

IT Evaluation in Business Groups: A Maturity Model

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ABSTRACT

Ensuring the effectiveness and efficiency of IT is a substantial aim of IT evaluation which is part of the strategic IT management. Weighing costs and benefits of IT is per se a complex and difficult process but gets even more challenging in the context of business groups. Business groups are a collective of legally independent entities that are owned and managed by a holding or parent company respectively. The purpose of this paper is to develop a maturity model for IT evaluation on the group level as a governance instrument to analyze and evaluate the current setup as well as to identify possible areas for improvement. In this way, maturity models facilitate the evolutionary reengineering of IT functions as they allow benchmarking assessments and roadmap planning to be carried out. The development of the maturity model is based on design science research and evaluated through various expert interviews, a focus group workshop and a real-world implementation.

Categories and Subject Descriptors

K.6.0 [Management of computing and information systems]:
General - Economics

General Terms

Management, Measurement, Performance, Design

Keywords

IT/IS evaluation, IT/IS performance management, costs and benefits of IT/IS, maturity model, business group, design science research

1. INTRODUCTION

Constantly increasing worldwide IT spending over the past years [1, 2] underlines the importance of weighing the costs and benefits of IT and justifying any kind of IT investment [3, 4]. Measuring the success of IT is an overarching goal of IT

performance management or IT evaluation. IT evaluation is defined as the task of measuring the effective and efficient usage of IT resources within organizations [5, 6]. Practitioners as well as research scholars both agree that IT evaluation is a fundamental and necessary task driving IT success [7]. The term “IT evaluation” is established in the Anglo-American language area, whereas in Europe, especially in the German language area, the term “IT controlling” is more familiar [8]. However the terms can be classified as equivalent and we use the term “IT controlling” from here onwards.

Current IT controlling literature shows a focus on refining existing methodologies. One shortcoming is the attention towards the arising challenges of applying the concepts to specific organizational environments such as business groups [9]. A business group is understood to be a collective of legally independent companies which are (partially) owned by a parent company [10]. There is still no common understanding of IT evaluation on business group level as various expert interviews with practitioners from business groups have revealed. Furthermore in the practitioners’ view, adequate instruments for assessing the current position and identifying opportunities for improvement are still missing. This explains their perception of unsatisfying results compared to their efforts to balance costs and benefits within the IT area. As a result, they are often unsure about where to start in improving the IT controlling organization and the IT controlling function respectively.

The objective of this research paper is to develop an artifact (the maturity model) by using a scientifically well-accepted approach to address the aforementioned practical problem and contribute to the body of scientific knowledge at the same time. Therefore, Design Science Research (DSR) was chosen as it combines both perspectives, the practical dimension and the scientific dimension. The maturity model focuses on the business group level to define group IT controlling maturity levels. In this article the authors target the following two research questions (RQs):

- [RQ.1] *Can existing maturity models holistically assess the critical success factors of the group IT controlling function in business groups?*
- [RQ.2] *How could a maturity model specific to group IT controlling be designed which targets the challenges of a business group?*

In order to address the research questions, the following paper is structured in 6 sections. First, fundamental theoretical terms and concepts will be explained and will be followed by the outline

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of the research methodology in section 3. Further on, section 4 presents the findings from a multiple study. Section 5 elaborates the main insights of the iterative artifact development and the maturity model itself. Subsequently, the evaluation of the maturity model is presented in section 6 and extended by the results from a self-assessment of leading international financial service business groups and the implementation at one case study partner. Finally, the work concludes with a wrap-up and research limitations.

2. FOUNDATION

In the following section most significant theoretical terms and concepts within this work (“maturity model”, “business group”, “group IT controlling”) are explained to ensure a common understanding.

