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**Management accounting system design and controllership
output quality: evidence of a preparer-user perception gap**

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Abstract

Our paper deals with the research question whether the association between management accounting system (MAS) design and controllership output quality is made by controllers, i.e., preparers of management accounting information, and managers, i.e., users of management accounting information, in a similar fashion. Based on data surveyed in 2007 with controllers and managers of German Top-1,500 firms we find empirical evidence for a preparer-user perception gap. For example, controllers associate the consistency of the financial language provided by the MAS in a significantly weaker fashion with controllership output quality than the managers. Underlying reasons for this perception gap might be found in the way management accounting information is used and hence demanded within the organization.

Our paper contributes to the literature on MAS design in three respects. First, the evidence provided in our paper supports the notion that MAS design cannot be evaluated independently from an institutional reference point. Second, the identified preparer-user perception gap sheds light on observed frictions between controllers and managers. Third, we give an example on how a key-informant bias can be used as a source of research information.

Management accounting system design and controllership output quality: evidence of a preparer – user perception gap

„ ... *careful information about the way managers use information and make decisions is scarce. There are remarkably few analyses of what managers actually do with their time, or what information they use or might use.*“
(James G. March, 1987, p. 162)

1 Introduction

In many cases, managerial decision-making is based on accounting information, especially with higher hierarchy levels and/or longer time horizons (Bruns/McKinnon, 1993). In most modern firms, accounting information used for management purposes is provided by specialized agents, i.e., management accountants or – as in German-speaking firms typically denoted – controllers (Weber/Schäffer, 2008).

During the last two decades, a broad body of literature has discussed the role transition of controllers from a more traditional understanding as book-keepers, cost-recorders, watchdogs or scorekeepers to business advisors or change agents (Granlund/Lukka, 1998; Burns/Ezzamel/Scapens, 1999; for an overview see Sorensen, 2009). Nevertheless, an increased shift from cost recording activities to “help[ing] the management team in the business decision-making process” (Sathe, 1982, p. 31) raises the question not only how accounting information is actually used by managers, as had been pointed out by James G. March in his address given in 1986 at the annual conference of the American Accounting Association, but also whether there might be divergent perceptions between controllers and managers on impact factors that constitute ‘good’ accounting information and thus drive controllership output quality. Therefore, our paper deals with the following research question:

Do controllers, i.e., preparers of management accounting information, and managers, i.e., users of management accounting information, have different perceptions on the association between management accounting system (MAS) design variables and controllership output quality?

Evidence for such a preparer-user gap, which might cause detrimental effects in the aspired role of the controller as business partner, has already been discussed in literature (e.g., Bruns/McKinnon, 1993; *Pierce/O’Dea*, 2003). From a methodological point of

view, diverging judgements of controllers and managers are also denoted as key-informant bias. Such a bias stems from the fact that “informants may disagree because they hold different organizational positions and thus different perspectives on the same organizational phenomena” (Kumar/Stern/Anderson, 1993, p. 1636). Whereas many empirical studies see a key-informant bias as possible source of noise and result distortion, research on preparer-user gaps explicitly considers key-informant bias as a source of research information.

In our paper, we take up an idea originally presented by *Pierce/O’Dea* (2003) who compare perceptions of managers and management accountants (controllers in our terminology) on MAS information as well as on management’s information needs. However, we transfer this setting into a different institutional context, as our analysis is nested in the fundamental shift of German management accounting practice from a dual towards an integrated structure. This shift has been observed since the 1990s, starting with Hasso Ziegler’s (1994) seminal description on accounting integration within the Siemens corporation, one of Germany’s Top-30 multinationals. However, until today how to judge this change in MAS design is still a matter of considerable methodological debate in both literature and practice (Jones/Luther, 2005; Ewert/Wagenhofer, 2007).

More specifically, our paper investigates the possibility of a preparer-user perception gap between controllers and managers in German Top-1,500 firms with respect to the association between two special features of MAS design, i.e.,

- the integration of financial and management accounting system and
- the resulting consistency of financial language,

and controllership output quality which based on the theory of rational choice is assumed to have an impact on managerial decision-making.

Our study is built upon a database gathered by *Weißenberger/Angelkort* (W/A, 2009) whose analysis gives evidence that managers’ assessment on controllership output quality as well as impact on managerial decision making does not directly depend on the level of accounting system integration, but rather on the perception of MAS information as being consistent with financial accounting information (consistent financial language). The W/A study is based on a dyadic research design: Questions on the technical features of accounting system design (level of integration as independent variable) were answered by controllers whereas all dependent variables (consistency of

financial language, controllership output quality, impact on managerial decision-making) were surveyed with both controllers and managers.

However, in their original model W/A solely relate management's view on the dependent variables to the level of accounting system integration. Thus, the W/A analysis gives no information on whether controllers would associate the level of accounting system integration with the consistency of financial language and controllership output quality in a similar fashion. To close this research gap, our paper extends the W/A analysis towards a multi-group analysis including also the controllers' answers on the dependent variables and thus capturing similarities as well as differences in the perceptions of controllers and managers.

Our paper contributes to the literature in a threefold way. First, the evidence provided in our paper supports the notion that accounting system design cannot be evaluated independently from an institutional reference point. Second, the identified preparer-user perception gap might be used as a starting point in explaining deficiencies in accounting information use by managers which have been observed e.g., by Brignall et al. (1999) and which cannot be explained to a sufficient degree by more traditional theories focusing on a purely instrumental link between system design and information use. Third, it shows that the key-informant bias might not only be seen as a drawback or limitation in empirical research, but also as a potentially rich source of research information.

