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Application of Best-Practice Reference Models of IT Governance

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Abstract

Best practice reference models like COBIT, ITIL, and CMMI offer methodical support for the various tasks of IT management and IT governance. Observations reveal that the ways of using these models as well as the motivations and further aspects of their application differ significantly. Rather the models are used in individual ways due to individual interpretations. From an academic point of view we can state, that how these models are actually used as well as the motivations using them is not well understood. We develop a framework in order to structure different dimensions and modes of reference model application in practice. The development is based on expert interviews and a literature review. Hence we use design oriented and qualitative research methods to develop an artifact, a 'framework of reference model application'. This framework development is the first step in a larger research program which combines different methods of research. The first goal is to deepen insight and improve understanding. In future research, the framework will be used to survey and analyze reference model application. The authors assume that "typical" application patterns exist beyond individual dimensions of application. The framework developed provides an opportunity of a systematically collection of data thereon. Furthermore, the so far limited knowledge of reference model application complicates their implementation as well as their use. Thus, detailed knowledge of different application patterns is required for effective support of enterprises using reference models. We assume that the deeper understanding of different patterns will support method development for implementation and use.

Keywords: IT/IS Governance, Best Practice, Reference Models, Qualitative Research

1   INTRODUCTION

A number of scientific papers find a positive correlation between a company's IT governance and its IT performance (comp. Weill & Ross, 2004; Hardy, 2006; Heier, Borgman, & Maistry, 2007; Law & Ngai, 2009; Sujitparapitaya, Janz Brian D., & Gillenson, 2003). Weill & Ross find that „IT governance becomes even more important when one consider that companies with better than average governance earn least 20% higher return on assets than organizations with weaker governance" (2004, p.1).

Already years ago, prominent authors censured researchers for the lack of effort put into studying e. g. how business and IT can be properly aligned, how IT related risks can be managed and how IT can contribute to the overall value of the enterprise (Reich & Benbasat, 2004; Chan, 1997). Furthermore, there is little guidance from research, and science is failing to answer practical questions too often. It seems likely that this lack of scientific support for practitioners resulted in the development of best practice reference models (BPRM) like ITIL (IT Infrastructure Library) and COBIT (Control Objectives for Information and Related Technology). They contain a big amount of consolidated knowledge and experience and promise methodological support for day to day governance practice. For this reason, they seem to be interesting subjects of research, e. g regarding their adaptation in practice and their inner structures and models.

However, until now, their acknowledgement in science is little and there is a lack of knowledge concerning BPRM. Accordingly there is no clear and definite understanding of the application of BPRM in an enterprise; instead, there seems to be a large variety of application modes depending on a lot of different factors, like individual enterprises' respective aims.

This contribution is therefore dedicated to the development of a framework for the application of BPRM of IT governance, which is the first step in a larger research program. We assume the existence of definable application patterns, or application types within the framework. By identifying patterns, we hope to learn about the application of BPRM in enterprises. In further works, this knowledge will be used to substantiate methodical support for the introduction and use of BPRM in enterprises, because we presume, that diverse application types require specific methodical support respectively due to their differences.

The remainder of the paper is organised as follows: After a deeper introduction to the problem and the research program as well as the method used here, section 3 deals with the construction of the framework. Based on the results of qualitative expert interviews and literature on this topic, dimensions of the framework will be introduced and discussed step by step. Section 4 exemplifies the specification of the framework for Control Objectives for Information and related Technology (COBIT), which are the basis for a quantitative-empirical analysis to be accomplished. Finally, section 5 summarises results, demonstrating the need for further research.

2   PROBLEM STATEMENT, RESEARCH GOALS AND METHODS

In the last decades, there were associations and (public) institutions from different provenance which developed BPRM for various purposes and several stakeholders. Furthermore, the same model could be used in enterprises with diverse motivation and in order to accomplish different goals.