Maturity models represent an instrument that “allows organizations to evaluate their capabilities with regard to a certain problem area” [11]. Maturity models aim to compare an actual situation with an industry-specific benchmark or best practice in order to support management decisions for continual improvement [12]. Thereby the basic idea of a maturity model is to briefly describe the typical activities exhibited by an organization at numerous maturity levels including a description of the activity as it might be performed at this corresponding level [13, 14]. A maturity model helps an organization to perform these activities in the most effective way, in the shortest possible time and with the highest quality standards while ensuring low costs [12]. After the first development of such a model for an IT department by Gibson and Nolan [15], a large number of comparable models have been proposed for a large variety of applications [16, 17, 18]. However, it might not be necessary for every organization to achieve the highest maturity level. Among IT/IS scholars and practitioners the adoption and application of maturity models is widely accepted [11, 19].

Business groups can be defined as a collective of legally independent companies or business entities (BEs) which are linked by various ties to a holding [10, 20]. The group center – also known as the core entity – acts as a parent company on top of this collective and to some extent provides common administrative or financial control or managerial coordination among the BEs [10, 21].

Prior to further explanations regarding group IT controlling, the constituent parts of the term have to be explained. In central Europe, the broadly established term “controlling” covers the aims and tasks of management accounting [22]. “IT controlling” indicates that those management accounting theories are used in the domain of IS/IT. Ensuring the effective and efficient usage of the IT resources provided within an organization is one of the core responsibilities of IT controlling [5, 6, 23]. Of course this includes also measures like business value of IT, costs, quality, functionality, and on-time delivery [6, 23, 24]. Applying the IT controlling concept within a business group context leads to the so called group IT controlling (GITC) which can be judged as a special form of IT controlling. Thereby GITC refers to the management of IT costs and performance with a cross-organizational scope [25, 26]. The most comparable management accounting domain would be legal entity controlling which aims to optimize the portfolio of subsidiaries and their interaction in order to increase corporate success and

value, than with the traditional definition of IT controlling [25]. GITC challenges, monitors, and analyzes the global IT budget and IT performance of a business group. Therefore it provides a holistic picture of the value contribution of IT and allows benchmarking across the BEs [25, 26]. A key element thereby is transparency across the organization which leads to the identification of improvement opportunities and best practices and allows the utilization of economies of scale, scope and skills.

3. RESEARCH METHODOLOGY

In order to address the RQs of this paper, we selected the Design Science Research (DSR) paradigm [27, 28, 29]. DSR is described by “a designer answering questions relevant to human problems via the creation of innovative artifacts, thereby contributing new knowledge to the body of scientific evidence. The designed artifacts are both useful and fundamental in understanding that problem” [30]. The major benefit of DSR is the fact that it addresses real-world problems and simultaneously contributes to the body of knowledge [31]. However, the development of maturity models within the IS domain is not new but has been popular for quite some time [19]. Mettler, Rohner, and Winter [17] count more than 100 models, Poeppelbuss et al. [18] counts even much more. One significant shortcoming within this research area is the lack of particular contributions regarding how to develop such models [11]. Moreover, most authors seldom expose their development process. Up to our knowledge there are only a few development procedure models for maturity models. The models of Becker et al. [11] and De Burin et al. [19] seem to be quite popular among IS scholars based their citation counts. We decided to apply the model of Becker et al. [11] to develop our maturity model because it is based on DSR and therefore provides a methodological foundation very suitable for application in our research approach. Furthermore, Becker et al. provide a stringent and consistent development process according to the DSR guidelines of Hevner et al. [27].

As described in the procedure model (see Figure 1) the first step is focusing on the problem identification (1). Within this step, we specified the research problems, provided practical relevance, and justified the value of the artifact. The problem definition is based on a multiple case study approach in accordance with Yin [32]. This is followed by the comparison of existing models (2). This step is based on the problem identification (1) and analysis of existing maturity models pertaining to the identification of shortcomings or lack of transferability. We used existing literature reviews [16, 17, 18] as a touch point for our conducted literature review which was based on an extensive online search to identify existing maturity models devoted to the same or similar domains. Thereby the review was guided and structured by the approach of vom Brocke et al. [33]. Subsequently, we analyzed the maturity models according to their domain and functionality as well as their capability to address the outlined problems.