Our paper is organized as follows. In section 2, we give an overview on the literature used to derive our assumptions and also briefly present the W/A benchmark model. In section 3, we develop our hypotheses. Section 4 gives an overview of the methodological approach. Section 5 provides the empirical analysis which is conducted using structural equation modeling (SEM). Finally, in section 6, we discuss the implications of our results.

2 Literature

2.1 Preparer-user gap: discrepancies in the perception of accounting information use

The concept of a preparer-user perception gap in management accounting is primarily related to the works of *Pierce/O'Dea* (2003). Based on semi-structured interviews, they identify differences in perceptions of managers and controllers on the management accounting information supplied by the controllers. Apart from other results, they find that compared to the view of production/sales managers of the firm, controllers overstate the quality of information they provide concerning relevance, accuracy, timeliness and satisfaction. In our paper, we take up the basic framework presented by *Pierce/O'Dea* (2003), but use it in a different institutional setting and relate our assumptions more closely to the diverging concepts of accounting information use.

A basic textbook approach suggests that management accounting information is used as an information system for internal decision-making purposes (e.g., *Weygandt/Kieso/Kimmel*, 2005). However, as this approach does not capture the diversity of firm practice, a broad body of literature has evolved around the question how a given set of information is used exactly.

Seminal work in this field has been provided by *Simon et al.* (1954). They analyze the organization of the controlling department and classify the observed forms of information use into three categories: (1) Information is used as a problem-solver when it refers to the possible outcome of a due decision. (2) Score-carding as the second category refers to the role of information in monitoring the success of the business as a whole or its subunits. (3) In the third category, information is used for attention-directing, i.e., to draw management's focus upon a special situation.

A second categorization relates to the works of *Pelz* (1978) who investigates the use of socio-scientific studies by decision-makers in politics. He identifies three roles of information use. (1) Information can be used in organizations in an instrumental fashion, i.e., as an immediate basis for decision-making in a given situation at hand. This type of use is closely linked to the category of problem-solving defined by *Simon et al.* (2) Conceptual information use is not solely focused on a partial problem or decision, but refers to the general perception of an organization and its environment. The conceptual use of information is also relevant for problem-solving, because it

influences and forms the perception of the context into which a problem is placed. Therefore, conceptual use of information can be interpreted as using information to shape a common *weltanschauung* in an organization. With reference to Simon et al., conceptual information use rather captures the features of scorecarding and attention-directing than problem-solving. (3) Finally, Pelz identifies symbolic use of information as a third category. This type of use occurs when information is consulted to legitimate a decision, which already has been made on a different basis of information. In that case, information has no influence on a decision, but only serves as an argumentative support for a decision already made. As symbolic use of information is typically disguised in an instrumental or conceptual fashion, our deliberations focus in the following in the first two categories established by Pelz, i.e., instrumental and conceptual use of MAS information.

Basically, discrepancies between the preparers and users of MAS information regarding the predominant type of information use might lead to diverging judgements on what constitutes a 'good' MAS design. For example, preparers typically imply that an information system functions appropriately if the relevant technical specifications are met (technical validity). Users however relate the suitability of an information system rather to its organizational validity, i.e., its ability to enhance job performance (Schultz/Slevin, 1975). These deviations might have detrimental effects. For example, the literature on management information systems supports the notion that actual use of information is closely associated with perceived usefulness (Robey, 1979), and also give evidence on the impact of user involvement on system success (Tait/Vessey, 1988).

Specifically with respect to accounting information, Bruns/McKinnon (1993) point out that managers are going to develop and use other sources of information, "*unless a management accounting system can provide information in the metric and the timely basis that managers demand*" (p. 106). Shields (1995) analyses the detrimental effects of a preparer-user gap regarding MAS information more closely. With respect to activity-based costing systems – one of the major MAS innovations in the 1990s Shields finds that not technical but rather behavioral and organizational variables enhance the suitability of MAS information. This entails that controllers are not able to provide an effective MAS design from management's point of view, if they do not understand or even misjudge the drivers of user satisfaction with MAS design.

This implication has also been one of the triggers of our research, as we observe a fundamental shift in German management accounting practice. Since the mid-1990s, German management accounting has moved from a dual towards an integrated structure. Instead of using non-GAAP-based accruals for operational performance measurement and internal business analysis, the recent management control techniques in Germany are based on financial accounting data. This has been a matter of considerable debate in German literature (e.g., Ziegler, 1994; Pfaff, 1995; for an overview see Ewert/Wagenhofer, 2007), which nevertheless is mainly focusing on the scope of integration, but neglecting the systems dimension (Bjornenak/Olsen, 1999), i.e., the links between the users of the management accounting system as well as the design of the management accounting system.

2.2 Benchmark Model

The empirical analysis in our paper is based on research provided by Weißenberger/Angelkort (2009) (W/A), who analyse the effect of an integrated accounting system design on controllership effectiveness (a summary construct capturing the causal relation between controllership output quality and impact on managerial decision-making) in German companies.

The model by W/A comprises the four variables ‘integration level of accounting systems’, ‘consistency of financial language’, ‘controllership output quality’ and ‘controllership impact on management decisions’. In order to incorporate the technical aspects of the accounting system as well as the user perspective into their study, W/A use a dyadic research design. This means that from each company which participated in the study a controller as well as a general manager were questioned. The dyadic approach covers the controllers’ and the managers’ positions and therefore the preparer as well as the user perspective on management accounting information. An overview on the variables analyzed by W/A is depicted in Figure 1.

