DelftTopTech

Influence of Organizational Culture on the Development of IT Organizations

Resume of thesis

study: Master of Information Management
DelftTopTech
Delft University of Technology

This abstract contains the executive summary and the last two chapters (cross case analyses and conclusions) of the original thesis. The full text can be obtained on request by email to the author.

EXECUTIVE SUMMARY

Introduction

In today's world business success relies more and more on the organization's ability to swiftly adapt its products and capabilities to the changing environment. This reflects in the priorities of modern IT organizations. In the past reliability, control and efficiency were the central values for many IT organizations, the new central theme is now "agility". The shift from a traditional to an agile IT organization can be made through a sequence of four growth stages. These growth stages bring an IT organization into a state of high performance in which agility and the ability to innovate are core capabilities.

Changes in the organization's culture are required to support the growth path stage by stage. This study explores the differences in organizational and cultural characteristics for each of the four growth stages, in order to help IT leaders understand how to include and manage cultural aspects during the development of their IT organizations. The purpose of this thesis is to understand how organizational culture contributes to or counteracts the development towards an agile and innovative IT organization. This research focuses on the cultural characteristics within each growth stage and the analyses of the differences of these characteristics between those growth stages. This will contribute to the scientific understanding to what extent organizational cultural change should be accounted for during a transformation of an internal IT organization towards agility and high performance.

The main research question for this thesis is formulated as follows:

What are the differences in cultural characteristics between the different stages of development of an internal IT organization in the context of a growth process towards agility and high performance?

Approach

The research comprises of three exploratory case studies. In preparation of these case studies a research model was developed by studying the literature related to the growth process towards agility and high performance, organizational culture and IT leadership. The case studies were executed at three different organizations, each in a different stage of growth. The aim was to explore and verify in practice the relationship between growth stages and the organizational and cultural characteristics.

Research model

The research model used during this research consists of four conceptual layers: 1) the business context, 2) the IT organization and 3) the organizational culture that exist inside the IT organization and finally 4) the manifestations (characteristics) of the organizational culture in a particular growth stage. A second model illustrates the sequence of these four growth-stages and details the organizational and cultural characteristics for each of these growth stages. The four growth stages we found are: 1) Reactive, 2) Responsive, 3) Proactive and 4) High Performing. Furthermore, the research model assumes a congruence between the organizational culture type and the characteristics during each of the four growth stages. The assumed congruent culture types for the four growth stages are respectively: 1) & 2) Hierarchy, 3) Clan-market and 4) Adhocracy.

Case studies

Three case studies were conducted respectively for three growth stages: Responsive, Proactive and High Performing. The results from the case studies confirmed the cultural characteristics from the research model. The results with respect to the congruence between the culture type and the characteristics of the growth stage were less unambiguous. This research found a tendency that the culture type develops from an internally oriented hierarchy culture towards an externally oriented

adhocracy/market culture as the IT organization develops to higher levels of growth. However, the results were not strong enough to confirm the assumptions in the research model.

Conclusions and recommendations

This research empirically demonstrates the relationship between four key factors with respect to the development of internal IT organizations. These factors are:

- Criticality of information and technology for differentiation in the industry.
- Maturity of the business in managing the IT function.
- The staged development of IT organizations towards a final state of agility and high performance along four stages: 1) Reactive, 2) Responsive, 3) Pro-active and 4) High performing.
- The organizational culture of the IT organization.

All four factors should be managed and developed in conjunction. This research found that each growth stage relates to a distinct set of characteristics of the other three factors. As the criticality of IT for differentiation in the industry increases the other three factors must be developed also to ensure that the potential of IT can be fully exploited. On the other side it is not effective to always strive for the highest levels of maturity, especially in situations where IT has little impact on the business's competitive edge.
Each of the growth stages requires a unique cultural foundation to supports the organization's strengths and capabilities in that stage. This foundation, the organizational culture, manifests itself through a number of organizational characteristics and a number of cultural characteristics. Some characteristics, such as strategic direction, vision, organizational structure, leadership style, planning frameworks, behaviors and traditions can be relatively easily observed. Other characteristics are less visible. They are hidden in the values, beliefs, orientations and motivations of the people in an organization. Organizational cultures can be typified according to the competing values framework as a hierarchy, clan, market or adhocracy culture. Each organization typically develops a dominant organizational culture. Cultural congruence, a fit between the organization's culture type and the organization's dominant characteristics, is a pre-requisite for effectiveness and performance.

