

Decision Support Framework for the Implementation of IT-Governance

*Fink, K., Ploder, C.; University of Innsbruck, Information Systems
Kerstin.Fink@uibk.ac.at, Christian.Ploder@uibk.ac.at*

Abstract

The role of Information Technology (IT) is transmitting from a support tool into a source of competitive advantages. Continuous change in business performance raises the pressure on IT to change at the same speed. To create sustainable value, it is necessary for organizations to link the development of an IT strategy to the business strategy. In this paper the authors address the issue of implementing IT Governance into the organizational context by introducing a decision support framework. The basic research framework is the IT Governance model by Weill and Ross (2004) with its five decision fields: IT principles, IT architecture, IT infrastructure, business applications, IT investment and prioritization. Using survey data from 480 large organizations in German-speaking countries (Austria, Germany, Switzerland), this paper investigates the use of IT Governance initiatives and their implementation. A decision support framework for organizations was developed to implement IT Governance successfully in the country-specific context.

1. Introduction

Corporate governance [2, 20, 23] has become a major research field in the last ten years. However, in recent years not only corporate governance but also the alignment to information technology (IT) is developing into a new research field. Organizations are increasingly challenged to manage and control IT to ensure value and benefits. Organizations have to deal with multiple levels of corporate governance and this makes responsibilities for IT decision-making more complex. Research evidence indicates that organizations that actively design their IT Governance arrangements make and implement better IT-related decisions [36]. The role of IT is transmitting from a support tool into a source of competitive advantage. To create a sustainable value for organizations, the development of the IT strategy must be closely linked to the business strategy.

The term IT Governance can be defined from different ways. Van Grembergen [34] takes the point that IT Governance is the organizational

capacity exercised by the Board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT. According to the IT Governance Institute, the term can be defined as “an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation’s IT sustains and extends the organisation’s strategies and objectives” [14].

Viewing the literature of corporate governance initiatives [18, 26] a very heterogeneous landscape is described and identified. Taking the international view into consideration [28], the OECD has issued a revised corporate governance report in 2004 [22] as well as the International Corporate Governance Network in July 2005 [12]. The OECD report makes the point that Board members require relevant information on a timely basis in order to support their decision-making and should accomplish a way of transferring this information to non-Board members. For Mallin [18] the corporate governance initiatives in Europe [6] are characterized by the existence of a unitary board system of governance as well as the dual board system. On corporate governance level, Germany is enforcing the German Corporate Governance Code [5] issued in the year 2002 with the current version of 2006. In Austria, in 2002 with the current version of 2006 the Austrian Working Group for Corporate Governance has issued the Austrian Corporate Governance Code [1]. Switzerland has published the guideline Swiss Corporate Governance Code in 2002 [27]. Different regional and cultural systems of governance are in use.

Based on the international and European corporate governance literature, the authors focused on the IT Governance [21, 29, 33, 37] in Europe, especially in the German-speaking countries (Austria, Germany, and Switzerland including Liechtenstein). While corporate governance issues in Europe are discussed in different research articles and reports [6, 18, 22, 26], the current impact of IT Governance to the decision-making process in European organizations is almost not taken into

consideration (see e.g. www.capgemini.com). Therefore, this article investigates the use of IT Governance in German-speaking countries by applying the research model from Weill and Ross [37]. Tricker [32] makes the point that besides corporate governance, in organizations information is an essential asset which should be taken into consideration for further business strategies. Especially through IT it is possible to address a variety of stakeholders and improve internal as well as external communication processes. Major changes in legislation, regulations and stakeholders expectations needs to be achieved that information is becoming a vital part of the organization's communication process. Corporate governance as well as IT Governance has wide implications and is critical to economic and social well being, firstly in providing the incentives and performance measures to achieve business success, and secondly in providing accountability and transparency to ensure the equal distribution of information. This paper tries to give insight of the use of IT Governance in German-speaking countries and the underlying decisions processes. The key objective of the conducted empirical survey among 480 German-speaking organizations is to develop a decision support framework for these countries. According to Peterson [24] an IT Governance architecture describes the differentiation and integration of strategic decision-making for IT and furthermore specifies the strategic policies and business rules that provide direction to strategic IT decision-making, and plots a path for achieving business objectives. Smith & Keen [30] identified in their focus group study of IT managers that IT Governance is among the key areas of interest for IT organizations until 2010.