For example there is empirical evidence in literature that the BPRM COBIT was more frequently used after the Sarbanes-Oxley Act 2002 and the Auditing Standards No. 2 of the Public Company Accounting Oversight Board 2004 came into force (on the effects see Abu-Musa, 2002; Crockcroft, 2002; Damianides, 2004; Mishra & Weistroffer, 2007). In these cases, there are strong regulatory and supervisory requirements, forcing the application of the model. The overall purpose is to be compliant with legislation. This observation is substantiated by the results of an empirical study performed by Tuttle & Vandervelde (2007). They show an increasing interest and application in COBIT after the

mentioned regulatory changes in 2002 and 2004. But, it is remarkable that the observed increase refers to a subset of COBIT only and that not all the processes have been taken into consideration.

Beyond compliance, there are further purposes promoting the application of BPRM and these are related to different goals and objectives of the model. The overall motivation here can be termed as "improvement" (Siviy, Kirwan, Marino, & Morley, 2008a; Webb, Pollard, & Ridley, 2006). COBIT for example is also expected to improve business/IT alignment and the business value of IT as well as a better controlling and monitoring of IT risks and resources (see the discussion in Goeken, Pfeiffer, & Johannsen, 2009). The ITIL BPRM addresses IT service management and has a similar focus but neglects risk and compliance. CMMI instead is focussing on process improvement for development, acquisition and also services.

But it has to be noted that improvement is the primary intended purpose of the authors and editors of the BPRM. Because it stands to reason that there are other not intended and not foreseen sense making applications of the mentioned BPRM. So it might be valuable to use ITIL or CMMI for the auditing of an IT department or a data centre in the context of an SAS 70 audit. We see this as a strong hint that there are different modes to discover for the application of frameworks.

In some cases, the BPRM are used as checklists or as inspiration to create a proprietary model, in other cases they serve as a blueprint for the structures and processes of the IT organisation. If compliance is the main driver, a full-blown implementation of the relevant parts of the BPRM might be required.

These observations reveal that the *modes of application of BPRM* as well as the *motivations* to use them might vary significantly. But concerning these and other possible applications of the models, there is little empirical evidence. Only a few case studies reporting individual experience can be found in literature (i.e. Willson & Pollard, 2009; Lunardi, Becker, & Macada, 2009). Due to the fact that the reported results are in parts contradicting, they do not provide a consistent picture.

Rather it is worth mentioning that in studies which could help to clarify the confusing observations, the basic constructs remain vague and are not properly defined:
- KPMG's 2009 IT Internal Audit Survey states that "standard risk and planning frameworks such as COBIT are increasingly popular for planning IT audit activity and are adopted by 75 percent of respondents." (KPMG International, 2009, p.7)
- In "IT Governance in Practice - Insight from leading CIOs" from 2006 50 CIOs of leading international companies has been surveyed. The result was that 63% of respondents used COBIT, 60% used the IT Infrastructure Library (ITIL). In total 95 % of the respondents used COBIT and/or ITIL while 65% indicated using both BPRM together (PWC, 2006).
- 2007 PricewaterhouseCoopers conducted a study on behalf of IT Governance Institute (ITGI). It was the third global study on IT governance and the results were published in the "IT Governance Global Status Report—2008". This study showed an increase of COBIT users from 9 to 15%, the application of ITIL increases from 13 to 24%. The use of a proprietary IT governance model which based on ITIL and COBIT increased from 14 to 33% (ITGI, 2008).

This significant difference between the above empirical studies, as well as the strong variation in different years might point to the different application forms. One reason for the differences may be that '*application of best practice reference models*' could not be properly operationalised and remained a relatively arbitrary concept. As a consequence, the answer of the respondents, if they used a BPRM or not is a purely subjective one. Therefore it can happen that a specific company model, developed by a company on the basis of a BPRM could be rated and indicate as an application of a BPRM or as a proprietary development. The same holds true for the partial use of BPRM, and for the unsystematic 'cherry picking' of ideas.