Based on our research findings we put forward the following propositions:

- Leaders should be sensitive to the importance of managing organizational culture when they want to reach higher levels of performance. While progressing on the path to high performance the attention for organizational culture becomes significantly more important.
- Leaders should take advantage of the possibility of variations in sub-cultures inside their IT organization. The overall performance of an IT organization can be increased by carefully choosing sub-cultures that fit the mission and targets of sub-units of the IT organization.
- Leaders can adopt the HPP-framework (Nelson, et al., 2005) and the competing values framework (Cameron, et al., 2006), that are used in this research, as useful tools to diagnose and manage organizational culture. The characteristics described in these models largely correspond to the manifestations of organizational culture and growth stages we researched during the case studies.
- Finally, leaders can assess in which stage of the growth model their IT organization resides and from there carefully consider the necessity to progress to a next stage. They should not rush on the ladder to high performance.

Further research is needed in this area. For example, to better understand the use of sub-cultures in IT organizations in order to optimize congruence between the sub-culture and the characteristics of different units of an IT organization. Furthermore, the influence of national and corporate cultures on the sub-culture(s) in the IT department would be a valuable area for further research.

Christiaan Kooijman, April 2015

7 CROSS CASE ANALYSES

This chapter analyses the results from the case studies. Differences between the cases and differences between the case findings and the literature are analyzed and interpreted.

7.1 CROSS CASE ANALYSES

This section starts with listing the results from the three case studies. The results are collected and sorted per key-construct in table 7.1. The first four rows in the table represent the initial selection criteria for the conducted cases studies. These selection criteria were used upfront by the responsible CIOs to assess the stage of development of their IT organizations.
The results from our case studies are analyzed in two ways. First we compare the differences between the three cases for each key-construct and aligned these differences with the research model's growth stages. Secondly we analyze the coherence of the findings for each growth stage.

Selection criteria:	**Case study 1**	**Case study 2**	**Case study 3**	
Assumed stage	Responsive	Pro-active	High-performing	
Criticality of IT	IT for cost efficiency	IT is a strategic asset	IT is a business innovator	
Role of IT Leadership	Functional Head	Strategic partner	Business Innovator	
Orientation	In-side out, Technology focus.	Demand driven	Outside-in, Business growth	
Findings per key-construct	**Construction NV**	**Storage NV**	**IS&DS** **GBS**	**GPO**
Business Context: Criticality of IT for differentiation in the industry	IT supports the business IT is managed as a cost	IT is a strategic asset	IT is a strategic asset	IT critical for business growth
Business Context: Vision and strategy towards IT	IT is owned by IT	Business executives steer IT	IT and Business steer IT	Business executives steer IT
Business Context: Business maturity in managing IT	Level 2 (of 4) Trust is emerging Business has limited understanding of IT Arm's length relationship	Level 3+ (of 4) Partnership is evolving Business has good understanding of IT Business and IT collaborate on strategic level	No measurement	"IT is part of business"
Dominant org. culture – second org. culture	1. Hierarchy - 2. Market	1. Clan - 2. Hierarchy	1. Clan - 2. Adhocracy	Market / Adhocracy
Desired culture	Adhocracy	Adhocracy	Adhocracy	Adhocracy
Organizational characteristics correspond to:	Responsive stage	Proactive stage	Proactive stage	Proactive / High-performing
Main leadership style(s)	Enforcing / coaching	Coaching / purposing	Coaching / purposing	Purposing / Empowering
CIO roles (2 main-)	1.Strategic partner 2. Innovator	1. Informational role 2. Strategic partner	1. Informational role 2. Strategic partner	1. Strategic Partner 2. Innovator

Table 7.1 Overview of the key-findings from three cases studies

7.2 BUSINESS CONTEXT

Our research model contains an implicit assumption that 'the criticality of IT for the differentiation in the industry' is an important determinant for the way an IT function is organized and managed within an enterprise. As the importance of IT increases business executives will take a more active role in the management (governance) of IT and the role of the CIO will need to change accordingly.

At Construction NV, IT has long been seen as a support tool. This resulted in a relative autonomous IT organization. Over the last couple of years IT has gradually gained importance to the business. In response the CIO has prepared a transformation of the IT organization to comply with the increasing demand of the business for a strategic partner to govern the future IT agenda.

At Storage NV a similar transformation has occurred several years earlier. IT is seen and managed as a strategic asset. Business executives are closely involved in governing the IT agenda and governing the main IT projects. IT is fully sponsored by the business. All major IT decisions are owned by business executives and jointly made by business executives and IT.