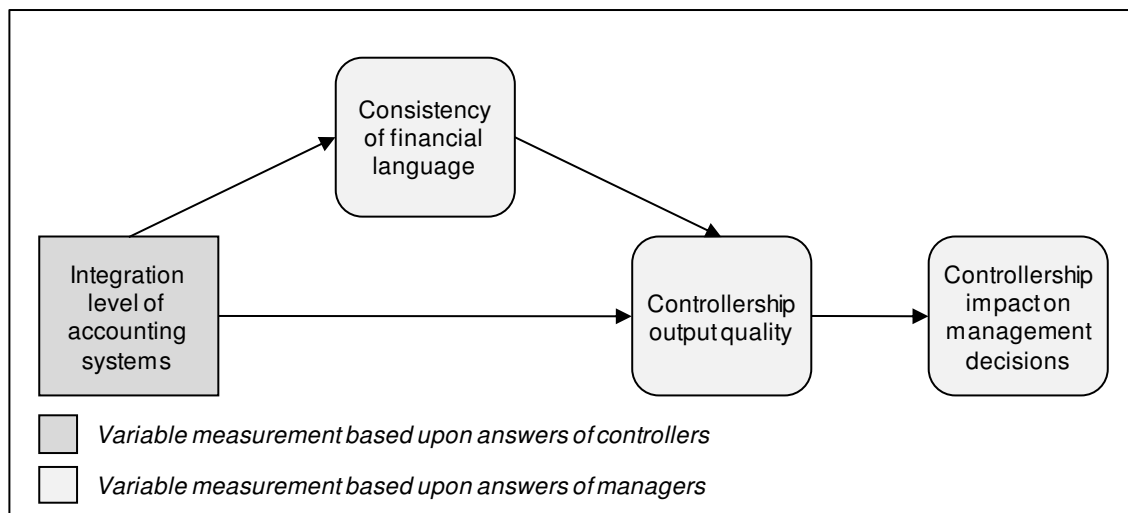


Figure 1: Benchmark Model by Weißenberger/Angelkort (2009)

The variable ‘integration level of accounting systems’ is the exogenous element of the model. It represents the degree to which management accounting systems are technically integrated within the financial accounting systems. The variable is formed by employing an index averaging the scores of 17 indicators which refer to controllers’ tasks with respect to providing MAS information (see appendix 1). The three endogenous variables reflect the managers’ assessment. The variable ‘consistency of financial language’ measures the extent to which the management perceives information which is provided by management accounting and financial accounting as coherent. In other words, the variable represents whether the management and financial accounting succeed in addressing similar business phenomena in a similar fashion. Three reflective indicators are used to form this variable (see appendix 2). The second endogenous variable ‘controllershship output quality’ represents the management’s evaluation of the controlling department’s output in terms of e.g., scope, timeliness or accuracy. This variable is based on six reflective survey items (see appendix 3). ‘Controllershship impact on management decisions’ as the third endogenous variable reflects the extent to which the controllers influence the process of decision-making in management. This variable is derived from three reflective indicators (see appendix 4).

The model tested by W/A assumes that ‘integration level of accounting systems’ has an impact on ‘controllershship output quality’ in two distinct ways:

- (1) The integration level is hypothesized to have a direct effect on the perceived controllershship output quality. This rather technical viewpoint assumes that solely a

more integrated accounting system design augments the output quality by providing accounting information faster and in a more aligned fashion.

- (2) Furthermore, the integration level possesses an impact on controllership output quality in an indirect way via the mediating effect of ‘consistency of financial language’. Integrated accounting systems are based on the data and thus on the conceptual framework of financial accounting. Therefore, integrated accounting systems provide MAS information which is coherent with financial accounting information. In other words, both financial and management accounting supply the management with ‘one version of the truth’ concerning the firm’s business and facilitate the establishing of a consistent financial language for internal and external communication purposes.

Furthermore, the W/A model assumes the variable ‘controllership output quality’ to have an effect on the variable ‘controllership impact on management decisions’. The management’s perception of the quality of the information provided by the controlling department should influence the degree to which the management uses MAS information as an underpinning for the decision-making process.

Data for this study was obtained by means of a questionnaire-based survey in the period from September to November 2007. Starting point for this survey was a database including information about German Top-1,500 companies with regard to sales volume. Financial institutions were excluded due to their specific accounting requirements; other companies had to be excluded for other reasons, e.g., lack of controlling department. In the end W/A contacted 1,269 companies and acquired 149 dyadic sets of completed questionnaires, this equals a return rate of 11.7%. The research results of W/A based on this data are shown in Figure 2.

