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**Positivistic Management Accounting Research:
Recent Issues and Future Directions**

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Abstract

The mainstream positivistic approach to management accounting research seeks to provide essentially rational explanations to social phenomena. Reviewing the recent issues in this approach to provide some directions for future research is the main aim of this paper. Various recent issues surrounding the use of this approach in management accounting research have been reviewed in this paper, including the recent debate around empirical positivistic research in management accounting, the sound definition of management accounting constructs, the closure of gap between surveys and case studies in management accounting research, the appropriate use of statistical methods for testing hypotheses in management accounting and the use of graphics to map theory-consistent empirical research. Based on this review, some guidelines and recommendations have been offered.

Keywords: mainstream, positivistic, functionalist, management accounting, empirical, survey, case study, cross-sectional field study

Positivist Management Accounting Research:

Recent Issues and Future Directions

1. Introduction

The functionalist or positivistic approach to management accounting research corresponds to the mainstream or dominant paradigm [1], seeking to provide essentially rational explanations to social phenomena (Ryan et al., 2002; Lukka, 2010; Modell, 2010; Burkerta and Luegb, 2013; Bums et al., 2014; Sponem and Lambert, 2016). Using this approach, management accounting researchers take an independent and objective stance, use standard research instruments such as questionnaires to collect quantitative data, and use statistical techniques to test research hypotheses derived from existing theories in order to possibly deduct universal laws to explain and predict management accounting phenomena. Over the years, different positivistic theories have emerged and used in management accounting literature such as neoclassical economic theory, agency theory, open system theory and contingency theory.

Neo-classical economic theory emerged in the second half of the nineteenth century. It presumes management accounting as a computational decision-making tool that helps maximise the goal of the organisation (Anthony, 1965; Ryan et al., 2002; Smith, 2014). The agency theory of management accounting adopts the core assumptions of neo-classical economics, i.e. utility maximisation and market mechanism. It is concerned with the agency relationship as a contract between a principal (e.g. an owner) and an agent (e.g. a manager). Under this contract, the principal delegates the decision-making authority to the agent, who then takes actions on behalf of the principal (Macintosh, 1994; Baber et al., 2002; Brown et al., 2009; Smith, 2014). The use of open system theory in organisational analysis started flourishing during the 1960s. According to open system approach an organisation is profoundly affected by, dependent upon, and able to adapt to its environment in order to survive. The contingency theory of organisation is based upon this approach and subsequently **management accounting**. The contingency approach to management accounting is based on the premise that there is no universally “best” design for a management accounting system, but it will depend upon the specific circumstances in which an organisation finds itself (Otley, 1980; Chenhall, 2003; Abdel-Kader and Luther, 2008; Woods, 2009; Macinatia and Anessi-Pessinaa, 2014; Al-Mawali, 2015).

This paper aims to review recent issues in the positivistic approach to management accounting research in order to provide directions for future research using this approach. It focuses on the recent debate around empirical positivistic research in management accounting, the sound definition of management accounting constructs, the closure of gap between surveys and case studies in management accounting research, the appropriate use of statistical methods for testing hypotheses in management accounting and the use of graphics to map theory-consistent empirical research. Towards this end, the paper is organized as follows. Section 2 presents an overview of the recent developments in the application of positivistic approach to management accounting phenomena. In Section 3 a discussion and recommendations for future research applying the positivistic approach in the management accounting field are made. Finally, conclusions are drawn in Section 4.