The third step contains the determination of the research strategy (3), which is outlined within this section of the paper. During the iterative model development (4), we used model adoption mechanisms (i.e. configuration, instantiation, aggregation, specialization, analogy [34]) to rigorously create a maturity

model (structure and content). We aggregated best practice parts of existing models while conserving appropriate parts of other maturity models [35]. In our last step, evaluation (5), we combined the steps of Becker et al. [32] – conception of transfer and evaluation, implementation of transfer media, and evaluation – into one. All steps will be content wise conducted, but to match the structure of this paper we applied this adjustment.

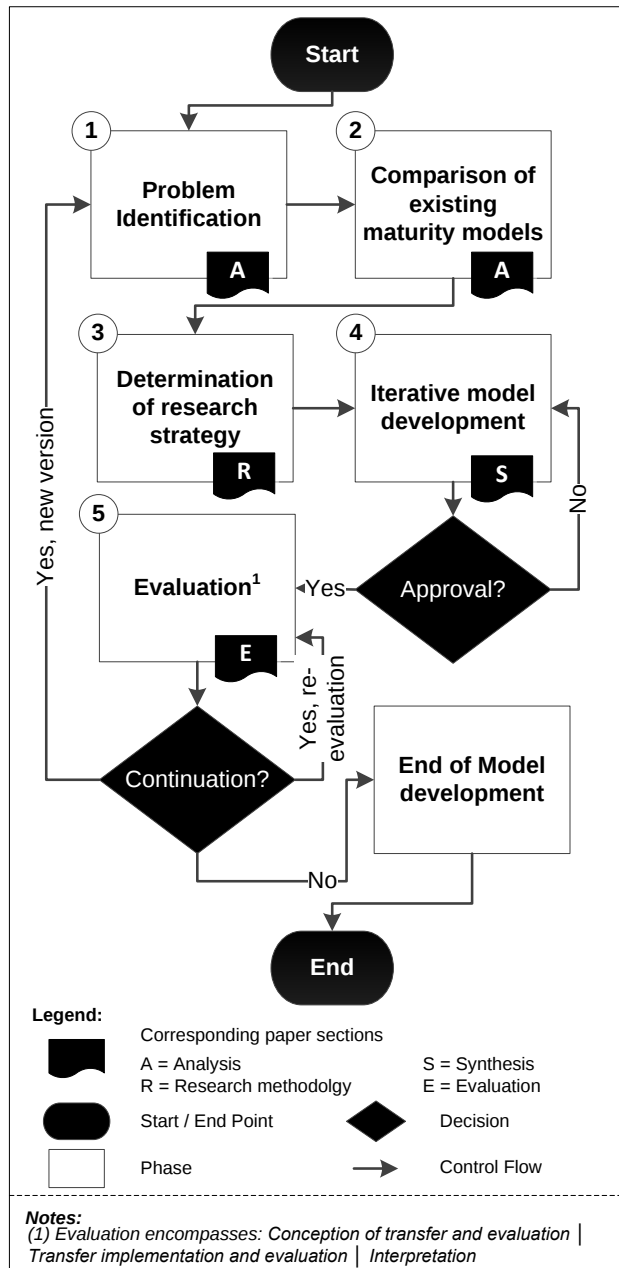


Figure 1. Procedure model of the research approach (adopted from Becker et al. [32])

Therefore we implemented the maturity model at one case study partner (where it is used to redefine the GITC strategy) in order to demonstrate the applicability and usability of the model. Further, we validated the model in several expert interviews.

And, we organized a focus group workshop with both senior scientists and executives from five financial service business groups to test the validity and understandability of the maturity model.

4. ANALYSIS

In order to provide a consistent and precise problem definition, we conducted a multiple case study with seven multinational business groups. The aim of the study was to identify current challenges, areas where future action is needed, and success factors [25]. The study is therefore based on expert interviews with 16 IT executives (average duration of each interview: 2.75 hours) in addition to corporate documents provided by the case study participants. The interviews took place between December 2009 and March 2010. Based on the documents provided and interview notes we used qualitative content analysis [36] and structured our findings according to three segments (strategy, process, information system [37]). In addition to the content analysis, we discussed and evaluated our findings during two workshops with IT controlling practitioners [25].