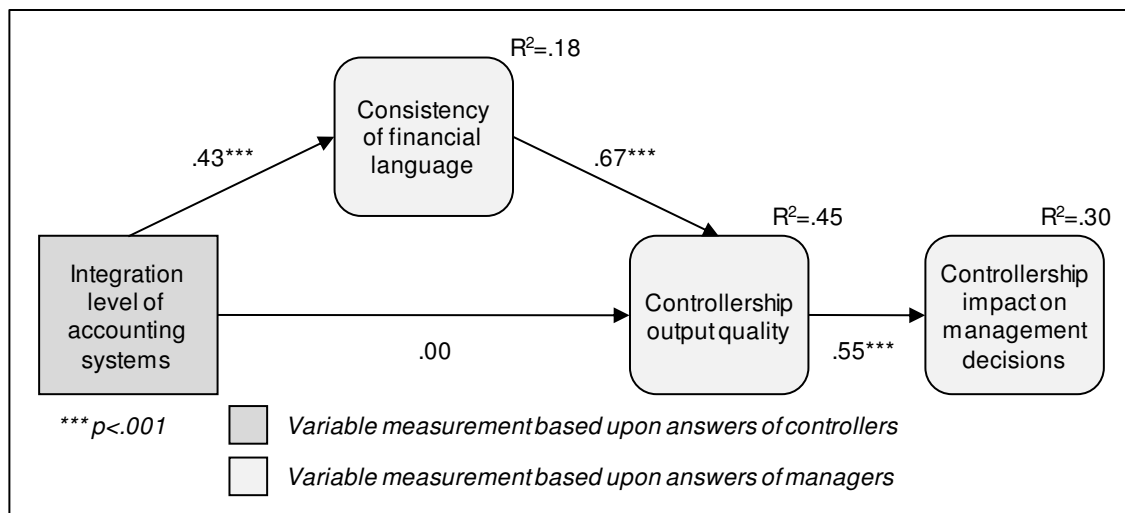


Figure 2: Results of the SEM by Weißenberger/Angelkort (2009)

As can be seen in Figure 2, W/A find no evidence for a significant direct effect of the integration level of accounting systems on controllership output quality. However, the parameter estimates point towards an indirect positive effect between these two variables with ‘consistency of financial language’ acting as a fully mediating variable: The variable ‘integration level of accounting systems’ has a significant ($p < .001$) and also relevant (.43) positive association with ‘consistency of financial language’, explaining 18% of the variance of the latter variable. The variable ‘controllership output quality’ is also positively associated with ‘consistency of financial language’ (.67; $p < .001$), with 45% of the variance of the former variable explained.

The results of W/A relate to *Festinger’s (1957)* theory of cognitive dissonance. According to Festinger human-beings have a tendency to neglect inconsistent information in their decision-making process. So-called cognitive dissonances are experienced when pieces of information – be it for inconsistency or contradiction – do not fit together. These cognitive dissonances create psychological uncomfortability and decision makers are inclined to diminish them by blinding out inconsistent information. ‘Good’ management accounting practice in the eyes of the management therefore provides information consistent to financial accounting information. Incoherent management accounting information might simply be ignored by the management during a decision making process.

These results support the following (still tentative) theory. First, managers’ information demand is not met by the controllers if a purely instrumental approach is taken: a technically sophisticated and integrated accounting information system itself is not to be

considered a direct driver for the perceived controllership output quality. Second, the specifications of MAS design influences managers' assessment of the controllership output quality only by influencing the consistency of financial language at least to a certain degree. In other words, managers demand information in a conceptual form to create a context for decision-making. This notion is also supported by Angelkort/Sandt/Weißenberger (2009) in a study conducted with Austrian IFRS-users. Allowing for the communication aspect of the MAS information is therefore of utter importance for the evaluation of the controllers' work by management. It is essential for controllers to support managerial decision-making with 'one version of the truth', i.e., meet management's demand for coherent information.

3 Hypothesis development

Our research objective is to explore whether a preparer-user perception gap divides controllers and managers in their function as preparers and users of management accounting information. As described above, W/A find evidence that managers use and therefore require MAS information in a conceptual fashion, i.e., information establishing a common perspective on the company's past, current or future state.

To meet management's demand for a coherent financial perspective controllers have to be aware of the importance of this conceptual information use. However, it is doubtful whether controllers are conscious of this part of their task. In the literature on management information systems, several studies show that preparers as well as users of information have fundamentally different perspectives (for an overview, see *Pierce/O'Dea, 2003*). Transferring these notions to the work of controllers who are responsible for the MAS design, they also might neglect the magnitude of conceptual information use and largely consider information only in its instrumental function. Our assumptions about controllers' behavior are in line with the functional fixation hypothesis established in early behavioral accounting literature (*Ijiri/Jaedicke/Knight, 1966*), as MAS textbooks typically convey an instrumental perspective on accounting, but neglect the link between MAS design and MAS use (*Bjorenak/Olsen, 1999*).

The resulting preparer-user perception gap would become visible in the model by W/A if the magnitude of the direct or indirect effect between the variables 'integration level of accounting systems' and 'controllership output quality' were dissimilar between the group of the managers and the group of the controllers. While the study by W/A already

shows that for the group of the managers the effect between the two variables mainly exists in an indirect conceptual way, we assume that this is different for the group of the controllers.

First, we hypothesize that controllers view the influence of the variable ‘integration level of accounting systems’ in a more direct or instrumental view than the managers.

H1: For the group of the controllers the extent of the direct effect of the integration level of accounting systems on controllership output quality is higher than for the group of the managers.

In reverse, this would lead to the assumption that controllers fail to notice the important conceptual indirect effect between the variables. Therefore our second hypothesis is as follows:

H2: For the group of the controllers the extent of the indirect effect of the integration level of accounting systems on controllership output quality, with consistency of financial language acting as a mediating variable, is lower than for the group of the managers.

4 Research method

We use the research model by W/A as the basis for our multi-group analysis and consistently employ a SEM analysis on Maximum Likelihood (ML) estimation.

