In the Maritime division formalized, standardized and centralized operations are even more preferred. Staff here prefers less individual accountability. The preference for individual accountability is not in line with a relative collectivistic culture. Working in groups is preferred over working individually, especially with A&B staff.

The main conclusion regarding the QMS is that this system is not fully understood by HI staff. The majority of the staff perceives it as a useful tool to avoid mistakes and not as a tool for continuous learning, as it was intended. Staff still has to learn how to use the system properly.

Part 4: Motivation and Development

The goal of these questions was to get a better understanding of what knowledge and skill is excelled at, which is lacking and on which the development must be focused. Also a good idea of what motivates staff to learn is asked to see what stimulates staff to achieve effective development.

Methodology

The aspects in the questionnaire are based on the RH competency assessment method. The idea behind the defined aspects is that they will provide guidance to what specific knowledge needs to be developed (defined in the 26 competencies as defined by RH) and what stimulus to use.
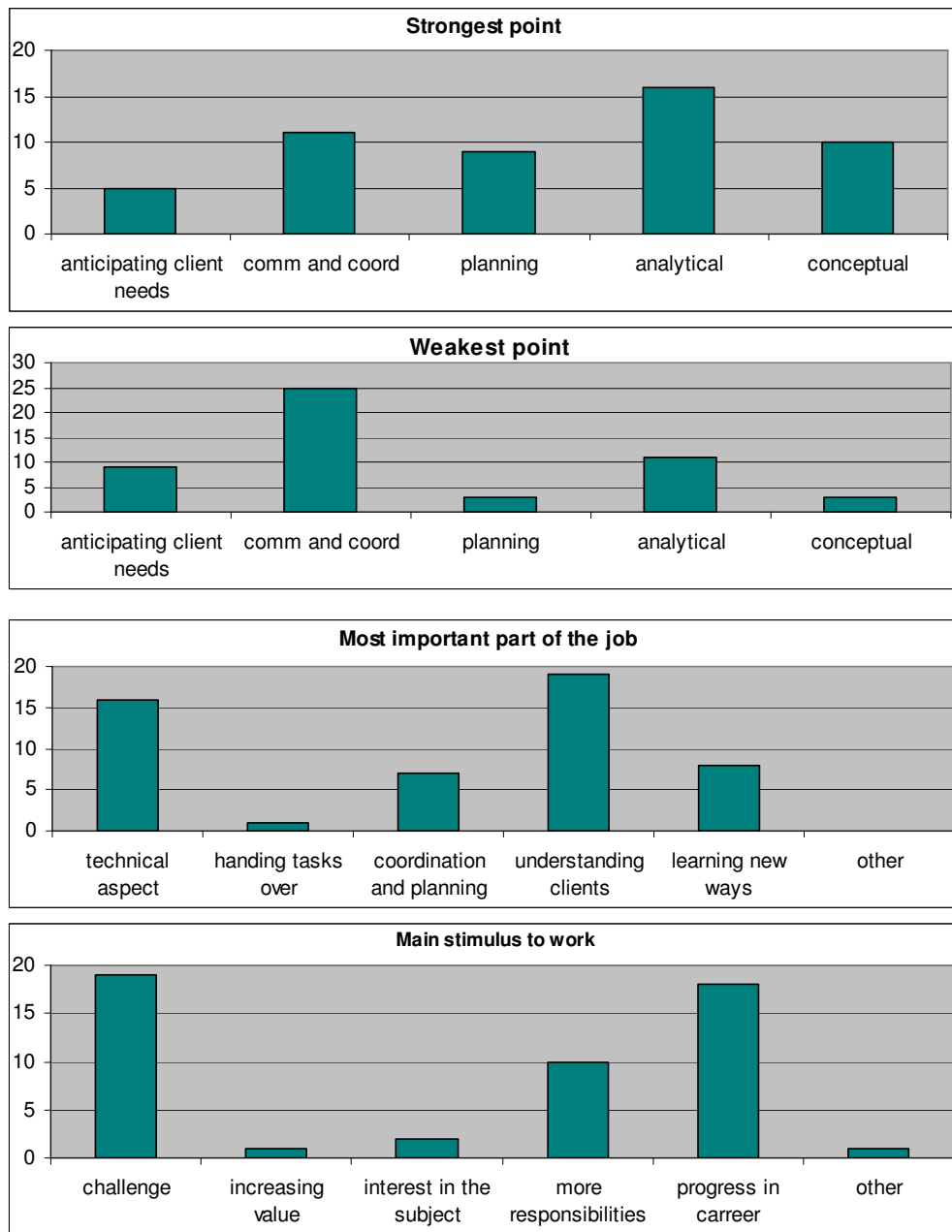
Figure 23: Results for knowledge development query for HI (continued)