IT is one of the key enablers in IS&DS's growth strategy. Business growth almost entirely comes from its digital media and services. Developing new digital solutions and services has become the core business of IS&DS's divisions. In order to fully unleash the potential of IT IS&DS has separated the IT function in two relatively independent organizations. One for managing the more traditional IT assets such as the company's IT infrastructure and the back-office applications, which are managed as strategic assets. The other for enabling the development of innovative customer-facing solutions. This split is made because both IT organizations require a different focus, strategy, style and organizational culture.

The three cases align with our assumption that the three key-constructs in the business context are related and should develop hand in hand. This is however no surprise and cannot be seen as evidence for this assumption as the case studies were largely pre-selected based on some of these characteristics.

7.3 ORGANIZATIONAL AND CULTURAL CHARACTERISTICS

The HPP-framework we used contains eleven dimensions with specific manifestations (characteristics) for each of the four stages of growth. The averages from each of the three cases studies matched quite closely with the characteristics of the corresponding stage of development. The case studies showed that often a combination of several characteristics occur in real life situations. For example, the score for leadership style at Construction NV ranged from enforcing to coaching up to empowerment. All three characteristics were said to be present in a specific context. This is due to the fact that the studied IT organizations are quite complex. They span multiple teams and geographically spread departments. Different teams can bear different characteristics.
Also, each IT organization delivers a wide range of IT services. Certain services require different processes and people's orientations as other services.

The HPP-framework is made up of nested frames. Each frame portrays a distinct operating frame of reference. The larger frames build upon the inner frames (Nelson, et al., 2005 p. 264). This implies that when an organization reaches a higher state of performance the characteristics of the previous level will not simply be replaced by a set of new characteristics. For example, the HPP-framework provides *feedback* as an organizational characteristic for the dimension 'communication' in the responsive state. In the next level of performance this dimension provides *feed forward* and in the high-performance state the framework mentions *feed through* as a characteristic of communication. In real life each of these three types of communication will occur in a high-performance organization. However, it is less likely that *feed through* communication prevails in responsive organizations.

Similarly, large IT organizations house multiple teams that each deal with the delivery of a distinct set of services. For example, at Construction NV the workplace-team deals with the smooth delivery of standard hardware and software to end-users, while the team of information managers focus on establishing excellent partnership relations with business executives and stakeholders. Yet another team focuses on innovations and exploring the potential of new IT developments. The main concern of the manager of the workplace team is to establish solid, reliable and efficient processes to ensure smooth delivery of products and services. The information managers' main focus lies on developing excellent relationship and above all they must look ahead in order to be successful. The people in the innovation team must be creative, curious and think independently in order to be successful. High performance thus means something different for each of these three teams.
To flourish high performance the ideal organizational sub-culture differs for each of the three teams described above. The workplace team should target for a strong market culture with high emphasis on reliable services and meeting customer expectations. The information managers will need to include more clan-culture elements since collaboration and partnership are typical strengths of a clan culture. Finally, the innovation team most likely flourishes best in an adhocracy culture as they were placed outside the controlled environment of a shared service center by Storage NV and IS&DS - to provide them the necessary freedom to be creative and innovative - and require a high external orientation.

The culture assessment in this study did not explicitly look into the existence (or need) of sub-cultures inside the three organizations. However, we saw that at Storage NV a small innovation team was established outside the control framework of the shared service organization in order to give this team more freedom to explore develop and deploy innovations in a more agile manner. IS&DS went one step further by installing an ambidextrous IT organization where back-office IT services are separated from customer-facing IT services, primarily because the latter organization needs fundamentally different characteristics and a different organization culture.
We found at Storage NV and IS&DS´s Global Business Services that the IT organization was split into a separate demand organization and a separate supply organization. At Construction NV this split is planned for 2015 as part of their transformation towards a demand driven IT organization. At Construction NV one of the reasons for choosing this demand-supply structure is the fact that this structure splits responsibility at management team level onto two sub-organization that both need a fundamentally different orientation and management style. Strangely we found that the culture paragraph in the transformation plan did not account for the differences in style and organizational culture in the demand and supply organization.
At Storage NV the split between demand and supply was implemented some years earlier. The COO and CFO were not very excited about the effects of the transformation towards the demand-supply model on the overall agility and result orientation. Discussions between demand and supply typically consumed a lot of time and energy. Also, here the transformation did not explicitly deal with the culture-differences required for the optimal functioning of the demand-supply organization. The case study at Storage NV revealed that a clan culture was dominant in the global shared service organization. Based on our culture analyses we would recommend a market culture for more result orientation and customer focus. In a clan culture people have a hankering to maintain harmony and consensus. These could very well be the roadblocks for the desired agility and result orientation.