A multi-group analysis is an instrument to test two or more groups for equality of estimated parameters (Steenkamp/Baumgartner, 1998). This is done by testing a consecution of nested models (Bagozzi/Yi, 1988; Steinmetz et al., 2009): (1) In a first step a baseline model is calculated. In this model the parameters for all groups included are calculated freely and simultaneously. (2) In a second step a set of parameters between the groups is constrained to be estimated as equal and the model is recalculated. Such a constraint normally leads to deterioration in the model fit. (3) To test for differences in the model parameters the measures of fit between the baseline model and the constrained model have to be compared. This is usually performed using a χ^2 -difference test. If the degradation of model fit between the baseline model and constrained model is found to be significant, the null hypothesis of equal parameters across the groups has to be rejected.

The group classification of a multi-group analysis should be conducted in accordance to the variable which is presumed to have a moderating influence on the model parameters.

Since group membership is a discrete variable our procedure is fairly plain. In our case we divide the respondents into two groups according to their function in their respective company. One group is comprised only of managers while the other group contains controllers.

5 Results

We test the discussed hypothesis by conducting a multi-group analysis using the original data collected by W/A.

Our aim is to find out whether for the respondents being either part of the controllers or managers as organizational groups the group membership has a moderating effect upon the parameters of the benchmark model. In other words, we intend to detect whether the group of controllers and the group of managers make different associations with the variables surveyed. Our main focus is the issue of different perceptions on how the integration level of accounting systems influences the controllership output quality. Perceived differences among the two groups concerning the direct or the indirect link between the two variables would point towards the existence of a preparer-user perception gap.

To reflect the perspective of the managers as the first group all endogenous variables are surveyed with the managers while only the exogenous variable ‘integration level of accounting systems’ is based on the controllers’ answers. This is the same procedure as presented in the model by W/A. To catch the perception of the controllers as the second group we use the same model structure, but this time all variables, the exogenous as well as all the endogenous, are based upon the answers of the controllers. To minimize measurement distortions, we measure all latent variables for both groups with the same set of underlying reflective indicators, which leads to a single difference compared to the model originally published by W/A. With respect to ‘controllership output quality’, the item ‘controllers use comprehensible methods and techniques’ is excluded, as this item from the controllers’ perspective would not measure output quality but rather input quality. Our methodological considerations are supported by the empirical evidence as including this indicator leads to an inferior model fit for the group of controllers.

A schema of our approach is depicted in Figure 3 below:

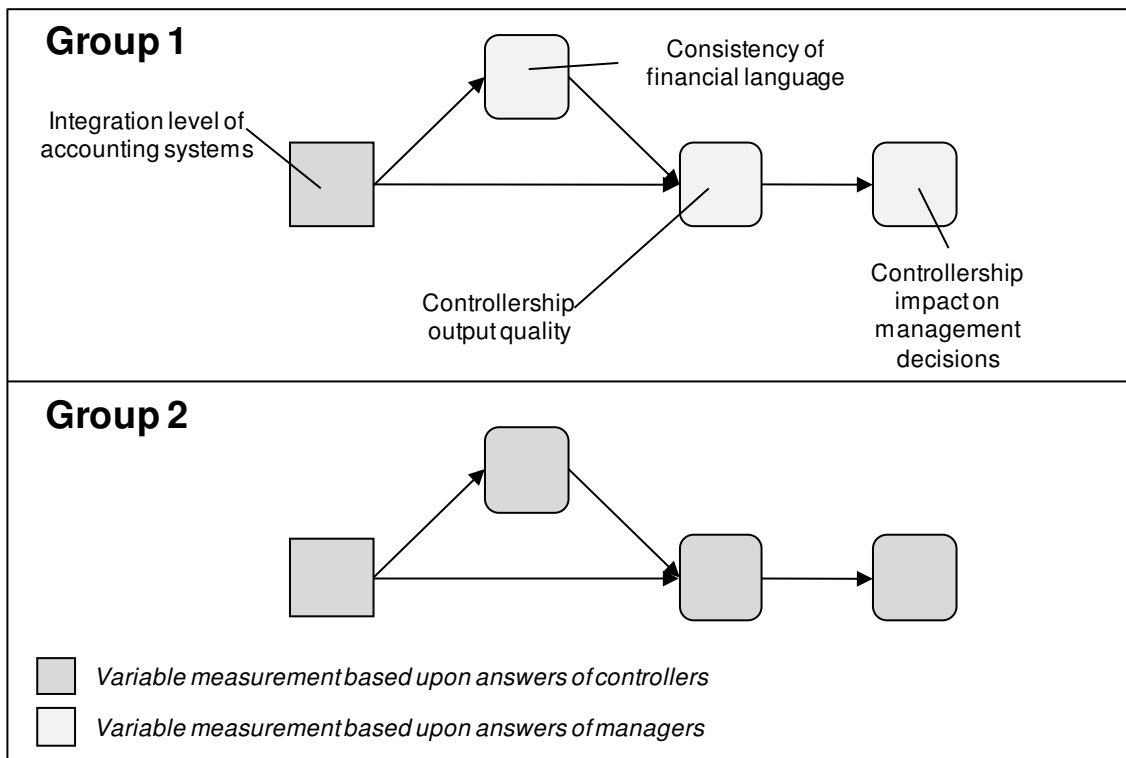


Figure 3: Model design for multi-group analysis

Before testing for group differences concerning the effects between the variables, we assess the reliability and validity of the endogenous latent variables for each of the two groups. Since the exogenous variable ‘integration level of accounting systems’ is an index averaging the scores of underlying items, which are measured with the controllers, the variable has not to be assessed.