2. Recent Issues in the Positivistic Approach to Management Accounting

This section focuses on reviewing recent developments in the positivistic approach to management accounting research. In order to identify these developments highly ranked

accounting journals (2+) were searched. The selection of relevant accounting journals was taken from the Association of Business Schools (ABS) Journal Quality Guide, which provides guides to relative quality of business and management and economic journals based on peer review, statistical information relating to citation and editorial judgments. This source provided a reasonable number of papers published during 1999-2016 in leading accounting journals (see list in Appendix A). Reviewed studies in this section cover the following areas: 1) the debate on empirical positivistic research in management accounting, 2) the need for a sound conceptual specification of management accounting constructs, 3) critique of the survey method and the attempts to close the gap between surveys and case studies in management accounting research, 4) the appropriateness of statistical methods for testing hypotheses in management accounting research and 5) The use of graphics to map theory-consistent empirical management accounting research

2.1. The debate around empirical positivistic research in management accounting

In 2001, Ittner and Larcker (2001) critically review existing positivistic research in management accounting that uses archival or survey data. They argue that positivistic research in management accounting has failed to accumulate a body of knowledge that builds on prior research studies and has left many important issues unresolved. In his commentary on the work of Ittner and Larcker (2001), Zimmerman (2001) suggests that positivistic management accounting researchers should become more innovative in discovering new interesting data sets and should develop models that rely more on economics-based theory. Hopwood (2002) criticizes Zimmerman (2001) and argues that economics-based theory suffers from many of the same limitations and problems as other social science theories.

Ittner and Larcker (2002) reject Zimmerman's (2001) criticisms and recommend an integrated theoretical framework that combines economics-based and behavioural approaches to explain management accounting practices. Luft and Shields (2002) believe that current research in management accounting is guided by a variety of theoretical frameworks from social sciences such as economics, psychology and sociology that provide more complete explanations of observed management accounting practices. Lukka and Mouritsen (2002) argue for heterogeneity in management accounting research as a monolithic economics-based paradigm would threaten the ability of management accounting research to develop a critical stance.

Malmi and Granlund (2009a) argue that there is a need for developing better theories that are unique to management accounting to explain what kind of management accounting systems we should apply, how, in what circumstances, and how to change them as existing theories largely fail to provide valid support for managers, organizations, and society. Quattrone (2009) criticizes the work of Malmi and Granlund (2009a) because they build their arguments on weak unquestioned assumptions of what is useful to the world of practice. Also, he states that Malmi and Granlund's (2009a) reference to other disciplines is distracting and makes management accounting research irrelevant. In their reply to Quattrone (2009), Malmi and Granlund (2009b) think that management accounting researchers should stop believing that existing theories such as economics-based theories, contingency theory and social theories, etc provide solutions for current and future challenges facing the management accounting field.

Baldvinsdottir et al. (2010) argue that practical learning from management accounting research has been missing. Helden et al. (2010) conclude that mutual influences between

consultants and researchers are limited. Lukka (2010) criticizes what is perceived to be the increasing narrowness of mainstream management accounting research and argues for keeping paradigm debates alive. Merchant (2010) criticizes the dominance of empirical tests of economics-based models and argues that the narrow focus on positivistic topic areas results in the loss of diversity in research topics and methods. Malmi (2010) argues for multi-paradigm openness and new ways forward beyond homogeneity of paradigms. Modell (2010) also finds his crossparadigm work very challenging and is worried about the high barriers between paradigms. Bums et al. (2014) debate diversity in management accounting research. They conclude that non-US academics use diverse theories, paradigms and methods but the US academic environment fosters a narrow view of management accounting research based on economic theories.

2.2. The need for a sound conceptual specification of management accounting constructs

Developing strong conceptual foundations for management accounting constructs is required prior to operationalizing these constructs and prior to analysing relationships between them. Based on Libby et al.'s (2002) predictive validity framework, Bisbe et al. (2007) concentrate on some construct validity issues relating to the sound conceptual specification of management accounting constructs used in theory-based quantitative research. They address two main issues: 1) the definition of the meaning and domain of management accounting constructs, and 2) the explicit choice and conceptual justification of the nature and direction of the relationships between **management** accounting constructs, their dimensions and the observable indicators. As far as the first issue is concerned, Bisbe et al. (2007) emphasize that a clear definition of the meaning (i.e. specifying its indicators or dimensions) and domain (i.e. what is included in its meaning) of a management accounting construct is more important in the case of practice-based constructs, where there is high potential ambiguity, than in the case of theory-based constructs.