7.3.1 DESIRED FUTURE CULTURE

All three case studies revealed that senior IT management expressed a need for more agility and innovation. This is in line with the main driver behind this research (see introduction). At the case studies the strive for agility goes hand in hand with a desire - according to the OCAI measurement - to shift the organizational culture towards an 'adhocracy'. The literature around the competing values framework clearly places agile, high tech companies in the adhocracy quadrant. This logic is most likely also the basis for the fact that all interviewees point to adhocracy as their ideal culture. The IS&DS case study teaches us that this is not always the case. The GPO organization at IS&DS, which

heavily depends on the ability of IT to deliver new innovative and competitive solutions, does not have a strong dominant adhocracy culture. At GPO adhocracy and market culture are in balance. The reason for this is contained in the fact that apart from striving towards agility and innovations the GPO and the business units they collaborate with in the end survive only when creativity leads to concrete results, i.e. products that are ready and viable to be launched into the market. The pressure to deliver results requires strong market elements in the culture.

Another significant factor that was easily overlooked in the desire to move towards another culture is contained in the HPP-framework which is made of nested frames. Every new stage builds on the strengths of the pervious stage (Nelson, et al., 2005 p. 264). This feeds our believe that, although all four IT organizations choose adhocracy as their ideal culture, an adhocracy culture is not the ideal culture for all sub-units of an IT organization. The ideal culture differs for different sub-units of the IT organization. The parts directly related to innovation and application development need high levels of agility and creativity and will thus flourish in an adhocracy culture. Those parts that are focused on reliable delivery of standard services to the business are likely better off in a market culture. Next to that, Information Managers that need to maintain partnership relations with business stakeholders must also develop skills that typically belong to a clan-culture. The IS&DS case teaches us that in those cases a split of the IT organization along the lines of the different cultures is a way to deal with different sub-cultures in one organization.

7.3.2 IT LEADERSHIP ROLES AND STYLES

The three case studies confirm the theory that leadership style is developing along the growth path as indicated by the HPP-framework: from enforcing –> to coaching –> to purposing –> to empowering. Another important finding is that high performance organizations require cultural variations across sub-units of the organization to support differences in goals and missions between sub-units. These cultural variations can best be implemented and rooted in the sub-units when the responsible management is empowered to build its ‘own’ team culture inside the corporate culture.

Our measurements of the roles of the IT leadership did not give a clear and consistent picture of how the roles of the CIO develop along the path towards agility and high performance. Either the questionnaires were unclear, or the roles are in practice not only related to the growth stage but other factors, such as personal preferences, could also play a role in the adoption of the roles.

7.4 GROWTH STAGES

The growth stages that were found during the three case studies match the growth stages from our research model. Clear evidence was found that the sequence of these stages also occurs in practice:

At Construction NV the IT organization is in the responsive stage with most organizational characteristics in line with this responsive stage, such as a hierarchical department structure, focus on output and activities and inward focus on the coordination of tasks in the department. The IT management at Construction NV is preparing a transformation to a new situation where increased customer focus, pro-activity and partnership with the business are the key improvements. The targeted new IT organization will have a matrix structure (split between demand and supply) and improved alignment with the business (through introduction of information managers) and more focus on strategic alignment (i.e. information plans directly derived from the business unit strategic plans). The situation after this transformation has many similarities with the subsequent proactive stage.

Approximately 2-3 years ago the Storage NV IT organization made the transformation from a responsive IT organization to a proactive IT organization. Here as well the switch was made from a hierarchical IT organization towards a matrix IT organization (split between demand and supply). This has also resulted in the introduction of information managers taking care of the business demands and a central shared service center ensuring reliable and efficient delivery of IT services. At the moment of

this case study Storage NV's management were exploring ways to prepare a next step towards increased agility and innovation, i.e. towards a high-performance stage.

At IS&DS the IT organization has been split into two parts. GBS takes care of the standard back-office IT services and the other part, GPO, takes care of the development of leading & innovative customer-facing IT solutions. Our research revealed that the GBS organization was in the pro-active stage, with a strong desire to shift towards more agility and innovation. The GPO had already entered the high-performance stage. The characteristics found at GPO demonstrate an IT organization well on the way to fully become a high-performance organization.