2. Methodology

Weill and Ross [37] have developed an IT Governance framework that provides an institutional self-assessment as well as a construct for a more effective approach to IT Governance initiatives. The framework includes three major components: domains, style and mechanisms which help organizations to evaluate the current institutional approach to governance and design a more effective decision-support methodology. The identification of these components enables organizations to translate its business principles into IT principles and to provide the alignment from IT to business objectives. The IT Governance framework proposes five key IT Governance decision fields: (1) *IT principles decisions* define

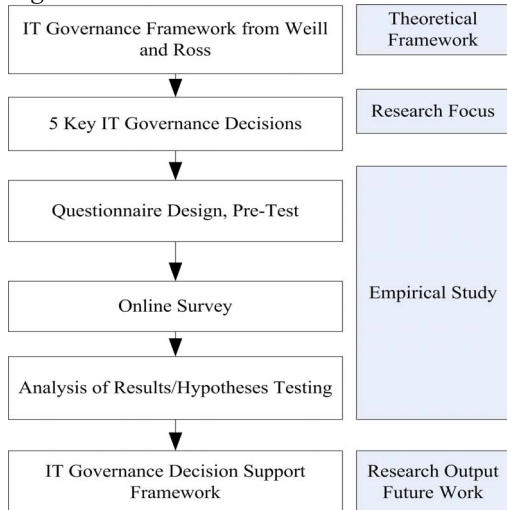
the role of IT in the business. These are for example statements related to the achievement of the business or the focus of the organization (profit orientation, process orientation); (2) *IT architecture decisions* define standardized structures and interfaces together with integration standards – and provide the foundation for data, application and IT infrastructure. In this context, IT Governance focuses on the decision of which kind of data or application needs standardization; (3) *IT infrastructure decisions* include all the common services that multiple applications can use. This includes the entire IT hardware and software with the exception of local business applications; (4) *Business applications* needs provide the link for IT applications to the overall business strategy. Business needs are met directly by business applications. An appropriately designed and implemented business application can enable new processes or efficiencies that deliver competitive advantage; (5) *IT investment and prioritization decisions* clarifies which IT architectures, initiatives or topics to fund and how to select between projects competing for resources as well as budget.

These five decision fields are interconnected. IT principles have a large impact on the other four principles by giving the direction of decision making. Infrastructure and architecture decisions translate the IT principles into services and then make a plan description concerning the needed capabilities. IT investment and prioritization decisions transform the organization's decisions into usable services and systems.

In the center of our research stands the IT Governance research framework (figure 1) which is adapted from Weill and Ross [36] and is focusing on the impact of the five key IT Governance decisions to IT processes in organizations. This means, that our research is analyzing the decision support processes in organizations dealing with the impact of IT Governance. The five key IT Governance decision principles are the theoretical framework and are adapted for the country specific characteristics of Germany, Austria and Switzerland. The situation considering in this research is to find out the impact of IT Governance projects to the decision support process and furthermore the relevance of IT Governance initiatives to German speaking organizations, since they are economically interconnected [25]. Therefore, it was possible to make inter-country specific statements for organizations having subsidiaries in one of the other country. The strengthening of regional, sub-regional and inter-country IT Governance

initiatives is becoming more important. The research is an explorative study which is initiated by the national chambers of commerce and by the raising concern of organizations in this region how to deal not only with Corporate Governance issues but also with IT Governance issues. This research is the effort to empirically investigate the use of IT Governance decisions in the German-speaking countries.