Based on an extended analysis of the case study materials and initial results, we identified several critical success factors (CSFs) for GITC in business groups. In evaluating CSFs, we relied on the theoretical framework of Rockart [38, 39], considering CSF as a “limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization”. In a second step, we condensed and verified the CSFs which we derived from the case study with existing literature on (group) IT controlling.

GITC should enable IT cost and performance comparison (benchmarking) among BEs within the group and avoid ambiguities [5, 6, 26]. At the same time, GITC should provide a holistic view on IT costs, performance, and capabilities to ensure an impartial measurement of the value contribution of IT [6, 24]. It is essential that GITC has a consistent and stringent task definition [9] and enables IT executives to act in a timely manner in order to minimize losses of effectiveness and efficiency [3, 4]. This leads to a minimization of the overhead efforts required for BEs to support the GITC function [40] as well as to the minimization of operational effort required for the GITC function. Finally, GITC should ensure high data quality standards in order to perform its tasks efficiently [41].

The seven CSFs for maturity models can be summarized as follows:

- [CSF1] Enable IT cost and performance comparison (benchmarking) among BEs within the group and avoid ambiguities
- [CSF2] Provide a holistic view on IT costs, performance, and capabilities to ensure an impartial measurement of the value contribution of IT
- [CSF3] Provide a consistent and stringent GITC task definition
- [CSF4] Enable IT executives to act in a timely manner to allow losses of effectiveness and efficiency to be minimized
- [CSF5] Minimize the overhead efforts required for BEs to support the GITC function

- [CSF6] Minimize the operational effort required for the GITC department
- [CSF7] Ensure a high efficiency of the GITC through high data quality standards

The elaborated CSFs were used as a reference baseline to assess the appropriateness of particular maturity models. Based on the results of our conducted literature review within the IS domain, we identified numerous articles dealing with maturity models. In a first step, we selected maturity models that were related to the topic area of (group) IT controlling based on an analysis of the abstracts. Prior to the in-depth assessment a few maturity models have been excluded, due to their different methodological approaches. Finally, the remaining maturity models were analyzed according to the degree to which they cover and fit to the previously defined reference baseline. Each maturity model was ranked for every CSF according to the degree of matching from 0 (very low) to 4 (very high). In the overview, we concluded that only five maturity models scored an aggregate of at least 6 points according to the defined CSF reference baseline.

- Maturity Model for Performance Measurement Systems (MPPMS) [42]
- Information Process Maturity Model (IPMM) [43]
- Information Technology Capability Maturity Framework (IT-CMF) [44]
- Control Objectives for Information and Related Technology (CobiT) Maturity Model [version 4.1] [45]
- Business Intelligence Maturity Model [BIMM] [46]

Table 1 presents the particular assessment results of the above as most significant identified maturity models in detail. Based on this set an average total score of 7.6 was achieved (max. score 28).

Table 1. CSF reference matrix fit assessment

Maturity model	CSF 1	CSF 2	CSF 3	CSF 4	CSF 5	CSF 6	CSF 7	Σ
MPPMS	3	1	0	0	1	3	0	8
IPMM	2	0	0	1	0	0	3	6
IT-CMF	1	2	2	1	0	0	1	7
CobiT	1	2	2	1	1	1	2	10
BIMM	0	0	0	1	2	2	2	7
Average	1.4	1.0	0.8	0.8	0.8	1.0	1.6	7.6

The analysis of score distribution along the CSFs revealed that almost all maturity models only partially address the CSFs. In most cases they have high degree of matching in approximately up to two CSFs (e.g. MPPMS) and address other CSFs not at all. Further on, only CobiT achieves to address all CSFs of the

reference baseline, but only with a low degree of matching. This is not a stunning result because CobiT at all remains highly generic.

5. SYNTHESIS

In accordance to the maturity model development approach of Becker et al. [32] a new maturity model has to be developed, if no exiting or the advancement of an existing one is capable to address the identified problem. So, based on the findings of our analysis there is no maturity model which satisfactorily fulfill the entire CSF reference baseline. Therefore we will develop a new maturity model.