These studies demonstrate, in addition to the observations above, the problem and the focus of this paper. In order to learn about the application of BPRM in practice, it seems to be necessary to previously develop a framework as an operationalisation of the concept *application of BPRM*. Only this preliminary step allows the investigation of the modes of BPRM application and the detection of

deeper structures in further empirical research. We hope to be able to base e.g. a method for introduction of BPRM in companies on these findings in later works as well.

Due to the fact that there is little empirical and conceptual work concerning the modes of BPRM application in literature, we also used the results of a series of expert interviews to develop a comprehensive framework first (see fig. 1). The goal of the research in this phase I is to identify relevant dimensions and instances to characterize BPRM application in practice. The intention of using literature review/desk research in combination with qualitative analysis of expert interviews is not to arrive at representative statements. The goal is rather to identify the facets of the application of BPRM in terms of their dimensions and instances.

As the research program depicted in fig. 1 shows, literature review and qualitative analysis of expert interviews are conducted in an iterative, cyclical manner. In this first phase, we focused on the construction of a framework by supporting the emergent dimensions, assigning instances to them, and validating them by iterating from literature to interview results and back to literature.
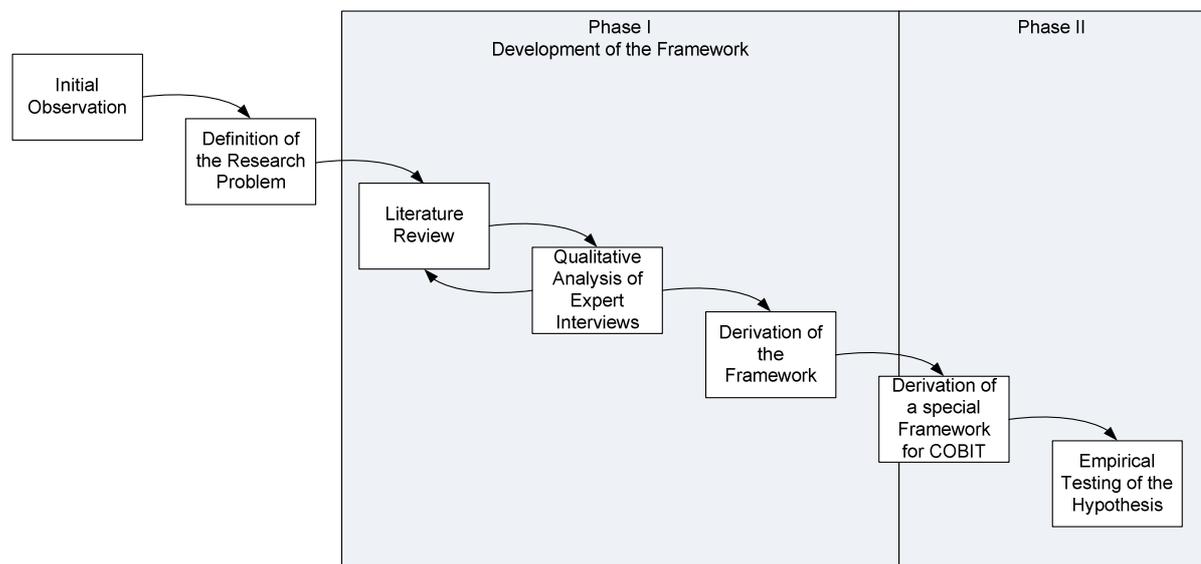

Figure 1.   Research Program

In phase II, which is future research, we will test derived hypotheses and thereby strengthen the awareness of BPRM application in enterprises. We believe that the application of BPRM has to be analyzed separately for each specific model, not for all BPRM in general. Therefore we will deduce a special framework for COBIT. An excerpt of this step of our research program is shown exemplary in section 4.

We think that the combination of different research methods allows us to develop a sound understanding of the application of IT governance BPRM. Following Mingers (2001) we assume that „a richer understanding of a research topic will be gained by combining several methods together in a single piece of research or research program" (p.241).