Figure 1. IT Governance Research Framework



The authors formulated two hypotheses:

H1: The introduction of IT Governance leads to an improvement of the IT decision support process in an organization.

H2: The importance of IT Governance is linked to a strategic business paper/code stating the most important IT Governance principles.

The process of the survey was divided into three key processes. First, a literature study was conducted with focus on IT Governance project in Austria, Germany and Switzerland. Second, 15 expert interviews with representatives of each country in order to have a basic idea about the impact of IT Governance to the organizational performance were conducted by the authors. The target groups were Chief Information Officers (CIO). The interview data was collected through one hour face-to-face interviews with the researchers and respondents. All CIOs were provided with the same structure and questions of the interview in order to gain a comparative result. The different views of IT Governance were summarized and incorporated into an online survey questionnaire.

In the third step of the survey process, the sample of the online survey was composed of 480 large organizations in Austria, Germany and

Switzerland, including 180 in Austria, 240 in Germany and 60 in Switzerland. Even if these countries are characterized by SMEs, the concept of IT-Governance is primarily applied by large organizations. A large organization is defined by more than 250 employees an annual turnover more than 50 Mio. EURO or the total asset higher than 43 Mio. EURO [22]. The sample was average allocated over the regional federal states of Austria, Germany Switzerland and Liechtenstein to get a representative result. The desired informants in this research were CIO (Chief Information Officers) and IT specialists. The survey was conducted during the time period of summer 2006 until March 2007. The questionnaire was pre-tested in June 2006 for general correctness and content validity by administering it to 15 CIOs and IT specialist. The survey package contained an online cover letter from the authors explaining the purpose of the study and the questionnaire. All respondents were guaranteed confidentiality of their responses. The final version of the collected data was finished in February 2007. Out of the 480 questionnaires mailed, 120 were returned, providing a response rate of 25%. The research method was the online questionnaire which was divided into four parts:

- (1) General information about IT Governance,
- (2) The impact of introducing IT Governance to the organization,
- (3) Industry related IT Governance information,
- (4) General demographic information.

The respondents by industry sector can be described as follows: Manufacturing 40%, Retail 20%, Financial Services 10%, Transportation 10%, Handcraft 10%, Tourisms 4% and IT/Consulting 6%. The differentiation of industry sectors is from the Chamber of Commerce of each country. The size of the respondents' organization is differentiated into three sectors: (1) 250<employees<1000 with 68.22%, (2) 1000<employees<5000 with 21.50% and (3) more than 5000 employees with 10.28%.

3. Results

3.1. Impact of IT Governance to IT Decisions

A key result of the survey was to make statements about the impact of IT Governance initiatives to decision making processes in the

organizations. The target group was scoring in a list of 15 measurement variables their importance using the Likert scale (+0 no impact, +4 little impact, +8 impact, +12 high impact; no answer). Table 1 is listing the improvement decisions of IT Governance project in the German-speaking organizations and furthermore gives a comparative result of Austria, Germany and Switzerland. Table 1 summarizes for each of the five IT Governance decisions from Weill and Ross [37] the key decision basics and their overall rating.

4. Business Application Needs: Generating more IT benefit to the employees (Ranking in Austria 423, Germany 419, Switzerland 432).
5. IT Investment and Prioritization Decisions: Improvement of IT performance (Ranking in Austria 402, Germany 398, Switzerland 415).

Table 1 shows that there are no significant differences in the decision making processes across the three countries. The only exception is the IT architecture decision process.