Regarding the second issue, Bisbe et al. (2007) distinguish between two types of relationships between constructs and indicators. The first type is the reflective model in which indicators are reflections or manifestations of underlying constructs. The second type is the formative model in which indicators are constitutive facets of a construct. They argue that inappropriate choices of the nature and direction of the relationships between constructs and their indicators have undesirable consequences on the operationalization of variables, leading to severely biased estimates and severely flawed conclusions. To illustrate these issues, Simons' (1995) interactive control systems have been used as a construct of interest. The review of the conceptual foundations of interactive control systems' construct reveal that it should be modelled as an emergent multidimensional construct formed from its constitutive dimensions.

Tessiera and Otley (2012) argue that the management control literature has been criticised as it has ill-defined concepts. They use methods of concept analysis to identify ambiguities and the positive and negative dimensions of control. They propose a solution to improve concept definitions or to clarify the relationship between concepts. Hamann et al. (2013) focus on organisational performance as a fundamental construct that consists of three dimensions: accounting returns, growth and stock market performance. They test the construct validity of indicators of these dimensions on a sample of 4,868 listed US firms from 1990 to 2010. They provide evidence of four organisational performance dimensions:

stock market performance, growth, profitability and liquidity. Trumpp et al. (2015) find a great deal of disagreement regarding the definition, conceptualisation and adequate measurement of corporate environmental performance. They integrate the available literature on corporate environmental performance to derive a theoretically sound framework of this construct. They test the construct validity of corporate environmental performance using a sample of 706 firms. Their results provide evidence for multidimensional nature of this construct.

2. 3. Critique of the survey method and the attempts to close the gap between surveys and case studies in management accounting research

Using Diamond's (2000) legal framework containing the five key categories of a well-designed survey, Van der Stede et al. (2005) assesses the quality of 130 studies using mail surveys in management accounting published in eight leading accounting journals over the period 1982-2001. The framework used consists of: 1) survey purpose (**description** vs. **explanation**) and design of the survey (longitudinal and cross-sectional designs and the level of analysis), 2) population definition (the survey population, the target population and external validity) and sampling (probability and non-probability samples and sample size), 3) survey questions and other research method issues (design or internal validity), 4) accuracy of data entry, and 5) disclosure and reporting. The study's findings indicate that theory testing or explanation is the dominant form of survey studies in management accounting (89% of the articles in the sample). Cross-sectional designs are used in 98% of these studies.

Most survey studies that focus on an organizational level analysis tend to use very few respondents in each organization, which weakens the validity of the study. 96% of the articles in the sample do not report a target population. 71% use some sort of a convenience sample, which lacks explicit sampling procedures. Only 30% of the articles pre-tested their survey instruments. The average response rate in management accounting is 55%. Only 25% of the articles use some sort of follow-up to increase response rates. Because of length limitations, the details of the actual survey data collection process are not included in academic publications. Overall, findings reveal that over time survey studies in management accounting have improved but the quality of survey data as well as the data collection process in management accounting is still weak. Duplicating the survey procedures used in other articles precludes innovation and improvements in the use of survey method. Van der Stede et al. (2005) recommend that management accounting researchers should devote more effort to studying the fundamental principles of the survey method and apply them accordingly.

Survey studies in management accounting generally aim at theory testing while case studies generally aim at theory development as well as some refinements or modifications of existing theories. Modell (2005) focuses on method triangulation by combining case study and survey methods in management accounting research in order to enhance internal, external and construct validities within the positivistic approach. He classifies the studies that use triangulation between survey and case study methods into three categories: 1) primarily theory testing, 2) primarily theory development, and 3) balanced emphasis on theory testing and development. The studies primarily aiming at theory testing use triangulation as a means of external and construct validation to replicate existing theory. In this category, the qualitative case study method is mainly used in the early stages of research to introduce some modifications of a prior theory depending on context-specific

factors. Examples of studies using this approach are Merchant (1990), Chow et al. (1996), Hoque and Hopper (1997) and Alam (1997).