3   FRAMEWORK FOR BPRM APPLICATION IN IT GOVERNANCE

The construction of a generic framework for BPRM application using results of a literature review (3.1) and a qualitative-empirical expert survey (3.2) is shown in the following section.. By using findings of expert interviews and a literature review we combine two different research modes. These two steps where done iteratively as shown in figure 1 but for better traceability of the findings origin they are presented in two separate sections. In section 3.3 the findings were discussed and the framework is presented.

3.1   Findings from Literature Review

According to the latest state of research, a reference model is an information model that represents a recommendation and basis for the development of specific models (Becker, Delfmann, & Knackstedt, 2002). As a general suggestion for the solving of an abstract class of problems, reference models support a solution for problems in respect to specific tasks. As a starting point, it provides a model pattern for a class of problems to be modelled (Fettke & Loos, 2002, p.9). Reference modelling is divided into two processes: (1) construction of a reference model, and (2) its application, i.e. development of specific models or solutions based on this pattern for a particular case (Fettke & Loos, 2002, p.10). A number of publications is available on the construction of reference models (i.e. Winter & Schelp, 2006; Becker, Delfmann, & Knackstedt, 2004; Schütte & Rotthowe, 1998) while little is known on the application of reference models itself. Those which are relevant for the application of BPRM in IT governance will be used in the following to derive different dimensions for the framework.

According to Becker et al. (2002, p.36), model application is carried out as follows. It can be divided into another four phases; the main phase being adaptation to an enterprise's specific situation. They describe the necessity of several techniques of adaptations before applying a reference model to a specific modelling situation. Following Fettke & Loos (2002) adaptation is divided into 2 categories. (1) For configurative adaptations individual areas of a model are erased, altered, or completed to improve its fit. (2) For generic adaptations, explicit options of adaptation are described apart from the actual reusable reference model. Rules are defined to be followed in order to adjust the reference model (p. 13). This is a clear hint that BPRM can be applied in part as well. Reference models are not necessarily designed for use as a whole. Apparently, a reference model is also considered as applied if individual parts are used differently or not at all; complete use of the entire reference model is not necessary. Regarding this, Bowen, Cheung, & Rohde (2007) show that organisations intending to introduce models frequently by choosing a subset of the model as an initial frame to begin with. In our framework we capture this finding from literature as the dimension *adaptation rate*.

Further aspects are mentioned in literature. BPRM are used in different *degrees of obligation*. Some users choose whole parts of BPRM in order to use them in a liable way while others use BPRM to obtain ideas and suggestions. A participant of the aforementioned study "IT Governance in Practice - Insight from leading CIOs" describes the application as follows: „I use frameworks and standards for inspiration, and we use what we think is useful and relevant for our organisation. We have no intention to get ourselves certified or to follow standards to the letter."(PWC, 2006, p.18). (Simonsson & Johnson (2008) and also De Haes & van Grembergen (2008) demonstrate that individual parts of COBIT (e.g. processes, aims, control objectives) are not considered equal. They assume that each BPRM has components that are more prominent while others just serve completion. Gammelgard, Lindstrom, & Simonsson (2006) describe how a certain part of content can be prominent rather than certain components as according to Simonsson & Johnson (2008). A partial amount of the COBIT framework, for instance, has been marked relevant for the requirements of Sarbanes-Oxley Act (SOX). Chosen out of 14 COBIT processes, 12 COBIT control objectives were adapted to SOX. In this case, the subset is used entirely as required by COBIT rather than for mere inspiration (see Mishra & Weistroffer, 2007). Although similar to the dimension adaptation rate, the dimension *degree of*

obligation is rather qualitative while adaptation rate has a quantitative character. In accordance with european law, possible parameter-values of this dimension can be compromised with a recommendation, a direction, or a regulation, i.e. whether the board of directors presents it as a recommendation or an order.

