

Untangling the value of information scope: An investigation in retail pharmacies

JENNIFER L HARRISON

Senior Lecturer, Faculty of Business, Southern Cross University – Tweed Gold Coast Campus, Tweed Heads NSW, Australia

ABSTRACT

This research investigates whether the importance of information scope for decision making mediates the relations between dimensions of strategic orientation, perceived environmental uncertainty (PEU) and organisational effectiveness in the retail pharmacy industry. Data from a survey of NSW pharmacies was analysed using structural equation modelling. Although two dimensions of strategic orientation – product-market development and market scope – were positively associated with information scope, the direct organisational benefits and mediating role of broad scope information were disconfirmed and no link between information scope and PEU was found. The results suggest the need for rethinking theoretical models of information scope. Implications for retail pharmacies and organisations interested in the effectiveness of those businesses are discussed.

Keywords: information systems, environmental uncertainty, strategic orientation, pharmacies.

Information is a key resource for organisations (Levitin & Redman 1998), forming the basis for corrective and preventative actions designed to improve organisational performance (Otley 1999). Designing effective systems for providing this information clearly depends, *inter alia*, on identifying what information is needed by managers (Ashill & Jobber 2001). Research has approached this issue by focusing on the specification of information characteristics (for example, Gordon, Larcker & Tuggle 1978; Gorry & Scott Morton 1971) and determining which characteristics are important for decision making, under what situations and with what impacts (for example, Bowens & Abernethy 2000; Chenhall & Morris 1986; Gaidiene & Skyrius 2006; Larker 1981; Mangaliso 1995).

One of the key characteristics that has emerged from this research is information scope, which refers to the breadth of information in terms of its focus, quantification and time horizon (for example, Ashill & Jobber 2001; Boulianne 2007; Chenhall & Morris 1986; Gordon & Narayanan 1984; Larcker 1981). In contrast to the traditional information found predominately in accounting systems, broad scope information is externally focused, future-orientated and non-financial in nature (Chenhall & Morris 1986). Broad scope information covers the environment beyond the boundaries of the organisation, considers performance indicators beyond traditional accounting numbers, and looks to the future rather than the past. It includes information, for

example, on customer preferences, employee attitudes and competitive threats.

Strategy and perceived environmental uncertainty (PEU) have emerged as central variables driving the need for broad scope information and linked ultimately to organisational effectiveness (Abernethy & Guthrie 1994; Boulianne 2007; Chenhall & Morris 1986; Chong & Chong 1997; Gordon & Narayanan 1984; Mangaliso 1995; Mia 1993). Both strategy and PEU define elements of the context in which a firm operates and so help shape the characteristics of information that will be most useful for decision-making in that context. To the extent that firms make use of information that matches the needs dictated by strategy and PEU, it is argued that effectiveness will be improved. The literature, therefore, suggests a mediating role for information scope in converting strategies and uncertainties into superior decisions that increase organisational effectiveness. However, research to date in this area has focused primarily on large manufacturing firms, with firms in other contexts receiving relatively little attention. This is despite the importance of service industries in Western economies and the dominance of small firms (Lowry 1990). Research is necessary for a better understanding of the information that is important to decision makers in these other contexts. Further, and perhaps more importantly, research needs to begin exploring any limits to the generalisability of the theories and findings in this area (Lindsay 1995).

The present study aims to address the imbalance in the literature by considering whether the perceived importance of information scope for decision-making mediates the relations between PEU, dimensions of strategic orientation, and organisational effectiveness in the context of the retail pharmacy industry in Australia. This industry currently faces a number of strategic opportunities and threats that make it an interesting case study for examining the effects of broadening the information used in decision-making and its linkages with adopted strategic orientations and levels of uncertainty perceived by the owner-manager. Currently,

the industry is partially regulated with State government regulations limiting ownership and the geographic dispersion of pharmacies and Federal government laws restricting price competition for medicines subsidised under the Pharmaceutical Benefits Scheme (PBS). However, continuation of this status is uncertain due to pressures from free trade arrangements, competition policy reform, on-line pharmaceutical services and the interest of large supermarkets in gaining a share of the market in prescription drugs. Front-shop (non-dispensary) retail activities represent an area of potential growth for pharmacies but this puts them in direct competition with supermarket chains and other providers of similar products and services. Banner group membership is a further avenue for opportunities, with banner groups providing 'brand' positioning and a variety of business development services.