By contrast, where theory development dominates, triangulation efforts tend towards internal validation to extend existing theory based on elaborating alternative or complementary explanations of unexpected or inclusive survey findings. In this case, the qualitative case study method is mainly used after the survey to invoke qualitatively informed explanations. Examples of studies using this approach are Covaleski and Dirsmith (1983) and Modell and Lee (2001). The last group of studies that uses multiple iterations between case study and survey methods within an evolving or established research programme and relies on a more balanced emphasis on theory testing and development tends towards using method triangulation for addressing internal validation pertaining to both converging and diverging findings. This contributes to a wide range of external validation through combining elements of both theory replication and theory extension. Examples of these studies are Anderson (1995), Anderson and Young (1999, 2001) and Anderson et al. (2002).

Lillis and Mundy's (2005) study aims at regenerating interest in a cross-sectional field study method, which lies somewhere between in-depth cases and broad-based surveys. This method is less structured in its data collection than the survey method and involves shorter, less intensive data collection on site than the case study method. It draws on a larger number of observations than the case study method, but deals with more complex 'how' and 'why' questions than the survey method to uncover reasons that might explain unsolved conflicting findings in prior studies. In the cross-field study method, the complexity of the phenomena being investigated and the importance of contextual issues are reduced to provide qualitative insights of relatively limited depth on issues of relatively limited complexity. The distinguishing attributes of a cross-sectional field study design include sampling logic, research instruments and data analysis protocol.

The approach to sampling in the cross-sectional field study method is mainly based on the use of dimensional sampling, in which the dimensions or variables of interest are pre-specified and then used as a sampling frame to select a small number of cases from the relevant population. In the cross-sectional field study method, the domain of observables should be systematically defined in the context of existing theory by clearly establishing the specific constructs and their relations. The quantitative data analysis is of relatively little value because of the limited number of data collected. Thus collected data is qualitatively analysed, i.e. time-ordered, role-ordered or thematic, to provide the critical link back to existing theory. The cross-sectional approach is particularly suitable when existing theory may not capture important aspects of the phenomena under study or there is some doubt about the definition and measurement of significant variables, their interpretation or their relationships. It can contribute to theory refinement. Mainstream examples using this research method include Merchant and Manzoni (1989), Bruns and McKinnon (1993) and Abernethy and Lillis (1995).

Modell (2009) defends the notion of triangulation as a key component of mixed methods research straddling between the functionalist and interpretive paradigms in management accounting, especially where this entails integration of theories and/or methods rooted in different philosophical assumptions (or paradigms). Modell (2010) discusses the role of mixed methods research in management accounting to help management accounting researchers bridge the divide between the economics-based, functionalist 'mainstream'

and 'alternative' interpretive and critical paradigms. Grafton et al. (2011) review a diverse range of management accounting studies that adopt mixed methods research. They identify a range of opportunities and challenges in conducting mixed methods research.

2.4. The appropriateness of statistical methods for testing hypotheses in management accounting research

Hartmann and Moers (1999) evaluate the use of moderated regression analysis in management accounting research studying the behavioural and organizational effects of budgeting over the last two decades. This statistical technique is mainly used to test the hypotheses derived from contingency theory that predict the interaction effects between budgetary and contingency variables, a specific type of contingency fit called the interaction type of fit. The application and interpretation of this technique in 28 budgetary research papers are analysed. The results of this analysis indicate that the use of moderated regression analysis in the papers reviewed is seriously flawed due to the lack of knowledge with its requirements and assumptions as well as the uncritical application of this technique.

Hartmann and Moers (1999) identify six types of errors in using moderated regression analysis in budgetary research. Firstly, the format of statistical test used in the papers reviewed does not conform to the hypothesis tested. Secondly, the budgetary research reviewed incorrectly uses tests for interactions of the strength type when the hypothesis refers to interactions of the form type. Thirdly, there is misinterpretation of main effects. Fourthly, there is misspecification of moderated regression equation. Fifthly, the studies reviewed faultily use higher-order interactions to test lower-order interactions. Lastly, there are incorrect conclusions about effect sizes from moderated regression analysis. The findings of Hartmann and Moers' (1999) study reveal that only one paper of the 28 papers reviewed is free from the above errors. These problems seriously affect the interpretation and conclusions of budgetary research.