Conclusion

The most striking result is found in the individual answers to the questions covering the strongest and weakest points. In 80% of the cases where staff marked their *analytical capabilities* as their strongest point, they marked *communication and coordination* as their weakest point and vice versa. This means the majority is good at *communication and coordination* and weak in their *analytical capabilities,* or finds *analytical capabilities* to be their strongest and *communication and coordination* weakest point.

What else is striking is that A&B staff marked communication and coordination more often as their weakest point than Maritime staff. The reason for this is expected to be the emphasis that has been placed on communication and

coordination by A&B management, which hasn't been the case for the Maritime division. Maritime staff is less aware of their communication and coordination skills and the importance thereof.

Staff finds *understanding client needs* the most important part of their job, but few marked *anticipating client needs* as either a strong or weak point. This seems odd, since one would expect a correlation between the two.

The interfaces are seen by professionals as less important to the effectiveness of a QMS. Staff at HI finds the (development of) technical skills more important.

Overall it can be concluded that the focus of the staff at HI is more on the technical aspect of the work than on the handover of work and communication and coordination.

Regarding the stimulus for staff to learn and develop, the focus should be placed on
▪ creating challenges for HI staff and
▪ salary and recognition.

Appendix 4: Example of the Instrument

- Primary Overview
- Objective Values and Targets
- Actual Results
    - HRM
    - Organization Structure
    - Customer Perspective
    - Financial Perspective

APPENDIX 4 – EXAMPLE OF THE INSTRUMENT

The following pages present the actual instrument as it will be used by HI management. The instrument is based on an Excel spreadsheet that can easily be modified and updated. When the user manual and description presented in chapter 6 are known, the instrument is very much self explanatory.

The numbers used in the example below are COMPLETELY FICTIONAL and only serve the purpose of explaining the workings and use of the instrument.