Variable	Group	Cronbach's alpha	Factor reliability	Average variance explained
Consistency of financial language	1	.82	.83	.62
	2	.79	.81	.59
Controllershship output quality	1	.90	.88	.60
	2	.82	.83	.50
Controllershship input on management decisions	1	.89	.89	.73
	2	.87	.87	.69

Table 1: Reliability and validity of the endogenous variables

As presented in Table 1 the endogenous variables fulfil the common criteria for reliability and liability. All values for Cronbach’s alpha exceed the critical value of .70 (Nunally, 1994). Furthermore all values for the factor reliability are above the critical

value of .60 and all values for the average variance explained exceed the threshold of .50 (Bagozzi/Yi, 1988).

As mentioned above, we test for significant differences concerning the effects between the variables across the two groups in three steps (Bagozzi/Yi, 1988): In a first step, we form a baseline model, in which all parameters of the first and second group are estimated freely and simultaneously. Due to the fact that all parameters are formed in only one run, we receive only one χ^2 -statistic representing the fit of the model. The empirical results of this unconstrained baseline model can be seen in Figure 4.

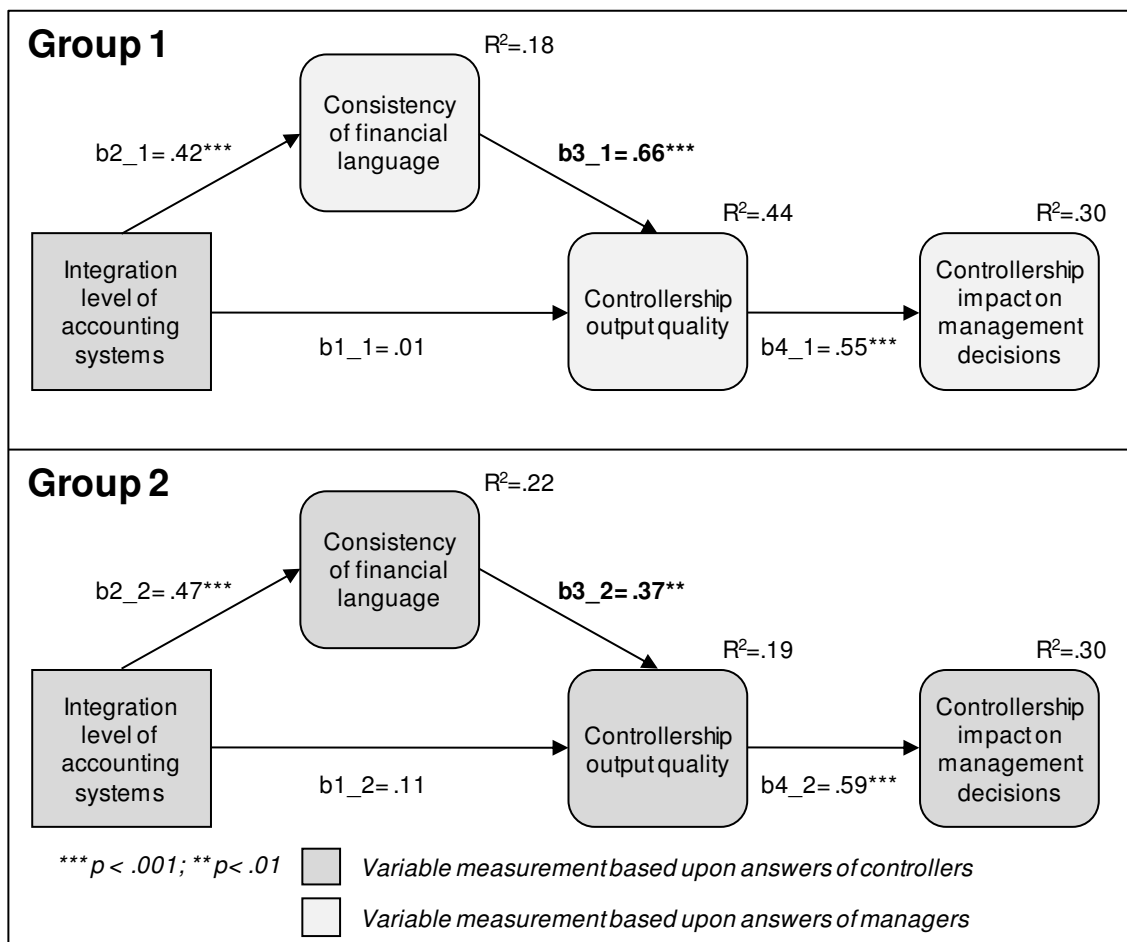


Figure 4: Empirical results of the unconstrained baseline model

Indicators of the model fit are displayed in Table 2 (model A). In a second step, we conduct a series of calculations, in which we constrain pairs of effects across the two groups. For each of the four effect types we conduct a calculation, in which the specific set of effects is constrained to be estimated as equal across the group of the managers and the controllers. For each one of the constrained models we obtain a χ^2 -statistic. The results of these tests for invariance can be seen in Table 2 (models B-D). In order to evaluate whether the group membership operates as a moderating effect we finally

compare the $\Delta\chi^2$ - statistic of the unconstrained baseline model with each of the corresponding values of the four constrained models.