THEORETICAL FRAMEWORK

Decision making using information from management accounting and information systems is viewed as an intervening mechanism between an organisation's context and its effectiveness (Otley 1980). The present study examines this assertion by developing a model and empirically testing the extent to which the importance of information scope for decision making (hereafter, importance of information scope) assists in translating uncertainties and strategies into organisational effectiveness. In developing the theoretical framework for the study, several potential links between study constructs are addressed. First, the potential link between PEU and the importance of information scope is examined. Second, potential links between the importance of information scope and several dimensions of strategic orientation are considered. Finally, the consequences for organisational effectiveness of the aforementioned links are assessed.

The link between PEU and information scope

PEU has been defined as a 'strategic-level variable pertaining to top management's perceptions of uncertainties in the external

environment' (Tymon, Stout & Shaw 1998: 23). The term 'uncertainty' in PEU has been defined by Milliken (1987: 136) as 'an individual's perceived inability to predict something accurately'. In uncertain environments, planning is made difficult due to the unpredictability of future events and more information is needed to help managers understand situations and make decisions (Chenhall & Morris 1986; Mia 1993). Since the environment is the source of uncertainty, additional information about that environment is required (Chenhall & Morris 1986). It follows that this information is likely to be externally based, future-oriented and, since uncertainty may reduce the ability to quantify the environment and its effects on the organisation, qualitative (Ewusi-Mensah 1981).

Despite this, lack of resources in smaller firms (such as the majority of retail pharmacies) may mean that broad scope information is not sought out to deal with uncertainty. Instead owner/managers may rely on intuition and heuristics (Simon 1987) so that satisficing is the more normal mode of decision making in these firms. In addition to lack of resources, highly centralised power can make information overload a potential problem (Gordon & Miller 1976). This again suggests that intuition may be relied upon, rather than seeking out broad scope information. However, a number of studies of manufacturing firms have found that greater PEU is associated with greater importance and usefulness of information scope in making organisational decisions (Gordon & Narayanan 1984; Chenhall & Morris 1986; Chong & Chong 1997; Mangaliso 1995; Mia 1993). This evidence is in line with the arguments above that broad scope information helps managers better understand their situations and is therefore more valuable when PEU is high. Therefore, the following hypothesis is tested:

Hypothesis 1: The importance of information scope is positively associated with PEU.

Links between dimensions of strategic orientation and information scope

As explained in review articles by Kald, Nilsson and Rapp (2000) and Langfield-Smith (1997), there has been burgeoning interest in the link between strategy and management information systems in recent years. Within that literature, it has been proposed that firms need to align their information systems with their strategy in order to achieve competitive advantage (Kald et al. 2000; Kaplan & Norton 1992; Simons 1987). Key studies of strategy and information scope have conceptualised strategy using Miles and Snow's (1978) typology (Abernethy & Guthrie 1994; Boulianne 2007; Chong & Chong 1997). The present study also relies on this typology, focusing on the dimensions of strategic orientation implicit within Miles and Snow's (1978) theory. These dimensions are product-market development, focus on efficiency, market scope and futurity (Doty, Glick & Huber 1993), each being relevant to the description of Miles and Snow's (1978) prospectors, defenders and analysers.

Product-market development closely matches Venkatraman's (1989) proactiveness dimension of strategic orientation and reflects continuous search for opportunities and experimentation with responses to environmental changes. Interpretation of Miles and Snow's (1978) theory deems orientation towards product-market development as the most distinguishing feature amongst the three ideal types of prospectors, analysers and defenders (Segev 1989). There is some evidence to suggest that broad scope information is most relevant to prospectors (Chong & Chong 1997; Guiding 1999; Simons 1987), who emphasise product-market development. Longitudinal research on family firms has also found that the importance of information scope increases as innovation increases (Craig, Cassar & Moores 2006). For pharmacies, this broad-scope information might be related to new products and services on offer in the market or being developed by suppliers and competitors. It may

also be related to potential future developments and predictions related to customer needs.