First the general instrument that presents all cause-effect relations, objectives, outcome measures and performance drivers and the success of these measures and drivers. After that the objective values of the measures and drivers are presented. The last three pages present the actual results of the outcome measures and performance drivers per perspective.
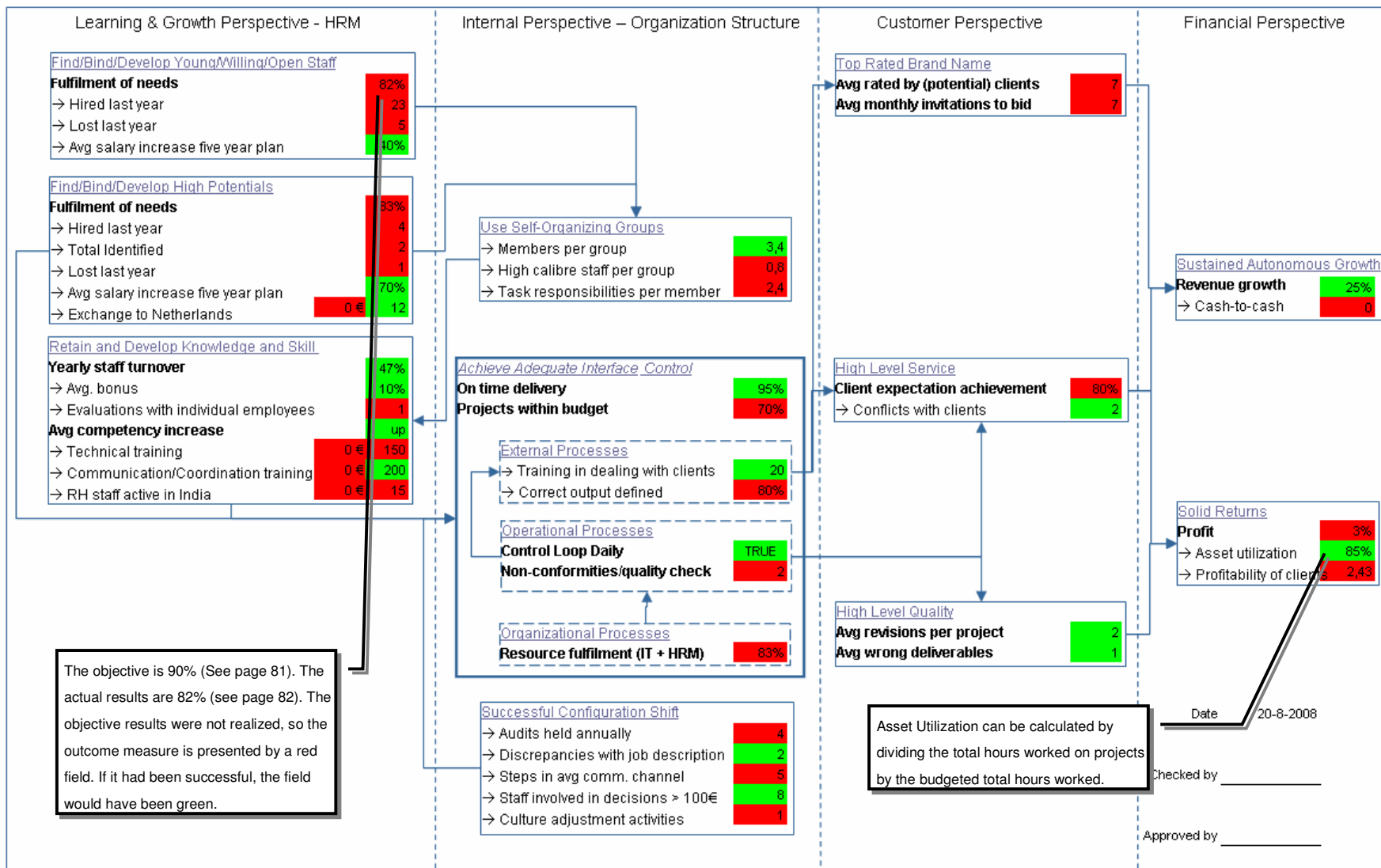
Learning & Growth Perspective - HRM

Find/Bind/Develop Young/Willing/Open Staff
Fulfilment of needs — 82%
→ Hired last year — 23
→ Lost last year — 5
→ Avg salary increase five year plan — 40%

Find/Bind/Develop High Potentials
Fulfilment of needs — 83%
→ Hired last year — 4
→ Total Identified — 2
→ Lost last year — 1
→ Avg salary increase five year plan — 70%
→ Exchange to Netherlands — 0 € — 12

Retain and Develop Knowledge and Skill
Yearly staff turnover — 47%
→ Avg. bonus — 10%
→ Evaluations with individual employees — 1
Avg competency increase — up
→ Technical training — 0 € — 150
→ Communication/Coordination training — 0 € — 200
→ RH staff active in India — 0 € — 15

The objective is 90% (See page 81). The actual results are 82% (see page 82). The objective results were not realized, so the outcome measure is presented by a red field. If it had been successful, the field would have been green.

Internal Perspective – Organization Structure

Use Self-Organizing Groups
→ Members per group — 3,4
→ High calibre staff per group — 0,8
→ Task responsibilities per member — 2,4

Achieve Adequate Interface Control
On time delivery — 95%
Projects within budget — 70%

External Processes
→ Training in dealing with clients — 20
→ Correct output defined — 80%

Operational Processes
Control Loop Daily — TRUE
Non-conformities/quality check — 2

Organizational Processes
Resource fulfilment (IT + HRM) — 83%

Successful Configuration Shift
→ Audits held annually — 4
→ Discrepancies with job description — 2
→ Steps in avg comm. channel — 5
→ Staff involved in decisions > 100€ — 8
→ Culture adjustment activities — 1

Customer Perspective

Top Rated Brand Name
Avg rated by (potential) clients — 7
Avg monthly invitations to bid — 7

High Level Service
Client expectation achievement — 80%
→ Conflicts with clients — 2

High Level Quality
Avg revisions per project — 2
Avg wrong deliverables — 1

Asset Utilization can be calculated by dividing the total hours worked on projects by the budgeted total hours worked.