Model	Constraints	χ^2 (df)	$\Delta\chi^2$ (Δ df)	RMSEA	CFI
A	Unconstrained	117.33 (102)	-	.02	.99
B	b1_1=b1_2	117.84 (103)	.51 (1)	.02	.99
C	b2_1=b2_2	117.90 (103)	.57 (1)	.02	.99
D	b3_1=b3_2	124.91 (103)	7.58** (1)	.03	.99
E	b4_1=b4_2	117.67 (103)	.34 (1)	.02	.99

** $p < .01$

Table 2: Tests for invariance of effects

H1 stated that the direct effect between ‘integration level of accounting systems’ and ‘controllershship output quality’ is higher among the group of the controllers than among the group of the managers. This hypothesis is analysed in model B in which we constrain this direct effect to be estimated as equal among the two groups. As can be seen in Table 2, model B shows a $\Delta\chi^2$ -statistic of .51 which is below the critical threshold of 3.84 (significant at 5%-level).¹ This – even modest – deterioration in the model fit cannot be seen as evidence supporting H1. In other words, the assumption that the direct link between ‘integration level of financial language’ and ‘controllershship output quality’ is higher for the group of the controllers than for the group of the managers cannot be confirmed.

In order to analyse H2, which claims that the extent of the indirect link between ‘integration level of accounting systems’ and ‘controllershship output quality’ is lower with the group of the controllers than with the group of the managers, we rely on the models C and D. What demands attention is the value for the $\Delta\chi^2$ -statistic in model D. This constrained model shows a highly significant deterioration of model fit, with a value for $\Delta\chi^2$ above the critical threshold of 6.63 (significant at 1%-level).

¹ Critical values for $\Delta\chi^2$ (gaining 1 df) are as follows: $\Delta\chi^2 \geq 3.84$ ($p < .05$); $\Delta\chi^2 \geq 6.63$ ($p < .01$); $\Delta\chi^2 \geq 10.83$ ($p < .001$).

The null hypothesis of equal effects among the two groups has therefore to be rejected and it can be assumed that group membership has a moderating effect on the link between ‘consistency of financial language’ and ‘controllability output quality’. This indicates that the association between ‘consistent financial language’ and ‘controllability output quality’ differs significantly between the group of the managers and the group of the controllers. As can be seen in Figure 4, the effect between the two variables varies substantially across the two groups in regard to the magnitude of the effect. Managers judge the effect (.66) between the two variables considerably stronger than controllers (.37). So, in the eyes of the controllers, a unified financial language does not seem to be as important for the output quality as in the eyes of the managers. This finding corroborates H2, because controllers judge the extent of an important part of the indirect link between the integration of accounting systems and the controllability output quality lower than the managers.

But as can be seen in model C, H2 is only partly confirmed. The value for the $\Delta\chi^2$ -statistic of this constrained model shows that there is no relevant proof for the existence of a moderating group effect upon the link between ‘integration level of accounting systems’ and ‘consistency of financial language’. As can be seen in Figure 4, the link between the two variables is positive for both groups and does not differ distinctly.

Generally can be stated that although only one path of the indirect effect between the variables ‘integration level of accounting systems’ and ‘controllability output quality’ is significantly different among the two groups, this discrepancy influences the whole indirect effect. The overall magnitude of the indirect effect is .28 for the group of the managers while the magnitude of the indirect effect is .17 for the group of the controllers.

It is remarkable that although both groups realize that an integration of accounting systems helps establishing a unified financial language in the company, the controllers estimate the impact of this common language on the perceived controllability output quality fairly low in comparison to the managers. In our view this is exactly where a preparer-user perception gap becomes visible. For managers the existence of a unified financial language is highly important since it influences their perception of the controllability output quality to a great extent. To them controllers deliver ‘good’ management information when it is in line with the common financial perspective on the organization. In other words, they use information in a conceptual form and

therefore require management information according to this demand. Controllers however are not aware of the extent of this information demand. They recognise the link between a common financial language and the controllership output quality but obviously underestimate it.

6 Conclusion

We show evidence for the existence of a preparer-user perception gap between controllers and managers regarding the use of accounting information. Controllers do not seem to realize to what extent the perceived quality of their work depends on how they succeed in providing the management with conceptual and congruent information.

Diminishing this existing perception gap would be a benefit for both groups. Managers would profit, since the quality of management accounting information they perceive as necessary for the process of decision-making would be augmented. The controllers would profit, since the perception gap dilutes their influence on managerial decision-making. Therefore the reduction of the perception gap would have motivational benefits for the controllers. By supplying information that is in line with the demand of management they can strengthen their role as business advisors and gain a more influential position inside the organization.

This discrepancy between managers and controllers can only be reduced by enhancing communication between the two groups. Managers on the one hand have to make transparent what type of information they use and need. Controllers on the other hand have to dissociate themselves from being pure specialists and have to embrace a broader and hence a more conceptual view on the organization.

Our findings implicate the importance of the systems perspective for future research. The quality and the mechanisms of a system like the accounting system are not to be seen as interdependent from the functional and hierarchical perspective of the evaluator. To catch the full organizational perspective on an existing system one has to analyze the distinct perspectives of the groups involved with the system. Although this is a rather complex and laborious research procedure it offers the chance to construct a holistic image of perceived realities.

Consequently the often criticised key-informant bias has to be seen in a different light. Since there is no unbiased and objective reality the notion that it could be distorted by focussing on a distinct informant has to be reviewed. By accepting and analyzing

subjectivity we can learn more about social reality which consists of the multiplicity of different perspectives.