There are some approaches and models in literature for governing IT, some focussing on the structural aspects like decision rights and committees. Others describe the processes and methods which should be used in IT (Weill & Ross, 2004; IT Governance Institute, 2007; De Haes & van Grembergen, 2005). Theses various views on the topic IT governance can affect the use of BPRM. The understanding of IT governance by Weill & Ross (2004), clearly differs from ITGI's definition COBIT is based on. Weill & Ross (2004) describe IT governance as "Specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT". COBIT for instance, has the component "RACI-Charts" which provides both activities of COBIT processes and roles within the enterprise with relations, combining decision rights with responsibility. This understanding of governance appears in Larsen, Pedersen, & Anderson (2006), they present a characterisation of BPRM as devices for "making decisions". Presenting another perspective regarding the use of models, Bowen et al. (2007) describe IT governance and its BPRM from a business point of view. They are referred to as possibility to support for management to professionalise and flexibly adjust IT to market conditions. Cost efficiency, growths, flexibility, and compliance are stated as the aims when applying BPRM. Likewise, Hardy (2006) use them for enhancing valuable contributions, though he mentions legal and surveillance-related challenges as reasons for the application of BPRM such as COBIT. IT revision and accounting, in contrast, use COBIT in order to make sure that IT processes meet regulatory requirements (Lainhart, 2000; Damianides, 2004; Fox, 2004). This is also confirmed by Tuttle & Vandervelde (2007). The context of IT management considers a BPRM as a possibility to establish organisational structures and processes for professionalised IT. According to Weill & Ross (2004), BPRM are also used for creation of decisive structure. Another possibility within this dimension is the purpose of examination and accounting. Finally, the creation of a common, generally accepted language is identified as the fourth extension. It turns out that there are various types of use with clearly varying motives. To sum up, there are at least four parameter-values within the dimension *types of use*.

Another possibility to distinguish different modes of application is offered by the different levels in organisations. A BPRM or rather the responsibility for the model could have its place on an individual defined level of the company. Literature often distinguishes operational, tactic and strategic level. The dimension *organisational level* promises interesting combination with other dimensions.

Reviewing the literature we find evidence for four dimensions which provide a possibility to distinguish different modes of application of a BPRM. The presented framework will include these dimensions.

3.2 Findings from Expert Interviews

The following results are taken from a qualitative study on the *use of several BPRM of IT governance* which focuses on how enterprises deal with the variety of models in the area of IT. This so-called *multi model environment* (Siviy et al., 2008a; Siviy, Kirwan, Marino, & Morley, 2008b) provides enterprises with specific opportunities (e.g. use of best practice knowledge from various areas) but also with challenges like complexity, ambiguousity, or overlaps (Cater-Steel, Tan, & Toleman, 2006). The participants of the interviews are skilled experts whose long-time experience (average years of experience in the field of IT governance: 7,8) accounts for their knowledge on research topic. Twelve interviews lasting several hours have been carried out. Object-related and area-specific statements have been generated within the following dimensions: (1) motivation and reasons for the use of several BPRM, (2) organisational and contentional arrangement of BPRM in union, and (3) challenges and need for support when using several BPRM of IT governance. The first part of this qualitative

research deals generically with the use of models before proceeding to its actual core, which is the use of several models. Therefore, the framework aimed at can be derived from this first part's results.

In the following, interview excerpts will be cited for providing suggestions for particular dimensions (participants indicated by numbers and quotations are in italics). We extract the excerpts out of the interview transcripts we finally choose and present those which include hints for special dimensions of the application of BPRM.

The interviews show that an analysis of the application should include the *direction of derivation* within an enterprise. For the interviewees it does make a difference if a BPRM is introduced top-down by the enterprise's top level management, or bottom-up in efforts by departments or users. For *E1,* it is clearly the management which motivates the application. *„The management is a frequent motivation. An internal client, it proceeds pressure by clients to the IT department, the aims being quality management and a degree of maturity." E5*, however, considers both the departments and the market a starting point for the use of BPRM. *„The market is the motivation, few clients are motivated by the board of directors; it usually comes from below."* The authors consider that the dimension *direction of derivation* ought to be taken into account when systematising the application since certain particularities in the application might have its origins in the direction of derivation. For instance, a combination with other dimensions may lead to interesting results, e.g. it might be possible that certain parts of a BPRM can be introduced top-down, others bottom-up.