8 DISCUSSION AND FINAL CONCLUSIONS

8.1 LINK ORGANIZATION CULTURE AND GROWTH STAGES.

In chapter 2.8.1.1 three assumptions have been put forward related to the organizational cultural type for each growth stage. Based on the results from the case studies the following analyses can be made in respect to these assumptions.

Assumption 1: An internal IT organization in the responsive-stage is focused on technology (internal orientation) and on cost efficiency (stability & control). These characteristics correspond with a *hierarchy* culture. After all the IT capabilities in this stage need to be geared towards *efficient* and *reliable* delivery of services.

At Construction NV the culture assessment pointed to a dominant hierarchy culture with market elements. The dominant corporate culture of Construction NV is also a hierarchy (strong power culture) and this corporate culture has strong influences on the sub-culture of the IT department. The organizational characteristics of the IT organization correspond with the responsive stage. In contrast to the assumption, the hierarchy culture is felt to be an obstacle for the reliable delivery of services. The internal focus prevents the focus on delivering according to the expectations of the business (internal customers). Focus on internal issues, efficiency and budget implications – the IT department holds its own budget – easily prevails over the customers' needs and interests. In order to improve the reliability of the service delivery the responsible IT management has initiated a change towards a market culture as part of a transformation program towards a demand driven IT organization (to be effectuated during 2015).

Assumption 2: In order to reach the proactive-stage IT organizations will need to develop more business focus, employees will need to pick up consulting skills and managers will need to become business partners. The assumption is put forward here that in order to realize good partnerships the IT-leadership should develop clan-elements in its culture. After all, building partnership relations is one of the strengths of the clan culture (Cameron, et al., 2006 p. 41). At the same time also market-elements must be strengthened in the culture to ensure customer & result orientation.

At Storage NV the culture type of the IT organization is a 'Clan' culture. This indeed has led to a sound relationship between the information managers and the business. This relationship is built on mutual trust and good partnerships. Market culture elements are less developed within Storage NV's IT organization. The interviews showed that result-orientation and speed of decision making are not up to the desired level. This feeds the opinion at Storage NV that the introduction of the demand-supply structure did not bring what people had expected. The lack of result-orientation may however also be the result of the dominant 'Clan' culture instead of a direct result of the split between demand and supply. Result and customer orientation are strengths of a market culture and are usually less developed in clan cultures. A clan culture lies opposite to a market culture in the competing values framework. This means that one must take special measures to develop cultural strengths from a clan *and* a market culture in one IT organization. They do not root and grow naturally alongside in one organizational unit. An organization where demand and supply are split offers the advantage that the strengths to develop and maintain partnerships (clan culture) can be developed in the demand organization while the result orientation (market culture) can be primarily developed in the supply organization.

At IS&DS the GBS-IT organization is also a in the pro-active phase and the organizational culture is also a clan culture, mixed with adhocracy elements. Even though the GBS-IT organization focuses on back-office IT and is thus not on the cutting-edge of software developments, the responsible management is still looking to strengthen its agility and capability to support business innovations. The reason for this lies in the fact that back-office technology become increasingly interwoven with cus-

tomer-facing applications. This raised the need for agility and the adoption of technology innovations in the company's IT infrastructure.

Assumption 3: In the high-performing-stage agility and the capability to innovate must be firmly developed. These capabilities fit best in a adhocracy culture. The high-performance team has certain characteristics from a market culture (goal orientation) and some from a clan culture (collaboration, communication). Nevertheless, the strong external focus together with flexibility, adaptability and ability to innovate positions the dominant culture in the adhocracy quadrant. As this culture lies opposite to the hierarchy culture, this research also assumes that agility and high performance cannot be reached within a hierarchy culture.

The GPO organization at IS&DS has developed well into the high performing stage. However, the organization also (still) bears a lot of the characteristics of the pro-active stage. This most probably indicates that the development towards high performance is still progressing. Interesting is the fact that although the organizational culture has some clear adhocracy characteristics the dominant culture is a balance of market and adhocracy cultures. The market culture originates from corporate pressure on achieving results and delivering mature solutions to the market.

All three case studies considered, a shift can be observed from a predominant internal focused hierarchy culture in the first stages of development to a more externally oriented adhocracy-market culture in the final high-performance stage. The situations at the case studies are however too complex and diverse to provide clear and strong evidence for the three assumptions above.

8.2 RESEARCH QUESTIONS

Q1. **According to existing literature which typical growth-stages in IT organizations can be identified?**

According to the literature we found that growth processes of internal IT organizations can be divided into four stages: 1) Reactive, 2) Responsive, 3) Pro-active and 4) High performing. These four stages bring an IT organization into a state of high performance where agility and the capability to innovate have rooted in the organizations culture. Organizations must travel through each stage without skipping one of them. Each stage builds on the results achieved in the previous stage. The whole process will take multiple years (min. 3-5 years).