Table 1. Impact of IT Governance to the Decision Making Process (Comparative Results)

IT Governance Decisions	Measurement Items	Ranking		
		GER	AUT	CH
IT Principles Decisions	Communication improvement process	318	321	324
	Improvement of IT understanding on top management level	268	276	280
	Implementation of an IT strategy	145	141	139
IT Architecture Decisions	Improvement of acceptance of IT decisions	291	293	288
	Involvement of key IT responsible persons	245	252	250
	Business Process Improvement	143	148	151
Business Application Needs	Generating more IT benefit to the employees	419	423	432
	Alignment of business strategy with IT strategy	242	236	221
	Alignment of business investment to IT investments	229	231	228
IT Investment and Prioritization Decision	Improvement of IT Performance	398	402	416
	Improvement of ROA (Return on Access)	154	166	173
	Lowering IT Risks	101	102	100
IT Infrastructure Decisions	Flexible IT infrastructure to react to market changes	249	243	250
	Transparency of IT decisions	150	148	145
	Better identification of critical IT success factors	118	126	117

Table 1 lists for each of the three top ranked decision principles the absolute ranking score in each country. The absolute scores are calculated by multiplying the data sample (n=120) from the Likert scale scoring per measurement item. It has to be noted that table 1 is a summary of the measurement items which were an overall of 40 items, meaning 7 measurement items in each of the 5 decision principle categories. The numbers for each country indicate the overall ranking compared to the other measurement items for each principle. As a result, in each IT decision field the following key success factors could be identified:

1. IT Principles: Improvement of Communication Processes (Ranking in Austria 321, Germany 318, Switzerland 324).
2. IT Architecture Decisions: Improvement of acceptance of IT decisions (Ranking in Austria 293, Germany 291, Switzerland 288).
3. IT Infrastructure Decisions: Flexibility of IT infrastructure to react to market changes (Ranking in Austria 243, Germany 249, Switzerland 250).

The acceptance of IT decisions has more impact in Austria (Ranking 293) and Germany (Ranking 290) to the overall acceptance of IT services than in Switzerland (Ranking 201).

The other two measurement items indicate a similar attitude towards IT architecture decisions, where the ranking in Austria and Switzerland have similar scores, while the evaluation for Switzerland is lower with values of 199 and 129. The IT principle decisions are governed by the improvement of the communication process, IT infrastructures decisions improve the flexibility to react to market changes, while for business application needs the generating of more benefits to the employees is the central issue, and finally IT investment decision focus on the improvement of the IT performance strategy.

3.2. Industry Sector Decision Processes

In order to receive more insight of the use of IT Governance in the organizations, the authors extended their survey to industry sectors. The

objective of this survey part was the identification of industry specific use of IT Governance and in addition to get information of the used IT Governance frameworks. Table 2 illustrates the use of IT Governance in the different industries as well as the three mostly used frameworks.

The participants were asked what IT Governance frameworks are in use such as ISO 9000/15000, Six Sigma, IT balanced scorecard, CoBit, ITIL, MOF. Table 2 gives the average value for all three countries, because there were no significant differences in the allocation of the values. Table 2 lists the use of IT Governance in German-speaking countries differentiated according to industry sectors. Furthermore, the use of the three primarily used IT Governance frameworks (COBIT, ITIL, MOF) is illustrated in the last three columns showing the total number of organizations using one of the three frameworks.

Table 2. The use of IT Governance and IT Governance frameworks from an industry sector perspective

Industry	IT Governance Use		IT Governance Frameworks		
	Yes	No	Cobit	ITIL	MOF
Manufacturing	37%	63%	12	28	4
Handcraft	7%	93%	0	8	0
Retail	23%	77%	0	24	4
Financial Services	0%	100%	0	0	0
IT/Consulting	7%	93%	0	8	0
Transportation	10%	90%	0	4	8
Tourism	0%	100%	0	0	0

In manufacturing, retail and transporting the use of IT Governance is essential. On the other side, in the financial service area and tourism sector IT Governance is of no relevance in the German-speaking organizations. These results correspond to the ITGI IT Governance Report 2006 [14]. However, a difference can be stated for the manufacturing sector where mostly IT Governance is implemented according to the ITGI report [14], while in the German-speaking countries in this sector no use of IT Governance can be found.