Hypothesis 2a: The importance of information scope is positively associated with product-market development.

Focus on efficiency reflects an emphasis on the development of efficient operations that enable lower cost positioning within the market (Porter 1980) and is manifested in timely provision of goods and services along with the provision of low cost products and services (Doty et al. 1993). It is also a dimension clearly distinguishing Miles and Snow's (1978) defenders from other types because defenders 'devote primary attention to improving the efficiency of their existing operations' (Miles & Snow 1978: 29). There are two completing lines of thought in the literature about defenders' information needs. One line of thought has suggested that defenders would find internal, financial and historical information more important than broad scope information (Abernethy & Guthrie 1994; Simons 1990). However, Boulianne (2007) reviews and presents recent research that shows a change in defenders' information needs to include more external, non-financial and future-oriented information suggesting a higher importance for information scope. These competing arguments, therefore, suggest there will be no clear association between the importance of information scope and focus on efficiency. While some firms focusing on efficiency may find information scope relevant to their needs, others will rely more on traditional internal, financial information. Therefore, no association between the importance of information scope and focus on efficiency is hypothesised.

Futurity concerns 'the notion of organizational preparedness for, and positioning in, future environmental situations' (Morgan & Strong 1997: 1057) and is manifested in an emphasis on formal, detailed forecasting and planning (Doty et al. 1993). Given the pressures for change occurring in the retail pharmacy industry in recent

years, an orientation toward planning and looking forward would be important to pharmacy owner-managers for predicting and adjusting to likely changes. Despite this, the extent of futurity found in the industry is likely to vary because many small businesses do not engage to a large degree in planning (French, Kelly & Harrison 2004). Information scope is expected to be important for firms oriented toward the future because the information will help support and operationalise their orientation into actual decisions about how their business should change. Futurity could be implemented by relying solely on internal, financial information about the past (information with narrow scope) and extrapolating it into the future. However, this would not be as effective in the industry's current climate of change as also incorporating external, non-financial information about the future and using this information to suggest changes in the firm's planning models. Therefore the importance of information scope for decision making is expected to be higher where futurity is also high.

Hypothesis 2b: The importance of information scope is positively associated with futurity.

Market scope refers to the breadth of product and service provision (Segev 1989), as well as heterogeneity in customers and geographic area of operation (Dess & Davis 1984). Organisations oriented towards a broad market scope increase the complexity of their business environment through some combination of a diversity of customers, a broader range of products and perhaps a wider geographic coverage. This suggests that a broader range of external information would be required and be more important for decision-making. For example, Guilding and Cravens (2000) have found broad market coverage to be associated with use of a variety of strategic management accounting techniques, many of which would require broad scope information as inputs.

Hypothesis 2c: The importance of information scope is positively associated with market scope.

Consequences for organisational effectiveness

Organisational effectiveness, a term often used interchangeably with organisational performance (Hirsch & Levin 1999), is 'fundamental to management practice and research' (Venkatraman & Ramanujam 1987; 109). It is defined here in terms of goal attainment where an organisation is effective to the extent that its outputs meet its goals (Steers 1975; Lachman & Wolfe 1997). Both financial and non-financial goals are considered, which is in keeping with the broad conceptualisation of business performance recommended by Venkatraman and Ramanujam (1986) and a 'balanced scorecard' view of effectiveness that relates assessment of performance with choice of strategy (Kaplan & Norton 1996). This conceptualisation is also in line with previous studies of information scope (Abernethy & Guthrie 1994; Chong & Chong 1997).