Another dimension of distinction is the *range of the application*. Interviews gave strong hints that at least two basic forms should be distinguished. BPRM can be used personally by individual members of an organisation in order to support their actions without requiring a decision by the enterprise. This individual application is described by *E7*: *„Lots of things from the models are not directly processed to the department of organisation, only with altered processes. We use COBIT rather for ourselves, it gives us ideas which we do not directly communicate to everyone in the organisation; rather, we use information individually in order not to burden the organisation with model content." E6,* in contrast, states that models are applied throughout the entire organisation. *„We have chosen COBIT as a whole model. COBIT is focused on professionalising our IT. This requires all staff members to know about its use. This choice was a strategically decision which is now being introduced successively in the entire company."* After all, it is possible that the two application modes blend. If individual application exceeds a certain degree, it resembles an application by the entire organisation. Application by the entire organisation, however, includes their deliberate decision. This is suggested by certification policy in the area of ITIL, whose certificates are individually obtained and granted whereas an organisation has to make a separated effort for certification according to ISO/IEC 20000. This would be required even if all members were ITIL-certified. Hence, the distinction between individual application and application by the organisation is to be taken into account when analysing the application of BPRM. Therefore the dimension *range of application* should be included in the framework.

The dimension *type of use* and the *adaptation rate* were derived from literature but are also results of the analysis of the interviews. The type of use is enlarged by *E7, a consultant in the area of IT governance.* He presents a type of use as it appears in his consultancy practice. He describes models being used for his clients in order to find a common idea of IT organisation and a common language. Hence, this type sets up a language by use of models, finding a unified common basis of speech within the enterprise. The adaptation rate was an overall topic of the interviews. The operationalization of this dimension should be done carefully, because this dimension seems to be very meaningful for the different modes of application of BPRM. Therefore adaptation rate is the chosen example in section 4.

3.3 Framework Construction

By using the presented findings we derived the framework for the application of BPRM depicted in table 1. The framework and its dimensions are the basis for the derivation and design of detailed surveys for specific frameworks. Meant as literature or empirical grounded examples, the parameter-

values shown at the right in table 1 are to be specified for each respective model. To reach clearly operationalised and independent variables for a survey, the dimensions have to be filled with parameter-values for each specific framework. Potentially not all dimensions could be operationalised for each framework; even some might be needless, or unhelpful. I.e. for a BPRM which is never used completely, the distinction between complete and partial use seems to be needless because all observations would have the same parameter-value. In this case is could be useful to refine the parameter-value *partial application* for further specification. This case is shown for the COBIT BPRM in the following section.

Dimension	Source	Possible Parameter-Values
Adaptation Rate	Literature/ Interviews	Complete Application, Partial Application
Application Range	Literature/ Interviews	Individual Application, Application by Organisation
Degree of Obligation	Interviews	Recommendation, Direction, Order
Type of Use	Literature/ Interviews	Examining/Accounting, Desicion-making, Designing, Setting up Speech
Objective	Interviews	Model Compliance, Orientation towards Corporate Goals
Direction of Derivation	Literature/ Interviews	Bottom-Up, Top-Down
Organisational Level	Literature	Operative, Tactical, Strategic

Table 1   Framework for the Application of BPRM

4   FRAMEWORK FOR THE APPLICATION OF COBIT

The following fourth section deals with the specification of the framework exemplified for COBIT and its potential operationalisation for an empirical survey. For analysis thereof, the dimensions have to be provided with parameter-values particular to COBIT, which have to be reasonably operationalised for a survey. This is important because the generic framework could not include best practice model-specific parameter-values which cover all BPRM. The specification of dimensions by means of model-dependent parameter-values will be demonstrated in the following, exemplified for the dimension adaptation rate.