Dunk (2003) critically reflects on the work of Hartmann and Moers (1999). He argues that they may be overstated their concerns for the integrity of budgetary research.

Dunk claims that they are not able to suggest how to develop a 'true' contingency theory. Hartmann and Moers (2003) provide a reaction to arguments put forward by Dunk (2003). They believe that Dunk (2003) sketches a more positive picture of the use of moderated regression analysis in behavioural budgeting research and has not put forward a single argument that requires restating their conclusions regarding many of the errors found in the application of moderated regression analysis in budgetary research. They invite Dunk to reanalyse their original data to address their concerns raised.

Gerdin and Greve (2004) provide a classificatory framework for different forms of contingency fit to overcome some shortcomings of contingency-based management accounting research that have led to a fragmentary and contradictory contingency theory. They differentiate between different forms of fit between context and structure. The first distinction is between a Cartesian approach and configuration approach. According to the Cartesian approach that takes a reductionistic view, fit is a continuum, where organizations frequently make small movements from one state of fit to another. By contrast, the configuration approach takes a holistic view, where only a few states of fit exist and organizations have to make quantum jumps from one state of fit to another.

The second distinction is between a congruence approach and a contingency approach. With a congruence approach, it is assumed that only the best-performing organizations

survive. Thus, the researcher studies the nature of context-structure relationships without paying attention to performance. The contingency approach assumes that organizations have different degrees of fit. Hence, a higher degree of fit is associated with a higher performance. 10 papers in the area of strategy-management accounting systems are reviewed. Findings show that different forms of fit have been used in the literature reviewed. However, very few of reviewed papers have fully acknowledged the difficulties of relating different conceptualizations of fit to each other. Gerdin and Greve (2004) conclude that some researchers incorrectly claim that their results are contradictory or are strongly supported by other previous studies when this is not necessarily the case.

Gerdin and Greve (2008) extend their work above by examining appropriate statistical technique(s) for each form of fit. Many various statistical techniques have been used to. Conceptualize fit between context and structure in management accounting literature. These include difference in means, bivariate correlation, difference in coefficients (strength and form), linear regression coefficients and an indirect path coefficient. Results indicate that some statistical techniques are only appropriate in cases where theory predict interaction effects in general while others are only appropriate when theory specifies a more precise functional form of interaction.

Burkert et al. (2014) critically discuss forms of fit in management accounting research' highlighting forms of fit that have not appeared in prior overview articles, mainly matching fit with hetero-performance and/or asymmetric effects of mis-fit on performance. They also re-evaluate the appropriateness of statistical techniques used to test sub-forms of fit. They present polynomial regression analysis in conjunction with the response surface methodology to differentiate between the sub-forms of fit, discussing the strengths and weaknesses of structural equation modelling to test for forms of fit.

2.5. The use of graphics to map theory-consistent empirical management accounting research

Luft and Shields' (2003) study relates different streams of management accounting research to identify the degree of knowledge accumulation in management accounting literature. Trying to capture the natural links and to avoid artifactual connections, Luft and Shields (2003) develop graphic representations of theory-consistent evidence about the causes and effects of management accounting in 275 articles in six leading accounting journals. The maps provide answers to three main questions about each study: 1) what has been researched (sets of variables included), 2) the direction and shape of the explanatory relationships proposed (the causal model), and 3) the levels of analysis (individual, organizational subunit, organization or beyond-organization). The causes and effects of management accounting have been identified in nine diverse streams of research, namely budgeting at the individual level, budgeting at the organization and subunit levels, information for planning and control, implementation of management accounting change, performance measures and incentives, contracting and control, individual judgements and decisions, management accounting in its historical and social context, and organizational change processes and the relation of financial and operational realities.