As Table 2 illustrates, is ITIL the most applied framework in manufacturing (28 organizations), handcraft (8 organizations), retail (24 organizations), transportation (4 organizations) and IT/consulting (8 organizations) which sums up to a total of 72 out of 120 organizations. In the manufacturing sector, CoBiT is only applied from 12 organizations of the German-speaking countries while MOF is only used by four organizations.

COBIT (Control Objectives for Information and related Technology) can be defined as a set of frameworks for IT management. It was created by the Information Systems Audit and Control Association (ISACA) [13] and the IT Government Institute (ITGI) [14] in the year 1992. According to ISACA “COBIT is an IT Governance framework and supporting toolset that allows managers to bridge the gap between control requirements, technical issues and business risks”[13]. The ITGI has published version COBIT@4.1 which can be used to enhance work already done based upon earlier versions. The ITGI is stating that ITIL® (the IT Infrastructure Library) is the most widely accepted approach to IT service management in the world. ITIL® provides a cohesive set of best practice, drawn from the public and private sectors internationally. It is supported by a comprehensive qualifications scheme, accredited training organisations, and implementation and assessment tools. The best practice processes promoted in ITIL® support and are supported by, the British Standards Institution's standard for IT service Management (BS15000). Furthermore, the Microsoft Operations Framework (MOF) provides operational guidance that enables organizations to achieve mission-critical system reliability, availability, supportability, and manageability of Microsoft products and technologies. With MOF guidance, you'll be able to assess your current IT service management maturity, prioritize your processes of greatest concern, and apply proven principles and best practices to optimize your management of the Windows Server platform (www.microsoft.com). The MOF framework is parted into four areas: MOF optimization quadrant, MOF Supporting quadrant, MOF Operating quadrant and MOF changing quadrant. According to the ITGI report 2006 the most used IT Governance frameworks are ISO 9000 (21%), internally developed frameworks (33%) or no decision (22%) yet. This means, that in the German-speaking organizations a different point of used IT Governance frameworks can be found. These three countries clearly concentrate on three IT frameworks CoBiT, ITIL, and MOF.

In the next step, the respondents were asked to give reasons for their use of IT Governance. The key objective of this question was to find out more information of the underlying decision processes. Four key reasons for using IT Governance could be stated:

- (1) Efficient management of IT,
- (2) Early recognition of IT risks,
- (3) Improvement of competitive advantages,

- (4) Successful implementation of business strategies and goals.

Especially in the retail sector the successful implementation of business strategies was the primarily reason, while in manufacturing early recognition of IT risks and efficient management of IT was the decision made to use IT Governance. Namely in the transportation sector efficient management was the underlying decision model. The other industry sector could not name specific reasons for using IT Governance and a country specific difference could not be measured. Furthermore, the three most significant decisions for not using IT Governance were:

- Missing internal knowledge of the IT Governance,
- Implementation time of IT Governance is too high, because there are more relevant decisions to make, and
- No need for making a decision on IT Governance.

Especially in the manufacturing sector 26% responding organizations have a lack of information concerning the impact of IT Governance to their business, followed by no need (12%) and no time (8%). All other industry sectors see no need for making a decision on the use of IT Governance concepts.

For testing the two hypotheses explained in Chapter Three the authors choose a chi-square test at a level of confidence of 95%. The hypotheses are:

H 1: The introduction of IT Governance leads to an improvement of the IT decision support process in an organization.

H 2: The importance of IT Governance is linked to a strategic business paper stating the most important IT Governance principles.

If the calculated chi-square score for the hypothesis is less than the score of a comparison table than there is a significant relationship between the two factors.

For the first hypothesis the calculated chi-square score was 3.74 and this is less than 9.49463 from the comparison table. In the next step the content must be evaluated. Caused by the little implementation of IT governance in the companies, hypothesis 1 cannot be confirmed. This means, concerning the first hypothesis H1, evidence showed that no significant power can be obtained that has an impact on IT decision making processes.