The case studies confirm the existence of these four stages in practice. We also found indications of the sequence of these stages during the case studies, however from this research one cannot conclude that this is the only possible growth path towards high performance.

The case studies also indicate that not all organizations or organizational sub-units need to develop along all four stages towards high performance. The optimal stage depends on the criticality of IT for differentiation of the business in the market. As the criticality of IT increases the need to develop further up the four stages increases.

Each stage has typical organizational and cultural characteristics that lay the foundation for the performance of the organization in that stage.

Q2. **Which dimensions of organizational culture can be found in literature and which characteristics of these dimensions apply for each growth-stage?**

Organizational culture is a complex phenomenon that influences peoples behaviors. It can be typified along several dimensions, among which are people/employee orientation, stability versus flexibility, result/customer orientation, hierarchical power and openness for change. According to Cameron et al. (2006) two of these dimensions are dominant and divide the spectrum of cultures in four quad-

rants representing a typical cultural arche-type: Hierarchy, Clan, Market and Adhocracy. Organizations do not have just one culture-type, rather they have a mix of different cultures-types. Often one of these culture-types is dominant.

According to Hofstede et al. (2010) shared values are the fundament of a culture, the things that (groups of) people value and belief in. Organizational cultures are besides values also strongly defined and influenced by certain organizational characteristics (see HPP-framework by Nelson, et al., 2005). These characteristics can be relatively easily observed. According to the HPP-framework these organizational characteristics differ over the four stages of development.

Leadership and culture are intertwined. Leaders have great influence on culture and how it evolves over time. Leaders can set values, examples, rituals and symbols that influence the culture. Leaders also determine and set the organizational characteristics that form the most visible part of an organization's culture.

Previous research has shown that culture has a strong influence on organizational performance. Companies with a strong culture outperform their competitors. Cultural congruence between the strategic direction of a company and its prevailing culture is a pre-requisite for enduring high performance. This means that culture change must be managed during the life-cycle of organizations especially during transitions.

Q3. How can one measure organizational culture?

This research has used the Organization Culture Assessment Instrument (OCAI) which is related to the competing values framework. The questionnaire that is used in the OCAI is simple and easy to use. However, we found that the process of collecting data by just sending out the questionnaires for collecting data is not sufficient. The process of collecting data needs to be followed by a group discussion where the different statements from the OCAI are discussed within the group and a consensus is reached about the score for each statement in the questionnaire (as is described in the guidelines for the correct use of the OCAI). Without this group discussion the chance of personal bias is too high. The same applies when the number of participants in the assessment is too small. From our experience we suggest a minimum of 3 people for each sub-unit that needs to be assessed. All in all, this results in a far less simple process than it may look upfront and that needs to be facilitated by someone who thoroughly understands the OCAI and its pitfalls. In this study the questionnaire was used in some cases with a lower number of participants. In those cases, the results had to be verified with other sources, such as additional interviews.

Furthermore, the High-Performance-Programming framework of Nelson et al. (2005) provides a check-list with organizational characteristics on 11 dimensions that together typify an organizational culture for each of the four stages of development in their framework. This checklist can be used to quickly measure the stage in which an organization resides by its cultural characteristics.

Q4. What is the relationship between organizational culture, the development of IT organizations and agility / high performance in practice?

The case studies confirm that the four stages of growth described above also occurred in the studied organizations. Furthermore, the case studies indicate that when an IT organization develops towards a state of high performance not necessarily all parts of the IT organization need to develop all the way up to the final level of high performance. The high-performance stage suits those organizational units that need high levels of agility, innovation and energy to explore new opportunities. Those parts of the same IT organization that deliver standard IT services - can reside in a lower stage of maturity, where there is more focus on operational excellence and reliability of service. The IS&DS's case illustrates this as they have chosen an ambidextrous model for their IT organization in which the part that needs to develop customer-facing solutions is separated - at executive level - from the part of the IT organization that manages the IT infrastructure and the back-office applications. The first

part has developed into the high-performance stage while the latter part remains in the pro-active stage.

Furthermore, our three case studies confirm that the organizational characteristics of the HPP-framework differ per stage. The observations made in the three case studies largely correspond to the characteristics described in the HPP-framework for the stage they are in. This makes the HPP-framework a very useful tool to 1) measure where an organization stands on the road to high performance and 2) give managers an indication which organizational characteristics must be developed in order to further develop the entire organization.