Financial Perspective

Sustained Autonomous Growth
Revenue growth — 25%
→ Cash-to-cash — 0

Solid Returns
Profit — 3%
→ Asset utilization — 85%
→ Profitability of clients — 2,43

Date — 20-8-2008

Checked by _____

Approved by _____

Figure 25: The general presentation of the instrument: the primary overview

The instrument will take the form as presented above. The textboxes will explain more about how it functions. This is the primary overview that relates the objectives of the different perspectives and presents the outcome measures and performance drivers and how successful HI has been in realizing the objective values.

Financial Perspective	Profit (%)	5%	Improved Asset Utilization (%)	10%
F1 – Solid Returns	Revenue Growth (%)	20%	Client Profitability (bad, average, good, excellent)	2,5
F2 – Sustained Autonomous growth			Cash-to-Cash Cycle (weeks)	8
Customer Perspective	Client Expectancy Achievement (%)	90%	Conflicts with Client (№)	3
C1 – High Level Service				
C2 – High Level Quality	Avg Revisions per Project (№)	3		
C3 – Top Rated Brand name	Avg Wrong Deliverables per Project (№)	1		
	Rated by (potential) clients (scale of 1 – 10)	8		
	Avg Monthly Invitations to Bid (№)	14		
Internal Perspective	Control Loop = Daily (true or false)	TRUE	High Calibre Staff per Group (№)	1
I1 – Achieve Adequate Interface Control	Non-Conformities in Average Quality Check (№)	5	Task Responsibilities per Member (№)	2
I2 – Use Self-Organizing Groups	On Time Delivery (%)	90%	Group Members per SO Group (№)	4
I3 – Successful Configuration Shift	Projects within Budget (%)	90%	Training in Dealing with Clients (Avg Hrs/Staff)	20
	Resource Fulfilment HRM and IT (%)	90%	Correct Output Defined in Specifications (%)	0,9
			Audits Held Annually (№)	12
			Discrepancies with Job Description in Daily Tasks (№)	less than 3
			Steps in Average Communication Channel (№)	3 or less
			Staff Involved in Decision Making > 100 € (№)	8
			Corporate Culture Adjustment Activities (№)	4
Learning & Growth Perspective	Fulfilment of Resource Need High Potentials (%)	90%	Hire this year (№) HP	5
L1 – Finding/Binding/Developing High Potentials	and		Total Identified (№) HP	3
L2 – Finding/Binding/Developing Young/Willing/Open-Minded Staff	Fulfilment of Resource Need Regular Staff (%)	90%	Total Lost (№) HP	2
L3 – Retain and Develop Knowledge and Skill			Average Salary Increase 5 Year Plan (%) HP	70% Budgetted In €
			Exchange Months Indian Staff (№ and €)	12
			Hire this year (№) YS	30
			Total Lost (№) YS	8
			Average Salary Increase 5 Year Plan (%) YS	40%
			Evaluations with Individual Employees	2
	Yearly Staff Turnover (%)	15%	Average Group Bonus (% of salary)	10%
	Employee Base Competency Increase (up/down)	up	Technical Training per Employee (Hrs and €/Hr)	200
			Communication/Coordination Training per Employee (Hrs and €/Hr)	200
			Dutch RH Staff active in India (days № and €)	20

Figure 26: The objective values for the instrument

The objectives can be determined based on HI management, RH strategy and objectives and prescriptions set by the adjustments determined in chapter 5.