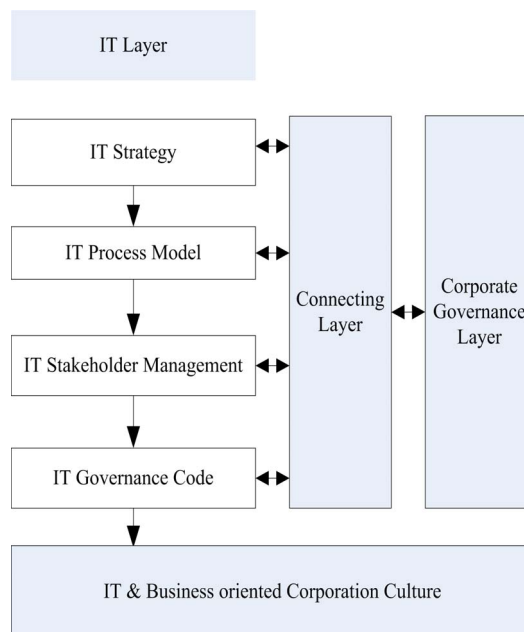
The second hypothesis was rated with a chi-square score of 2.72 and this is less than the score

of the comparison table with 6.81426. The results obtained confirm that there is significant correlation between the use of a strategic business papers and the introduction of an IT governance code. Therefore, hypothesis 2 can be confirmed.

4. Decision Support Framework

The development of the decision support framework (figure 2) is the result of the conducted empirical studies, regional case studies and the current discussion on IT Governance in Europe [21, 28, 32].

Figure 2. Decision Support Framework for IT Governance Implementation in German-Speaking Organizations



Currently, the existence of corporate governance codes is well implemented in Austria, Germany and Switzerland as already stated in Chapter 1. These countries are characterized by a corporate governance (*Corporate Governance layer*) discussion which is underestimating the impact of IT strategies to the decision support process.

Therefore, the authors developed a framework taking the *IT layer* also into consideration (figure 2). The authors used the results of empirical study as summarized in table 1 for the IT layer concept. This means, the improvement of communications processes is top ranked and was the proving ground for defining an IT strategy as the initial

process on the way to develop an IT Governance Code. Furthermore, the statements about the improvement of acceptance of IT decisions (top ranked in all three countries) made it necessary for IT process modeling. The IT stakeholder view was a key issue in the survey. Managers have to recognize the criticality of each stakeholder and process that integrates multiple people in different countries and their subsidiaries. IT Governance initiatives are more due to integration, communication processes, and should avoid user's lack of involvement in the development process. For multinational organizations a unique IT governance code could improve inter-country and inter-organizational communication processes regarding IT principles.

The findings from the present undergoing case studies provide an initial empirical insight into the current status of IT Governance activities. Organizations have to recognize that in the knowledge society IT Governance becomes a major issue and that IT Governance should be part of the Corporate Governance by setting (*connecting layer*) up an IT Governance framework with corresponding best practices [33]. The four processes of the IT layer are explained in detail:

(1) *IT Strategy Development*: In most German-speaking organizations there is an awareness of a corporate governance code and corresponding decisions of the use of such codices are made. However, corporate governance has wider implications and needs an alignment with the IT strategy [16, 35]. Huang [11] makes the point that "when alignment exists, IT delivers systems and services that are crucial to the company's strategies, operations, or user needs".