The organizational culture type observed in the three case studies differed per stage. In the responsive stage (Construction NV) the culture contained dominant characteristics of a hierarchy culture. The two cases related to the pro-active stage (Storage NV and IS&DS GBS) included a culture with dominant characteristics of a clan culture. The IS&DS GPO case focused on a putative high performing organization. This last case revealed an organizational culture with adhocracy characteristics balanced with market culture characteristics.

8.3 SUMMARY AND CONCLUSIONS

This research empirically demonstrates the relationship between four key factors with respect to the development of internal IT organizations. These factors are:

1. Criticality of information and technology for differentiation in the industry.
2. Maturity of the business in managing the IT function.
3. The organizational culture of the IT organization.
4. The staged development of IT organizations towards a final state of agility and high performance along four stages: 1) Reactive, 2) Responsive, 3) Pro-active and 4) High performing.

All four factors should be managed and developed in conjunction. This research found that each growth stage relates to a distinct set of characteristics of the other three factors. As the criticality of IT for differentiation in the industry increases the other three factors must be developed also to ensure that the potential of IT can be fully exploited. On the other side it is not effective to always strive for the highest levels of maturity, especially in situations where IT has little impact on the business's competitive edge.
Each of the growth stages requires a unique cultural foundation to supports the organization's strengths and capabilities in that stage. This foundation, the organizational culture, manifests itself through a number of organizational characteristics and a number of cultural characteristics. Some characteristics, such as strategic direction, vision, organizational structure, leadership style, planning frameworks, behaviors and traditions can be relatively easily observed. Other characteristics are less visible. They are hidden in the values, beliefs, orientations and motivations of the people in an organization. Organizational cultures can be typified according to the competing values framework as a hierarchy, clan, market or adhocracy culture. Each organization typically develops a dominant organizational culture. Cultural congruence, a fit between the organization's culture type and the organization's dominant characteristics, is a pre-requisite for effectiveness and performance.

This study started from the need of modern businesses to swiftly adapt to changes and challenges in the outside world and the enabling role of Information technology with respect to the agility of an enterprise. Our research finds that a change of the prevailing organizational culture is an essential part of an organization's transformation towards agility. All cases we have studied included to some extent cultural aspects in the transformation program they have gone through or they have still planned to go through. However, with respect to the cultural dimensions little awareness was found among the interviewees. As a result, the plans we found to change the culture remained quite vague and were sometimes limited to the definition of a new set of shared values. Based on our research findings we put forward the following propositions:

1. *Leaders should be sensitive to the importance of managing organizational culture when they want to reach higher levels of performance.*

While progressing on the path to high performance the attention for organizational culture becomes significantly more important. In the high-performance stage managing organizational culture is more important to leaders than managing technology. There is a risk that leaders spend most of their time improving processes and implementing tools in order to mature their organizations. Enduring change must however be "programmed" into the cultural foundation of an organization. Leaders should face this challenge and develop their ability to manage cultural change and paradoxes.

2. *There is no one-size-fits-all culture for every growth stage. Leaders should take advantage of the possibility of variations in sub-cultures inside their IT organization.*

Sub-units of an IT organization often have their own targets and ways to become successful. By carefully managing sub-cultures for specific sub-units, leaders can increase the overall performance of the IT organization. Leaders should take the cultural differences in account when designing the structure of an IT organization in order to maximize cultural congruence for each unit of the organization. This research has found three practical examples: 1) In three case studies CIOs have split demand and supply in their organization's structure. This allows a demand organization to develop clan-culture characteristics in order to build partnership relations with the business executives. The supply organization can develop towards a market culture in order to become demand driven and result oriented. 2) second example was found at Storage NV where the CIO installed an innovation team outside the control framework of the global shares service center. The innovation team can benefit from a more agile, creative and innovative sub-culture. The third and most extreme example was found at IS&DS. They have chosen for an ambidextrous organization structure for their IT function. The mission, vision and strategy of the Global Business Services organization differ fundamentally from the Global Platform Organization, and so does the necessary organizational culture to support these two organizations. Therefore IS&DS chose to make a clear split between the two functions and installed two independently led IT organizations.