The newly developed model presented below (see Table 2) adopts established structural elements, domains, and functions of the best practice maturity models analyzed in section 4, which have been extended and adjusted to fit the environment of business groups. As outlined within our research methodology, we applied an iterative process for the maturity model development. In total we needed three iterations which are described in the following:

First iteration: As a first step, we have defined the basic characteristics and the structure of the model. As a starting point we propose five levels of maturity – prepared, engaged, established, managed, and optimized – as this approach is observable in many established maturity models like CMM [47]. The integration of the business engineering framework [37] with its dimensions strategy, processes and information systems was an ideal approach to ensure that the GITC capabilities were assessed from a holistic perspective. We then mapped fitting sub-dimensions of analyzed maturity models (MPPMS and IPMM) and adjusted them to the selected approach with five maturity levels.

Second iteration: The aim of this iteration was to align the adopted structures and elements of existing maturity models and the further advancement of the model itself. Therefore, we adjusted the inherited sub-dimensions and functionalities of existing frameworks and extended the model's main dimensions [A, B, and C] to balance the model if appropriate. Amongst others CobiT, IT-CMF, and BIMM provided the necessary orientation. Finally, we took the special characteristics of GITC in consideration and adjusted as well as aligned all sub-dimensions accordingly.

Third iteration: In a first step we analyzed the new model (see Table 2) if it addresses our aforementioned CSF reference baseline sufficiently and discussed it during expert interviews with senior scientists and IT controlling practitioners. In a second step we took the findings from the analysis and the feedback received into consideration and refined the model slightly in terms of wording and details. As a last step, we compared the sub-dimensions and aligned them with each other.

In addition to the already discussed, maturity levels 1–5, we added level 0, which means that the business group is not executing any GITC function or task at all. Therefore level 0 is not explicitly mentioned within the GITC maturity model (see Table 2).

Table 2. GITC maturity model

Dimension	Sub-Dimension	Level 1	Level 2	Level 3	Level 4	Level 5
[A] Strategy	[A.1] Group-wide standardized terms and methodologies	[A.1.1] No GITC standardized terms and methodologies are established	[A.1.2] Basic standardized controlling terms (e.g. cost definitions) are defined	[A.1.3] In addition to [A.1.2], standardized terms are extended and basic methodologies are partially established between GITC and BEs	[A.1.4] In addition to [A.1.3], standardized terms and methodologies are extended and aligned between GITC and BEs	[A.1.5] In addition to [A.1.4], standardized terms and methodologies are regularly adjusted and aligned between GITC and BEs
	[A.2] Controlling objects	[A.2.1] GITC has no specific performance indicators in place	[A.2.2] GITC is focused on financial performance indicators	[A.2.3] Beyond [A.2.2], non-financial performance indicators are added	[A.2.4] Beyond [A.2.3], financial and non-financial performance indicators are balanced	[A.2.5] In addition to [A.2.4], controlling objects are adjusted regularly according to stakeholders interests
[B] Process	[B.1] Utilization of core controlling processes	[B.1.1] IT cost and performance management on group level has no defined process	[B.1.2] IT cost and performance management on group level is only monitoring	[B.1.3] In addition to [B.1.2], a planning process or steering process is established	[B.1.4] Beyond [B.1.3], planning, monitoring, and steering processes are in place	[B.1.5] In addition to [B.1.4], all three processes are aligned and continuously improved
	[B.2] Repetition of core controlling processes	[B.2.1] IT cost and performance management on group level is not established or is done irregularly	[B.2.2] IT cost and performance management on group level has a long repetition cycle (e.g. yearly).	[B.2.3] IT cost and performance management on group level has a medium length repetition cycle (e.g. quarterly).	[B.2.4] IT cost and performance management on group level has a short repetition cycle (e.g. monthly).	[B.2.5] IT cost and performance management on group level is continuously repeated (e.g. real-time)
[C] Information system	[C.1] Data integration	[C.1.1] Data of BEs is collected on an ad-hoc basis – no integrated data approach	[C.1.2] Data collection of BEs is done manually – basic proprietary data integration (e.g. MS Excel)	[C.1.3] Data collection of BEs is partially automated – partial data integration (e.g. intranet based web tool)	[C.1.4] Data collection of BEs is fully automated – data integration with major BEs (e.g. MIS)	[C.1.5] Data collection of BEs is fully automated and optimized – group-wide data integration
	[C.2] Data quality	[C.2.1] No data quality assurance in place	[C.2.2] Basic quality assurance established (e.g. plausibility checks)	[C.2.3] In addition to [C.2.2], quality assurance encompasses a horizontal reconciliation (int. al. between finance and IT function)	[C.2.4] In addition to [C.2.3], quality assurance encompasses a vertical reconciliation (int. al. between operative and analytical systems)	[C.2.5] In addition to [C.2.4], data quality is measured and part of a continuous improvement process