The result is an IT strategy map giving the input to the Business Process Modeling decisions. The IT infrastructure of an organization consists of a set of physical devices and software applications that are required to operate the entire organization. For Laudon and Laudon [17] an organization should be capable of providing services to its stakeholders such as customers, suppliers and employees. Ideally, this service should support the organization's business strategy. Analyzing Table 1, IT infrastructure decisions are named, e.g. transparency of IT decisions are ranked in Austria with a rating scale of 148, Germany 150, Switzerland 145. The results of the survey show that in German-speaking countries the view that IT alignment should recognize for the co-evolution and mutual adjustment of the IT and the business strategy in the context of changes in the external environment. German-Speaking organizations

have to focus on the development of an IT strategy with an IT plan that is more than traditional business data derived from enterprise resource planning (ERP) systems. Today, corporations need to have access to different kind of information resources such as RFID tags, wireless and mobile devices, ubiquitous access. In addition an IT strategy must accommodate the crucial need for speed [8] and connect the participants in information sharing both inside and outside the organization.

(2) *IT Process Management*: For successful using IT Governance it is necessary to make a decision on IT Governance frameworks [21]. Most German-speaking respondents were not aware of the use and existence of such frameworks or were afraid of using because of time spending. Furthermore, the survey showed that CIOs are seeking to stabilize technologies through process methodologies such as standards and increased consistency in IT operations. In most German-speaking organizations IT infrastructure is grown over years and need to make place for methodologies and approaches such as ITIL and Six Sigma. By mapping IT activities with the IT strategy CIOs can develop a plan for the incremental movement towards results. This means, they have to adopt an IT service model, organizing to support that model and delivering ongoing results through continuous business improvement approaches. Better alignment of IT [31] with business objectives, ensuring compliance and improving operational efficiency are all driving demands for best practice frameworks such as ITIL. Strnadl [31] states that "IT architecture has become a strategic asset for the whole organization". The ability to adapt to changing business needs requires a transparency of information across the organization. An integrated approach to IT allows an organization to have that required transparency. To meet the business demands of transparency and agility as your IT and network architectures evolve the organization requires more adaptive and responsive resources to remain effective. A more intelligent network enables the integration between business and the technology that delivers the information transparency and organizational agility needed to succeed. Such solutions should contain: Integration across all layers of the IT infrastructure, reduction of complexity and facilitation of regulatory compliances and IT Governance frameworks.

(3) *IT Stakeholder Management*. Stakeholder analysis [4, 10] is the identification of a project's key stakeholders, an assessment of their interests

and the way in which those interests affect the project viability. The stakeholder analysis is the first step in building the relationships needed for the success of a participatory management project. It provides a starting point, by establishing an environment with which IT decision makers are working in the project [9]. This means, a stakeholder analysis helps the project initiators to access the social environment in which they will operate. Stakeholder analysis is best accomplished before the IT project is initiated or at some beginning point. The broad view of stakeholder identification focuses on a stockholder's ability to influence the firm's behaviour, direction, process or outcome, and focuses on the urgency, power and legitimacy of the stakeholder in question [3, 19]. IT stakeholder analysis must be integrative part of the company strategy. Top management has to make a commitment for IT management and develop a communication strategy concerning the impact and the use of IT to the success of the company. This means, that IT Governance is not only the role for the CIO but also of more primary stakeholders [24]. As our research indicates, besides the CIO, the IT-managers and business managers, the employees are a key stakeholder for successful IT Governance implementation (see Table 1).

(4) *IT Governance Decision*: Finally, German-speaking organizations have to work on a commonly accepted framework or code for IT Governance and not only on the widely recognized corporate governance frameworks. Incorporating new concepts and model within the IT and business strategy is a long-term change process because institutional policy is situated within policy frameworks from government and other funding sources. Nevertheless, within these constraints it should be possible to develop an IT Governance policy framework. As the survey showed IT, decision makers are not aware of the importance and impact of IT Governance to their overall business strategy, while the first essential for IT Governance is an informed top management sponsorship [21]. Reasons for their reaction were the lacking of information about requirements, investment costs and time for implementation.