3. *Leaders can adopt the frameworks used in this research as useful tools to diagnose and manage organizational culture and lead IT organizations to higher levels of performance.*

This research found that the High-Performance-Programming framework, originally created by Nelson and Burns in 1983 (Nelson, et al., 2005), is also very applicable to the development of modern IT organizations. Their four-staged perspective on organizational development towards a state of high performance aligns perfectly with recent views and literature on the staged maturing of IT organizations towards agility and higher levels of innovation and performance. This finding establishes a link between the literature that focuses on the development of IT organizations and the literature that focuses on organizational culture and its influence on an organization's performance. The predictions of Nelson and Burns back in 1983, that high performance organizations would emerge from networked organizations of self-managing teams where time and distance would not form obstacles and where energy and creativity would flourish to the benefit of the organization's overall performance, have become reality in today's era. Internet, flexible sourcing models, social-networking and other contemporary technology trends enable the vision of Nelson and Burns about the development towards high performance organizations. However, despite the potential of the modern era many IT organizations are still seeking ways to meet the challenges on the path towards agility and higher levels of performance. Answers to these challenges can be found in the HPP-framework and more specifically in the coherence of cultural and organizational characteristics it describes.

This research also adopted the Organizational Culture Assessment Instrument (OCAI), part of the competing values framework (Cameron, et al., 2006). Although the OCAI is a simple questionnaire, we found it hard to use correctly and to interpret its results. First of all one should carefully consider all the guidelines provided with the tool for its correct use (Cameron, et al., 2006 pp. 90-92). As a result, the assessment process will take a considerable amount of time and requires careful study of

the theories behind the competing values framework in order to be able to interpret the results provided by the OCAI.
In the end the OCAI in combination with the theory of the competing values framework give IT leaders a powerful insight in the core dimensions and characteristics of organizational culture and its influence on the effectiveness of organizations. This insight is necessary to succeed on the road to high performance.

4. *Assess in which stage you are in the growth model and from there carefully consider the necessity to progress to a next stage. Do not rush on the ladder to high performance.*

All respondents expressed the desire to swiftly move towards more agility and to offer more innovations to the business. The OCAI results all revealed the desire to move to an adhocracy culture. This includes the danger that IT leaders want to progress too quickly towards agility. As we have seen above, not all IT organizations - or all units of an IT organization - need to develop all the way to the fourth stage of high performance. An adhocracy culture is most likely not necessary for those units that take care of traditional (back-office) IT services. In other cases, it may not be necessary because the criticality of Information and technology for differentiation in the industry does not require a high-performance team with high focus on innovation and agility.

Furthermore, this study confirms the theory that transformations to a next stage need multiple years to become successful. Progressing to quickly means that the foundations of the previous stage have not yet sufficiently matured and as a result a transformation to the next stage may not become successful. A good example is provided by the development of the GPO organization at IS&DS. The GPO organization took 10 years to develop and mature to its current state of high performance.

8.4 LIMITATIONS

The literature related to organizational cultures is very rich. The literature contains a wide variety of frameworks, dimensions and typologies. It is impossible to include all aspects of organizational culture in one research. Therefore, a choice had to be made which resulted in the use of the competing values framework in combination with the HPP-framework. This will introduce a certain bias towards the associated theories and exclude competing views on the role of cultures in organizations.

This research has chosen to use the Organizational Culture Assessment Instrument linked to the competing values framework as means to measure and assess the organizational culture. The OCAI is criticized because it would oversimplify how cultural characteristics manifest at different organizations. However, even with the simplified version of the OCAI the culture assessments took a significant amount of time. In the IS&DS case it was not possible to receive sufficient feedback on the questionnaires so that the results must be regarded are indications of the prevailing culture rather than scientifically rigor measurements.

Another limitation is the generalization of the research findings. This research investigated three case studies that were carefully selected using a number of criteria derived from the targeted growth stages. This method includes a bias towards the assumption that IT organizations develop according to the growth stages in our research model. Obviously by selecting cases according to three specific growth stages one will also find these growth stages in practice. This method does not exclude that other stages can be found in other companies.
Furthermore, the number of cases is too small to perform quantitative analyses. The results of this research thus only provide indications of relationships and patterns in similar organizations. This was also the target of this exploratory research.

According to Hofstede et al. (2010) cultures exist at various levels, such as nations, religions, organizations and organizational units. National cultures influence organizational cultures. Corporate organizational cultures influence cultures at lower levels in the organization. Because of this it is not possible to easily extrapolate the conclusions of this research to other organizations.

This research has not investigated the influence of corporate organizational culture on the sub-culture of an IT organization. However, we received several indications that this influence is significant. The implication of this is that it could be difficult to develop a sub-culture in the IT department that differs significantly from the corporate culture.