It can be concluded from literature on the topic that neither COBIT nor other BPRM need to be used in their entirety, as has also been confirmed by results of the interviews. If the aim is to systematically collect data on the application of COBIT, the adaptation rate of the BPRM has to be taken into account. Two cases occur in the first place, complete and partial use of COBIT. Because of the authors observation that most companies use only parts of COBIT the partial use have to be refined. Partial use means to select a subset of COBIT. That means COBIT > COBIT-Subset. For detailed specification of partial use, further classification criteria are required. These criteria can be derived by abstraction of the model into a best practice reference meta model. As shown in figure 2 a model's structure is defined by its meta model components.
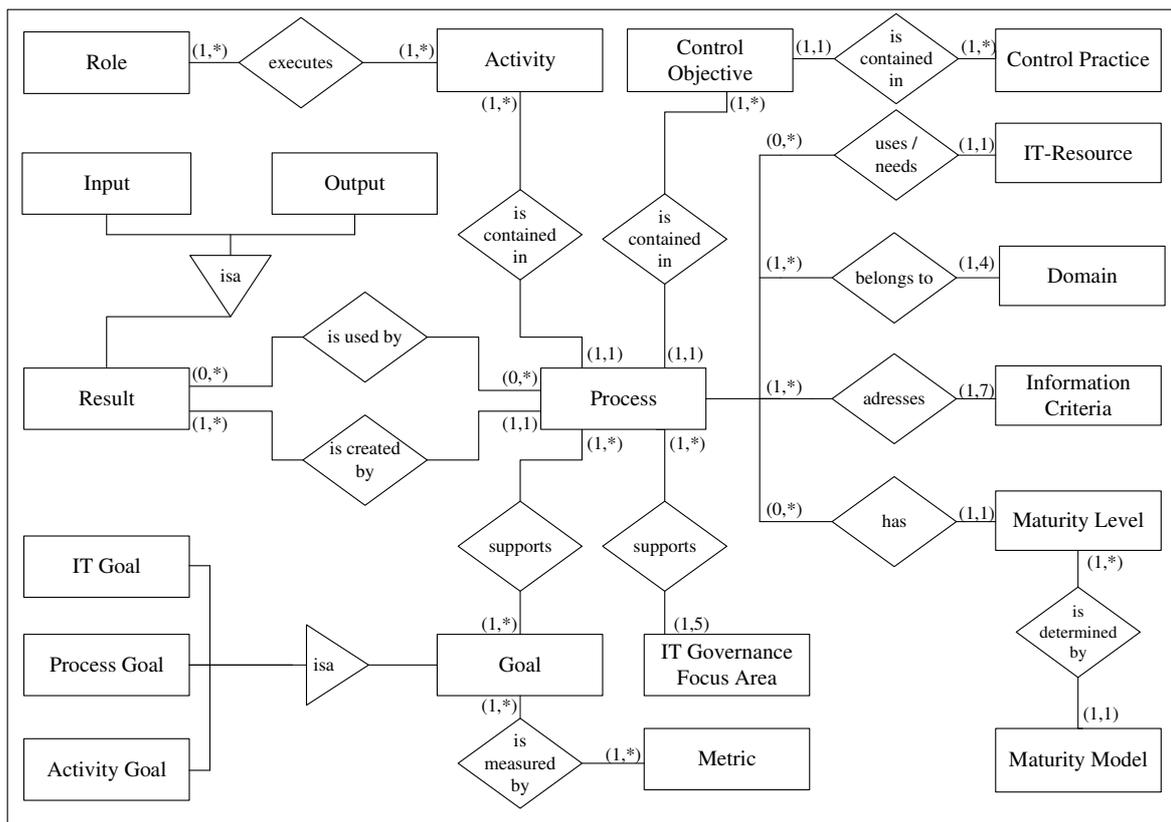
Fig. 2 COBIT Meta Model

Basically, COBIT version 4.1 consists of 34 processes (model component) which describe the content of the reference model. Model components are the instances of meta model components, e.g. the defined processes of COBIT like "manage changes" etc. Meta model components are i.e. process, domain, control objective, maturity level etc. (for a description of all components see Goeken & Alter, 2008, Goeken & Alter, 2009). According to the inner structure of COBIT the dimension adaptation rate could be refined by two subordinate dimensions metamodel components and model components.