The IT and corporate culture influences the future success of the codes. When German-speaking organizations are changing the structure of their organizations with the alignment of the business and IT strategy, it is necessary to achieve smooth operations as soon as possible to convince all stakeholders that IT Governance is essential for the establishment of competitive advantages. IT management should facilitate adoption of the new

decision framework by taking specific steps to create a new and accepted corporate culture.

5. Discussion and Future Research

The aim of this study was to explore perceptions of the role of IT-Governance in German-speaking organizations. The findings of the empirical study clearly indicate that the lack of the definition of an IT strategy is predominately perceived to be related to the business success.

The definition of stakeholder roles in the process of IT Governance formulation includes motivating the employees and teams to meet the expected goals, make the team members' role clear, and clarify priorities in the process of decision making. Our four step and three layer decision support framework enables organizations to develop an IT Governance code taking the five IT principles from Weill into considerations. The strong impact of IT Architecture Decisions as well as IT infrastructure decisions in Austria, Germany and Switzerland to the development of an IT Governance code suggests that more stakeholder involvement primarily employee integration, business process improvement initiates and flexibility of the IT infrastructure are critical success factors for the use of governance frameworks. The results suggest that integration as well as definition of an IT strategy aligned to the business strategy is of major value in decisions making processes. Our integrative decision model shows multiple layers through which IT responsible persons in German-speaking organizations add to the understanding and importance of IT Governance principles to receive competitive advantages.

The decision support framework developed in this study is shown to be a good reference model for the intension to develop an IT Governance code. The framework developed in this research could be used as a model for different industry sectors as well as for organizations wishing to define IT Governance principles. Obtaining the idea of systematic decision processes could be useful in preventing unsuccessful attempts to utilize IT Governance frameworks. The results of testing the model show that there is an organizational need for the implementation of a decision support framework supporting the IT Governance decision processes in organizations.

The results outline two major areas of managerial significance related to IT Governance importance. First, the careful consideration of an IT strategy formulation as the starting point of the

decision process and the alignment to the business strategy is a key success factor. Once managers have perceived the impact of IT Governance to their business success they work on process modeling and stakeholder management initiatives. Secondly, it is also useful to note that a stakeholder's perceived need for IT Governance decisions plays an important role in the intension to accept an IT Governance framework suggested by Weill and Ross [37]. Therefore, as IT Government issues become more important in German-speaking countries, a decision support framework that emphasize the benefits of such layer concepts and clear define processes for supporting the decision process may aid in improving the IT Governance landscape in Europe. The proposed model in this paper could be modified and applied to other countries taking specific internal and external impact factors into consideration.

In general, an integrated decision model acknowledging the linkage between business processes and IT processes seems to be appropriate for describing IT Governance and corporate governance decisions. Our results provide support for organizations in German-speaking countries to introduce IT Governance to the existing corporate governance codes. The decision support framework focuses on a more holistic and integrative approach trying to demonstrate the complexity of the underlying business mechanisms through which IT strategy formulation, business process modeling, and stakeholder analysis have a major impact to make decisions on IT Governance issues. The acceptance of new technologies has long been an area of inquiry in the Management Information Systems (MIS) literature [7, 15]. In the next years, the issue of the impact of IT Governance to the business success has also to undergo an acceptance process in German-speaking countries. Not only corporate governance issues have an impact on the business advantages but also the integration of IT strategies and by doing so the development of an IT Governance code.

One limitation of this study was the use of German-speaking organizations and their use of IT Governance decisions, which limits the generalization of some extent. However, this provides an opportunity for future research, in that it would be useful to extend the study to more European organizations. A second limitation was the focus to all industry sectors in order to receive an impression of industry specific differences. The research showed that only in manufacturing, retail and transportation areas the use of IT Governance

is essential. Future research should on one side focus on these three major industry sectors trying to analyze how these organizations deal with decision making and developing an IT Governance code. On the other side, research should investigate on the identification of reasons why in the financial service area and tourism sector IT Governance is not playing a significant role.

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