Using the maps to represent the nine streams of research in management accounting, Luft and Shields (2006) have identified variables with partially shared meanings, conflicts among different causal models linking similar variables and relationships among variables at different levels of analysis. These ways are useful to identify valid connections and disconnects. Based on their analysis, Luft and Shields (2006) conclude that research has

not yet provided a complete and valid explanation of management accounting and its effects. They provide 17 guidelines to aid management accounting researchers in building such an explanation by identifying more of the natural links and eliminating artificial links within and across the diverse streams of management accounting research.

Using Luft and Shields' (2003; 2006) maps, a number of management accounting researchers review various management accounting areas (e.g. Caglio and Ditillo, 2008; Berry et al., 2009; Granlund, 2011). Caglio and Ditillo (2008) review and discuss the theoretical and empirical literature on management control in inter-firm contexts by organising contributions into control archetypes, management control mechanisms and cost and accounting controls. Berry et al. (2009) identify emerging themes in management control, mainly decision making for strategic control, performance management for strategic control, control models for performance management and measurement, management control and new forms of organisation, control and risk, culture and control and practice and theory. Granlund (2011) discusses the status of research on the interface between management accounting and information technology.

3. Discussion and directions for future research using the Positivist Approach to Management Accounting

In the previous section recent developments in the positivistic approach to management accounting has been reviewed. Several suggestions for future research can be identified on the basis of the studies reviewed. Rather than developing a comprehensive list of future directions, this section will draw attention to a limited number of future directions. These directions have been classified into the same categories used in Section 3 above. Figure (1) outlines the relationship between theory testing and development that forms the basis for future research directions.

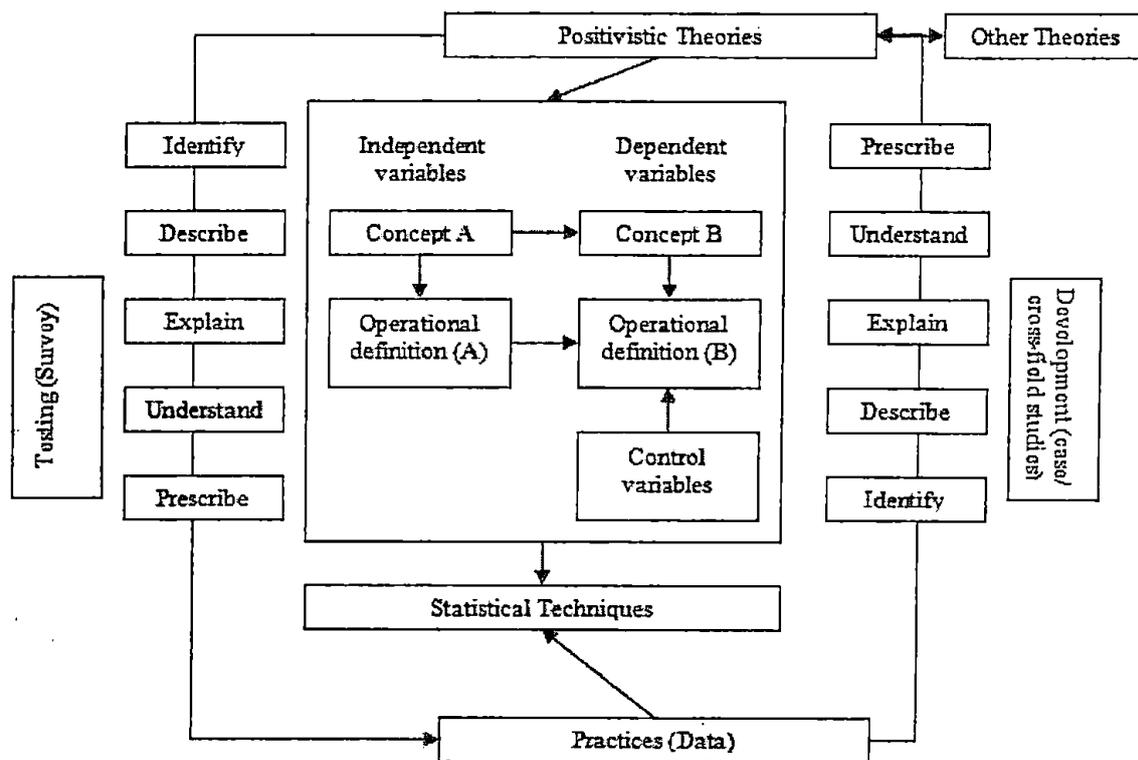


Figure (1): positivistic theory testing and development

3.1. The debate on empirical positivistic research in management accounting

There are increasing pressures on positivistic research in management accounting to carefully re-consider its theories and try to establish links with other theories and