Appendix

Appendix 1: Summary statistics on the 17 indicators underlying the variable *'integration level of accounting systems'* divided into five sub-indices referring to the main tasks constituting controllership

Indicator	Mean	Std. Dev.
<i>Sub-index: Planning and budgeting</i>		
To which extent is short-term planning and budgeting based on valuation methods in accordance with financial GAAP on top management level? (0 = very low, ..., 5 = very high / N=149)	4.08	1.21
To which extent is valuation within medium-term planning and budgeting based on valuation methods in accordance with financial GAAP on top management level? (0 = very low, ..., 5 = very high / N=147)	4.05	1.22
What is the level of congruence between management control structure and legal structure for planning and budgeting purposes? (0 = very low, ..., 5 = very high / N=149)	3.34	1.44
<i>Sub-index: Reporting</i>		
To which extent are deadlines for management reporting and financial reporting harmonized? (0 = very low, ..., 5 = very high / N=149)	4.28	1.03
How many workdays are required to report monthly financial key performance indicators (KPI) to top management in accordance to financial GAAP? (0 = KPIs are not calculated in accordance with financial GAAP 1 = >20 workdays 2 = 13-20 workdays 3 = 7-12 workdays 4 = 4-6 workdays 5 = 1-3 workdays / N=149)	2.91	1.33
To which extent are imputed or opportunity cost and revenue types used for management control purposes? (reverse coded item) (0 = very high, ..., 5 = very low / N=149)	3.62	1.51
To which extent can single line items/sums in the internal management reports be reconciled with corresponding items in the income statement? (0 = very high, ..., 5 = very low / N=149)	3.86	1.31
To which extent is the internal measure for operating income in accordance with the operating income published in the financial statements? (0 = very low, ..., 5 = very high / N=149)	4.20	1.06

Indicator	Mean	Std. Dev.
<i>Sub-index: Reporting (continued)</i>		
How many adjustments are necessary for reconciling the operating income based on financial GAAP to the financial KPI used for internal management control purposes? (reverse coded item) (0 = >10 adjustments 1 = 8-10 adjustments 2 = 5-7 adjustments 3 = 3-4 adjustments 4 = 1-2 adjustments 5 = 0 adjustments / N=144)	3.44	1.37
To which extent differs the operating income based on financial GAAP in volume from the financial KPI used for internal management control purposes? (reverse coded item) (0 = very high, ..., 5 = very low / N=146)	3.90	1.18
<i>Sub-index: Performance measurement</i>		
To which extent is overall top management compensation based on financial GAAP based profit measures? (0 = very low, ..., 5 = very high / N=148)	3.66	1.30
<i>Sub-index: Accounting information technology design</i>		
In our company, only one set of accounts (books) is used for both financial and management accounting purposes. (0 = definitely false, ..., 5 = definitely true / N=149)	4.16	1.27
In our company exists one or more company-wide accounting databases containing actual and planning data that are used for both financial and management accounting purposes. (0 = definitely false, ..., 5 = definitely true / N=149)	3.83	1.55
In our company, an integrated IT system (e.g., SAP-SEM) is available that provides a basis for both internal management reporting and consolidated financial statements. (0 = definitely false, ..., 5 = definitely true / N=149)	2.66	1.87
<i>Sub-index: Administration of the controlling function</i>		
In our company, management accountants and financial accountants report to the same member of the executive board (0 = definitely false, ..., 5 = definitely true / N=149)	4.72	0.94
In our company, there is a mutual professional exchange between controllers and financial accountants. (0 = definitely false, ..., 5 = definitely true / N=149)	4.03	1.00
In our company, the financial accountants are briefed by controllers on management reporting issues. (0 = definitely false, ..., 5 = definitely true / N=149)	3.83	1.17

Appendix 2: Summary statistics on *items underlying the variable 'consistency of financial language'*

Item	Group	Mean	Std. Dev.
Controllers and financial accountants have the same understanding of business performance. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.78	1.11
	Controller	3.85	1.01
Information provided by the controllers is consistent with accounting information based on financial GAAP. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.46	1.26
	Controller	3.83	1.14
Information provided by controllers and financial accountants adds up to a consistent view on the firm's business. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.88	1.11
	Controller	4.11	0.98

Appendix 3: Summary statistics on *items underlying the variable 'controllership output quality'*

Item	Group	Mean	Std. Dev.
The management reports cover all important fields of business activity. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.94	1.04
	Controller	4.16	0.80
The management information system provided by controllers reflects actual circumstances in a comprehensive and valid fashion. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.90	0.84
	Controller	4.14	0.67
Information provided by controllers is very precise. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.91	0.83
	Controller	3.99	0.76
Information provided by controllers is up-to-date. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.77	1.06
	Controller	3.96	0.79
Information content and explanatory power of management reports are both high. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.78	0.95
	Controller	3.96	0.71

Appendix 4: Summary statistics on *items underlying the variable 'controllership impact on management decisions'*

Item	Group	Mean	Std. Dev.
Controllers play a very important role in the decision-making process of our organization. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.84	0.98
	Controller	3.79	0.84
Management sets a high value on the controllers' opinion in the decision-making process. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.81	0.91
	Controller	3.57	0.93
Controllers have a strong influence on management decisions. (0 = definitely false, ..., 5 = definitely true / N=149)	Manager	3.51	1.00
	Controller	3.32	0.92

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