A limitation of the applied meta model components is typical for a reduction of a model's range. It turns out that the structure of the meta model is changed by partial use of the meta model components. But the relations shown in the meta model define the possible changes. A coherent subset does not, for instance, allow the use of metrics of the COBIT processes unless the goals of the process are used as well. This is because the component goal links process with metrics.

The second case to be regarded is defined by reduction of the model's scope. Accordingly, all meta model components are employed but not all model components. Thus the content is reduced but the model's structure is unchanged. The reduction of model components results in different problems than the reduction of meta model components does. This is due to interconnections of content, such as predecessor-successor-relations, which can cause successors to be left without any input or the output of a process to remain unused even though links within the meta model are intact.

Therefore a survey of the adaptation rate of COBIT should include these findings and should distinguish between partial use of model components and partial use of meta models components. As exemplified for adaptation rate all dimensions have to be specialized for the application of COBIT. The dimensions have to be furthermore operationalised with parameter-values. The resulting framework for COBIT is the basis for a survey in order to achieve empirical results on the application of COBIT. A survey on the application of COBIT should include several parameters, which could be

derived from the framework's dimensions. Completeness of model components and meta model components are examples for parameters derived form the dimension adaptation rate.

We expect that the resulting data would show so-called application patterns within the application of COBIT. The authors assume certain dependencies, such as certain parameter-values of dimensions appearing more frequently in combination with certain values of other dimensions. These application modes or patterns are defined as tuple of parameter-values. The use of a BPRM with the objective "model compliance", for instance, might increase the probability of "strategic level" and "complete application" of a model's content. If application patterns exist within the data, they will probably be ascribable to certain user groups. User groups could be determined by the user's business, industry, or profession. According to the example before an ascribable user group might be "Accounting Information Systems". This user groups could be specifically supported when applying the model in their specific manner. In case certain components are not or rarely used within a specific pattern of action, for instance, tools and manuals can be adjusted accordingly. Thus, the quality of application is enhanced, which serves reduction of complexity.

5   CONCLUSION AND FUTURE RESEARCH

BPRM of IT governance offer methodical support for corporate IT organisations. Developed because of various reasons, existing BPRM as well as their individual components have different stakeholders, focuses, and aims. Caused by these differences and individual interpretation the application of BPRM differs noticeable. The resulting multitude of application modes makes it difficult to support their introduction and application in enterprises reliably. Thus, detailed knowledge about BPRM application is required for effective support of enterprises using those models.

By combining two different research methods we were able to get a deeper understanding of the application of IT governance BPRM. Based on observable applications, we developed several generic dimensions of application. These findings were confirmed by literature and qualitative expert interviews. The dimensions are combined to a generic framework. This framework contains the deduced dimensions needed for a distinction of various application modes. The target of the herein presented part I of the research program was to identify the facets of the application of BPRM in terms of their dimensions and instances. The developed framework is the result of this phase. For part II of the research program the developed framework provides an opportunity to collect data systematically. This data enables us to derive representative statements by using quantitative empirical methods. This step will broaden our understanding of the research topic and enrich our research program by adding a further research method.

Even if individual dimensions themselves contain important conclusions referring to BPRM application, we also assume that "typical" application patterns exist beyond individual dimensions. To be aware of these different application patterns will build a basis for further research e.g. the construction of a method for introduction of BPRM in companies based on different application patterns.

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