The literature suggests a partial mediating role for management accounting and information systems between contextual (or contingency) variables such as strategy or PEU and organisational effectiveness (Otley 1980; Fisher 1995; Tymon et al. 1998). Information scope, as part of the management information system, is similarly expected to have a role in transforming strategies and uncertainties into more informed decisions that, in turn, lead to improved performance. In committing to a strategy and facing decisions relating to the implementation of that strategy, information will take on greater importance for facilitating the decision making process. The more appropriate this information is to the decision, the better decisions should be, leading to improved organisational effectiveness. Evidence suggests a positive link between the importance and use of information scope and business unit effectiveness (Abernethy & Guthrie 1994; Boulianne 2007; Chong & Chong 1997). There is also support for a mediating role of the use of information scope in relation to PEU and strategy (Chong & Chong 1997).

In order for the importance of information

scope to have a mediating role, PEU and dimensions of strategic orientation must be associated with organisational effectiveness. Greater uncertainty about the external environment is thought to lead to lower organisational performance in the absence of any mechanisms to absorb that uncertainty (Jauch & Kraft 1986; Thompson 1967). Empirical evidence generally supports this proposition (Gerloff, Muir & Bodensteiner 1991). There is also evidence to support associations between dimensions of strategic orientation and performance (Ketchen, Thomas & Snow 1993; Morgan & Strong 2003; Venkatraman 1989). Altogether the evidence above suggests that:

Hypothesis 3a: The association between PEU and organisational effectiveness is partially indirect, operating through the importance of information scope.

Hypothesis 3b: The associations between dimensions of strategic orientation (product-market development, futurity and market scope) and organisational effectiveness are partially indirect, operating through the importance of information scope.

Figure 1 summarises the hypothesised model tested in this study. Associations between the contingent variables and organisational effectiveness, with the exception of focus on efficiency, are expected to decrease as a result of the mediating effect of the importance of information scope and so are shown in the diagram as dotted lines. These paths are included in the model because only partial mediation is expected (James, Mulaik & Brett 2006); that is, PEU and strategic orientation are likely to have some direct effect on organisational effectiveness (Otley 1980) as well as an indirect effect via the importance of information scope. Formal hypotheses were stated only for the links that relate to the importance of information scope but a greater focus on efficiency, as suggested above, is expected to be linked to higher organisational effectiveness. Directions of

associations between the contingent variables are not asserted and are only specified in terms of covariance.¹ Associations between focus on efficiency, futurity and product market development were suggested by Venkatraman's (1989) study of dimensions of strategic orientation. Market scope is not expected to be associated with the other dimensions because, as suggested within Porter's (1980) work and supported by empirical studies (Dess & Davis 1984; Miller 1988), any level of market scope could be chosen to combine with a high or low emphasis on product-market development, futurity and focus on efficiency. The literature on relations between PEU and the dimensions of strategic orientation is somewhat conflicting but suggests PEU may be associated with focus on efficiency, futurity and product-market development (Govindarajan 1988; Miles

& Snow 1978; Miller, Dröge & Toulouse 1988). Based on Miller's (1988) study, PEU and market scope are not expected to be associated.

METHOD

Sample and procedures

The sample used to test the hypothesised model was composed of owner/managers of retail pharmacy businesses in New South Wales (NSW), Australia. Because this research investigates organisational-level constructs the unit of analysis was a pharmacy business, defined as a group of NSW pharmacy outlets with at least one common owner. The population frame was developed from an extract of the Register of Pharmacies for NSW, which was provided by the Pharmacy Board of NSW, and identified a total of 1,340