Finally, this leads to the following maturity levels:

- Level 0 – GITC not existing
- Level 1 – GITC prepared
- Level 2 – GITC engaged
- Level 3 – GITC established
- Level 4 – GITC managed
- Level 5 – GITC optimized

In order to move from level 0 to level 1, the group IT management needs the awareness that GITC is needed as a relevant function of the IT management process. Furthermore, basic IT controlling tasks have to be established on group level

with the aim to ensure efficiency and effectiveness of IT resources across the business group.

6. EVALUATION

The evaluation step is a substantial element of DSR. Thereby it is necessary to demonstrate the “utility, quality, and efficacy of a design artifact” [30]. To conform to these requirements we followed a multi-perspective evaluation approach consisting of three stages:

- Expert interviews
- Focus group workshop
- Implementation at a case study partner

Since the third development iteration, several expert interviews were conducted with GITC practitioners of financial service business groups, management consultants and scientists. Hence, the GITC maturity model (see Table 2) and its corresponding drafts during the iterative model development process were used as a discussion base. Findings, comments and recommendations from interviews were continuously used for further improvements and refinements of the model.

In the second stage we used a focus group workshop to discuss the maturity model in broad audience of GITC practitioners from five financial service business groups (see Table 3). Additionally to the workshop, each practitioner conducted a self-assessment of the corresponding business group by applying the GITC maturity model. The possibility was given to skip the assessment for individual sub-dimensions of the maturity model due to ambiguity or applicability reasons (see Table 4, column “N/A”).

Table 3. Profiles of assessed financial service business groups

Company	BEs > 50	Employees > 50k	IT FTEs > 5k
ALPHA	✓	✓	✓
BETA	✓	✓	✓
GAMMA	✓	✓	✓
DELTA	✓	-	-
EPSILON	-	-	-
	Ø 96.2	Ø 76.4k	Ø 7.2k

Notes: BEs: Business entities, FTE: Fulltime equivalent

As a final stage, one case study partner has implemented the maturity model in its GITC function. The model was used as guideline during a strategy development process to assess its current setup, identify efficiency lacks as well as imbalances regarding its capabilities. And finally, to derive a roadmap including needed actions to achieve a higher maturity level.

We used the framework of Frank [35] to structure and document our evaluation findings and results. The economic perspective focuses on the evaluation of costs and benefits as well as on coordination. The evaluation of costs and benefits has hardly been measured as of now, due to the lack of multiple cases. As a result, the evaluation of costs and benefits cannot be conducted objectively at this point in time. Based on the findings from the expert interviews it can be determined that organizations can increase their GITC effectiveness and efficiency by achieving higher maturity levels. Furthermore, the experts interviewed expect positive effects on communication between different stakeholders (e.g., group level and BEs). In addition, findings from the implementation showed that the effort (costs) for an in-depth assessment is closely related to the availability of detailed information regarding strategy, processes and information systems. One particular group IT controller of the case study partner was able to carry out the assessment including checks with involved parties (e.g. financial and operations departments) within 2-3 working days. Above all, the stringent guidance offered by the GITC maturity model during the assessment was highlighted as very beneficial in terms of staying focused and drawing a holistic picture of the current GITC capabilities.

From the deployment perspective, understandability and appropriateness are the main evaluation criteria. The feedback of practitioners and management consultants has confirmed both the understandability and appropriateness of the GITC model.