paradigms as well as practices. This debate suggests various alternative solutions such as single economics-based theory vs. multiple theories from different disciplines, and importing theories from other disciplines vs. building unique management accounting theories. Zimmerman (2001) argues for a single economics-based solution. Other management accounting researchers argue for diversity in theories, within the positivistic paradigm or even from alternative paradigms, informing management accounting research (Hopwood, 2002; Ittner and Larcker, 2002; Luft and Shields, 2002; Lukka and Mouritsen, 2002; Lukka, 2010; Merchant, 2010; Modell, 2010; Bums et al., 2014). Malmi and Granlund (2009a, 2009b) and Malmi (2010) suggest the development of unique management accounting theories. Other management accounting researchers encourage the use of theories from other social sciences to explain management accounting practices (Hopwood, 2002; Ittner and Larcker, 2002; Luft and Shields, 2002; Lukka and Mouritsen, 2002; Lukka, 2010; Merchant, 2010; Modell, 2010; Bums et al., 2014). Future positivistic research in management accounting should be aware of these alternatives when testing or developing their theories.

Another issue that future positivistic management accounting researchers should take into account is the contributions of their research findings to practice. In this regard, Baldvinsdottir et al. (2010) describe the key stages in empirical management accounting research, namely identification, description, explanation, understanding and prescription. The last stage is the most important stage in linking research to practice. The production of research that is seen as 'applied' should provide prescriptions for practitioners. Baldvinsdottir et al. (2010) and Mami and Granlund (2009a) recommend the use of innovative action research to solve practical problems with practitioners and use the novel solutions suggested to create theories useful for practice.

3.2. The need for a sound conceptual specification of management accounting constructs

Bisbe et al. (2007) provide clear guidelines for future quantitative management accounting research employing survey-based methods in order to improve the conceptual specification of management accounting constructs. The exact meaning of a construct should be specified and the relationship between the construct and its indicators should be clearly justified. While Bisbe et al. (2007) focus mainly on some construct validity issues regarding the sound conceptual specification of a construct, the predictive validity framework of Libby et al. (2002) covers other validity issues, which are important when developing and testing theory-based hypotheses. Management accounting researchers are encouraged to read both articles to have a more complete picture of validity issues surrounding hypotheses development and testing. Other management accounting researchers use these guidelines to enhance the conceptual specification of management accounting constructs (see for example, Tessiera and Otley, 2012; Hamann et al., 2013; Trumpp et al., 2015).

3.3. The attempts to close the gap between surveys and case studies in management accounting research

Management accounting research often encounters severe problems in the collection of data. The survey method used by positivistic management accounting researchers to test extant theories is the most heavily criticized research method. Van der Stede et al. (2005), Modell (2005; 2009; 2010), Lillis and Mundy (2005) and Grafton et al. (2011) provide some innovative ways to reduce the perceived drawbacks of using the survey method. The

key elements of the framework used by Van der Stede et al. (2005) can be used in future positivistic management accounting survey designs to improve the quality and credibility of survey data by ensuring the adherence to the fundamental principles of survey design and administration.

A way of enhancing external and construct validation is to use the case study method before the survey to modify extant theory by introducing context-specific factors (Modell, 2005). This approach is mainly useful when testing existing theory in a new context. To extend and refine existing theory, Modell (2005) recommends the use of the case study method after the survey while Lillis and Mundy (2005) suggest the use of the cross-sectional field study method. The use of these approaches can improve internal validity. There is a high potential of the survey followed by a case study or a cross-sectional field study to make real contributions to management accounting research by providing some answers to unexpected or conflicting survey findings. Other management accounting researchers suggest the use of mixed methods research integrating theories and/or methods rooted in different research paradigms. Positivistic researchers are encouraged to use these innovative approaches in their future research to tackle existing problems in using surveys in management accounting.

