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The impact of contingencies on management accounting system development

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Four hypotheses relevant to the contingency theory of management accounting are presented. Data relate to the period 1994–98 for a sample of new Scottish microfirms. First, correlation analysis is applied to test the hypothesis that the introduction of management accounting system (MAS) developments is related to the timing of contingent events such as cashflow crises, shortfalls of finance, and innovation. Second, cluster analysis is used to test the hypothesis that contingencies cluster to form three configurations of small firms, adaptive, running blind, and stagnant. Third, regression analysis is used to test the hypothesis that an index of organizational form, measured by weighted headcount, is explained by aspects of the generic contingencies, technological uncertainty, production systems, business strategy and market environment. The fourth hypothesis is that MAS complexity is determined by sub-unit interdependence, market dynamics, and work methods. The four hypotheses tested support several aspects of contingency theory, as modified to a small firms context.

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1. Introduction

The focus of this paper is on management accounting system (MAS) design and use. The theoretical framework adopted is that of the contingency theory of management accounting. This would see organizational strategy and aims, technology, organizational structure and management style as impinging on MAS development. In turn, these are conditioned by the organization, technological

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environment, the parent company (if relevant) and market conditions, respectively (see Mitchell *et al.*, 2000). The approach that is adopted uses data from a sample of small firms, gathered by face-to-face interviews. Parts of the administered questionnaire instrument used were specifically cast within the framework of the contingency theory of management accounting. This theory suggests that there is no ideal form for a MAS. Rather, particular circumstances, or contingencies, dictate the best choice of MAS in each particular circumstance. These contingencies are usually classified as the environment, organizational structure, and technology (see Emmanuel *et al.*, 1990). Substantive hypotheses arising from the contingency framework are investigated, using correlation, cluster and regression analysis.

The structure of this paper is as follows. First, the elements of the contingency theory of management accounting are outlined. Those aspects of contingency theory that lend themselves to statistical testing are emphasized. Second, the design and principal features of the small firms database on which the testing is undertaken are examined. Briefly, the sample is of 150 new business starts in Scotland, where data were obtained by face-to-face interviews. Third, correlation, cluster and regression analysis are used to test hypotheses on the data within a contingency theory of management accounting framework. The correlation analysis relates the occurrence of contingencies to subsequent MAS development. The cluster analysis identifies three classes of firm types, which are shaped by contingencies. These can be related to the empirical analysis of three firm archetypes by Miller (1975). The regression analysis tests two hypotheses, on the determinants of organizational form, and on the determinants of MAS complexity.

The general conclusions reached are as follows. (a) The timing of specific contingent events, with variable lags, tends to be positively associated with the timing of adaptations to a small firm's management accounting system (MAS). (b) Cluster analysis separates the data into three firm types, similar to the archetypal organizations identified by Miller (1975). (c) The organizational form of the small firm, as measured by a type of weighted headcount, is explained by contingencies under the generic headings of technological uncertainty, production systems, business strategy and market environment (see Gordon and Miller, 1976). (d) The complexity of the MAS is explained by sub-unit interdependence, market dynamics, and work methods. Thus, evidence is found to support specific aspects of the contingency theory of management accounting, suitably adapted to a small firms context.

2. Contingency theory

The contemporary contingency theory of management accounting has the limited aim of explaining how particular circumstances (that is, contingencies) shape the form of the MAS. However, the earliest versions of contingency theory had broader aims of explaining the form of the organization itself. A notable transitional work by Gordon and Miller (1976, Figure 1, p. 59), links the narrower concept of today, with the broader concept of yesterday. They argue that the MAS is the most essential feature of the organization, and indeed treat it as an 'objectification' of the organization, in the sense that it provides a coherent picture of what the organization looks like. They then show, using a flowchart, how the MAS can both influence and

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