Table 4. Self-assessment of five financial service business groups

Dimension	Sub-dimension	Level					N/A	Ø
		1	2	3	4	5		
[A] Strategy	[A.1]	-	#1	#3	#1	-	-	3.0
	[A.2]	-	#4	#1	-	-	-	2.2
[B] Processes	[B.1]	-	#2	#3	-	-	-	2.6
	[B.2]	-	#3	#2	-	-	-	2.4
[C] Information Systems	[C.1]	-	#2	#3	-	-	-	2.6
	[C.2]	-	#3	#2	-	-	-	2.4
Total								2.5

The “engineering” perspective evaluates the quality of definitions and explanations of the model. The model was discussed in a focus group workshop with five business groups with on average 96.2 BEs, 76,400 employees and 7,200 IT FTEs (see Table 3) each and comparable organizational structures. The practitioners were asked to assess their business groups according to the maturity model. All practitioners were able to classify their GITC functions into the maturity levels of the model without any complication or any need for clarification (see Table 4). Most of the business groups located their GITC functions between maturity level 2 and 3. The average total maturity level across all five financial service business groups was 2.5 (see Table 4). Regarding the individual sub-dimensions the average maturity level per sub-dimension varies between 3.0 and 2.2. [A.1] “Group-wide standardized terms and methodologies” achieved an average level of 3.0 which is the highest result. [A.2] “Controlling objects” had the lowest average level with 2.2. These results were expected based on the gained knowledge and experience of the authors. A consolidated view indicates that all companies have a GITC function in place, but still have space for improvement. Only [A.1] “Group-wide standardized terms and methodologies” was already rated on a relatively good level.

The epistemological perspective contains the evaluation of the theory itself and the contribution to the scientific body of knowledge which is characterized by applying the maturity model approach to the specific domain of GITC. The GITC maturity model fills thereby a research gap within this area by sketching the building blocks of a GITC framework.

7. CONCLUSION

The aim of this paper is the development of a maturity model for GITC. The latter can serve as a governance instrument that could be used by the IT management to analyze and evaluate the current strengths and weaknesses of the GITC function. However, the model is not restricted to analytical purposes only. It can also be used to derive a roadmap towards an evolutionary improvement of the GITC function regarding its capabilities and its effectiveness and efficiency.

The first part of the paper elaborates the CSFs which were used as a reference baseline to investigate whether existing maturity models are capable of holistically assessing GITC in a business group context [RQ.1]. The findings revealed that existing maturity models cover the entire reference baseline insufficiently, since they only selectively address the CSFs. Hence, no existing maturity model is able to solve the identified problem. Finally, we decided to design a new maturity model in consistency to the defined research strategy.

In the second part of the paper, we described the development of a maturity model for GITC, including the model itself as well as its evaluation to address the second research question: “How could a maturity model specific to GITC be designed which targets the challenges of a business group?” [RQ.2]. The developed model is based on existing maturity model structures and inherits concepts and methodologies of the IS, management accounting, and organizational research domains. The researchers took care during the development to provide a consumable research result. Moreover, the GITC maturity model benefited from the multi-perspective evaluation approach by further advancements. The self-assessment results offered insights regarding the status-quo of GITC in five leading financial service business groups which is additional contribution.

Naturally, the applied research approach comes along with certain limitations. First, the maturity model was designed and evaluated mainly with the focus to assess and evaluate the GITC function in business groups which possess a federal governance structure. Their aim is to identify and realize synergies in terms of IT capabilities and resources among the BEs of the group. We addressed this fact by involving two business groups with a more centric governance structure during the evaluation process. Further on, the development process was closely accompanied by one particular business group, which has been a close research partner. Considering this bias we tried to mitigate it through an extended evaluation with the involvement of experts from other business groups.

In order to extend the research strand, we suggest evaluating (and refining) the GITC maturity model within different industry sectors to mitigate the circumstance that during the evaluation almost only practitioners from the financial service industry were involved. This would lead to a more generic GITC maturity model and would finally enable cross-industry benchmarking.

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