3.4. The appropriateness of statistical methods for testing hypotheses in management accounting research

The use of statistical techniques has become a cornerstone in positivistic management accounting research. Additional care should be exercised when linking substantive theory to statistical tests. Hartmann and Moers (1999, 2003) highlight some severe problems in using moderated regression analysis in budgetary research informed by contingency theory. No arguments can justify the misuse of this complex technique. Future positivistic management accounting research should avoid the flaws identified by Hartmann and Moers (1999, 2003) when applying moderated regression analysis.

Gerdin and Greve (2004) identify various concepts of fit between context and structure, Cartesian vs. configuration and congruence vs. contingency, that make the comparison between the results of studies using different forms of fit incorrect as these approaches are incompatible. Future positivistic management accounting research should acknowledge the differences between different forms of fit and make reference to existing literature within each form of fit. Following the recommendations of Gerdin and Greve (2008) and Burkert et al. (2014), management accounting researchers should use statistical techniques whose functional form is precise enough to be able to differentiate between the different concepts of fit.

3.5. The use of graphics to map theory-consistent empirical management accounting research

The guidelines recommended by Luft and Shields (2003; 2006) should be followed in future positivistic management **accounting research** to completely and validly explain management accounting practices. The use of maps to represent theory-consistent evidence about the causes and effects of management accounting is a valuable tool that provides a compact visual overview of empirical management accounting research. Future positivistic research in management accounting should use this tool to identify the degree of knowledge accumulation in each area of management accounting research and address unresolved issues (see for example, Caglio and Ditillo, 2008; Berry et al., 2009; Granlund, 2011).

4. Conclusion

The objective of this paper has been to review recent developments in the positivistic approach to management accounting research to recommend some guidelines and directions for future research. To achieve this aim, the paper has covered the recent debate around empirical positivistic research in management accounting, the sound definition of management accounting constructs, the closure of gap between surveys and case studies in management accounting research, the appropriate use of statistical methods for testing hypotheses in management accounting and the use of graphics to map theory-consistent empirical research. The debate around the unsatisfactory state of empirical positivistic management accounting research has resulted in offering various future solutions and directions for the theorization of management accounting research, including the sole reliance on economics-based theory, the diverse use of wide range of theories from different disciplines, importing theories from other disciplines or building unique management accounting theories.

The use of soundly specified management accounting constructs is another important issue that has been highlighted in this paper. The exact meaning of a construct should be specified and the relationship between the construct and its indicators should be clearly justified. The paper has also focused on the efforts to close the gap between surveys and case studies. Various ways have been offered for future research: cross-sectional field studies, method triangulation between case study and survey methods and mixed methods research. The faulty use of moderated regression analysis and other statistical techniques, another issue covered by this paper, has raised some concerns on the appropriate use of these techniques to test hypotheses in future research. The last issue discussed in this paper is the useful tool of mapping theory-consistent evidence to distinguish between valid connections and artifactual links.

Footnotes

[1] The term paradigm was introduced by Kuhn (1962: viii) to refer to ‘universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners’. It provides ‘a framework including an accepted set of theories, methods and ways of defining data’ (Hussey and Hussey, 1997:47).

Appendix (A): List of Journals Reviewed

The British Accounting Review; Accounting, Organizations and Society; Management Accounting Research; Journal of Management Accounting Research; The Accounting Review; The European Accounting Review; Accounting and Business Research; Journal of Accounting and Economics; Financial Accountability Management; Harvard Business Review; Advances in Management Accounting; Research Journal of Finance and Accounting; Health Policy; Organizational Research Methods; Journal of Business Ethics; Qualitative Research in Accounting & Management; International Journal of Accounting Information Systems; Handbooks of Management Accounting Research.

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