ACTUAL RESULTS HRM (Learning & Growth Perspective)

This number presents the actual amount of high potentials/high calibre available

Automatic!!!!   Fill In   Fill In

Learning & Growth Perspective				Fill In	Fill In
	Fulfilment of Resource Need High Potentials (%)	47%	Hired last year (№) HP	8	
L1 – Finding/Binding/Developing High Potentials	and		Total Identified (№) HP	2	
L2 – Finding/Binding/Developing Young/Willing/Open-Minded Staff	Fulfilment of Resource Need Regular Staff (%)	73%	Total Lost (№) HP	3	
L3 – Retain and Develop Knowledge and Skill			Average Salary Increase 5 Year Plan (%) HP	70%	Cost
			Exchange Months Indian Staff (№ and €)	12	
			Hired last year (№) YS	50	
			Total Lost (№) YS	10	
			Average Salary Increase 5 Year Plan (%) YS	40%	
	Yearly Staff Turnover (%)	19%	Average Group Bonus (% of salary)	10%	Cost
			Evaluations with Individual Employees	1	
	Employee Base Competency Increase (up/down)	up	Technical Training per Employee (Hrs and €/Hr)	150	
			Communication/Coordination Training per Employee (Hrs)	200	
			Dutch RH Staff active in India (days № and €)	15	

This number presents the actual amount of high potentials/high calibre staff lost this year

This percentage represents the average amount of staff lost and thus needs to be replaced. It is an average between 'HP staff lost/HP hired' and 'YS lost/YS staff' hired

Fill In

	Fill In
Total number of staff needed	70
Number of High Calibre staff needed	15
Number of Young staff needed	55

This number is the actual amount of staff in the self organizing groups.

This is the number of high calibre staff that is needed this year perceived by HI management.

This is the number of young staff that is needed this year perceived by HI management.

To be filled in by Human Resource Manager

Figure 27: Actual HRM results

This page and the following three pages cover the actual results determined by the different support managers. The actual HRM results are drafted by the HR manager. The Euro amounts can be produced by the financial manager.

ACTUAL RESULTS Organization Structure (Internal Business Perspective)

Internal Perspective		Fill In from Audits		Fill In from Audits
	Control Loop = Daily (true or false)	TRUE	High Calibre Staff per Group (Nº)	0,8
I1 – Achieve Adequate Interface Control	Non-Conformities in Average Quality Check (Nº)	2	Task Responsibilities per Member (Nº)	2,4
I2 – Use Self-Organizing Groups	On Time Delivery (%)	95%	Group Members per SO Group (Nº)	3,4
I3 – Successful Configuration Shift	Projects within Budget (%)	70%	Training in Dealing with Clients (Avg Hrs/Staff)	20
	Resource Fulfilment HRM and IT (%)	83%	Correct Output Defined in Specifications (%)	80%
			Audits Held Annually (Nº)	4
			Discrepancies with Job Description in Daily Tasks (Nº)	2
			Steps in Average Communication Channel (Nº)	5
			Staff Involved in Decision Making > 100 € (Nº)	8
			Corporate Culture Adjustment Activities (Nº)	1

Average quality checks performed per day by DAG	3
Average number of S O Groups	3

TRUE is the represented value when the average actual quality checks performed per day by the DAG cover all the SO Groups

Figure 28: Actual internal perspective results

Actual values here are determined by internal audits held by the QMS manager.

ACTUAL RESULTS Customer Perspective

Customer Perspective		Fill In from Audits		Fill In from Audits
	Client Expectancy Achievement (%)	80%	Conflicts with Client (Nº)	2
C1 – High Level Service	Avg Revisions/Errors per Project (Nº)	2		
C2 – High Level Quality	Avg Wrong Deliverables per Project (Nº)	1		
C3 – Top Rated Brand name	Rated by (potential) clients (scale of 1 – 10)	7		
	Avg Monthly Invitations to Bid (Nº)	7		

Figure 29: Actual customer perspective results

Actual results of the customer perspective outcome measures and performance drivers are determined by the marketing manager and the QMS manager through external audits and market research.

ACTUAL RESULTS Financial Perspective

			Fill In from Financial Reports		Fill In from Financial Reports
Financial Perspective	Profit (%)	3%	Improved Asset Utilization (%)		85%
F1 – Solid Returns	Revenue Growth (%)	25%	Client Profitability (bad, average, good, excellent)		2,4 See below!!
F2 – Sustained Autonomous growth			Cash-to-Cash Cycle (€)		

Clients (bad = 1, average = 2, good = 3, excellent = 4)	Score
client 1	2
client 2	1
client 3	4
client 4	2
client 5	3
client 6	3
client 7	2
Average	2,4

Figure 30: Actual financial perspective results

The actual financial results are produced by the financial manager.