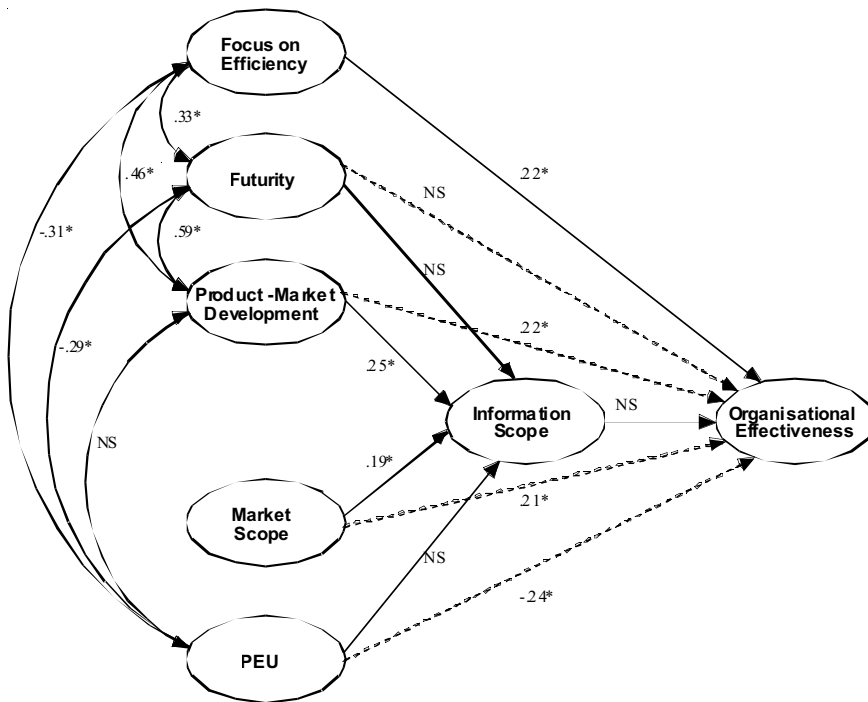


FIGURE 1: THE HYPOTHESISED MEDIATION MODEL WITH STANDARDISED PATH COEFFICIENTS

¹ Chong and Chong's (1997) mediation model included a link from strategy to PEU. A causal direction is not asserted in the present research because the literature about the direction of such a link is ambiguous. For example, in contrast to Chong and Chong (1997), Tymon et al. (1998) argue that PEU affects strategy, while others suggest bi-directional causality (Jauch & Kraft 1986; Miller, Dröge & Toulouse 1988).

discrete pharmacy businesses covering 1,694 pharmacy outlets. All 1,340 discrete pharmacy businesses were surveyed, with one owner from each being chosen at random to be the informant for that pharmacy business. Owner/managers, rather than pharmacist managers, were considered more appropriate as informants because they were more likely to determine the overall direction of the pharmacy business and to use information in doing so. Furthermore, non-owner pharmacists tend to be representatives of one pharmacy outlet, rather than the total business.

Informants were first sent an introductory letter followed, just over a week later, by the questionnaire and a cover letter advising informants that the questionnaire was given an A1 approval rating by the Pharmacy Guild of Australia. This, along with an offer for a summary of results, was expected to improve response rate. Telephone follow-up began two weeks later, with 300 contacts made.

Analysis was based on a total of 242 useable questionnaires. Based on an ineligibility rate estimated using information on returns and known ineligible from follow-up, the adjusted sample size was 1186. This adjusted sample size excluded owners not involved in managing the business, managers that were not owners, individuals who were no longer an owner, undeliverable questionnaires and wrong or disconnected phone numbers. Based on the adjusted sample size, the useable response rate was 20.4%. Despite several uncontrollable factors that possibly reduced the response rate (for example, it was discovered during follow-up that the survey was in competition with three other surveys and coincided with completion of both accreditation requirements and GST returns), this rate was comparable to another survey of NSW pharmacies (Hindle & Cutting 2002).

The possibility of non-response bias was assessed by: (1) trend analysis, statistically comparing early and late respondents (late being those received from the third day of follow-up to allow for postage delay); and (2) comparison with secondary data sources, specifically the NSW state averages from the 2001 *Guild Digest* (Phar-

macy Guild of Australia 2001), which is an annual financial performance survey of retail pharmacies. No significant differences were detected in trend analysis and the sample compared well to *Guild Digest* data.

The average age of respondent owner/managers was 49 years. Around half were sole owners of their pharmacy business and 35% had one partner. Most of the businesses consisted of a single pharmacy outlet (81%). The average business had 7.8 full-time equivalent employees, with the average per outlet being 5.6 such employees. Mean business sales were \$2.72 million but there was considerable skew, with the skewness value being 3.82, the median being \$1.9 million and the range being \$420,000 to \$22 million. On a per outlet basis, average sales were \$1.94 million, with a \$6.67 million maximum. The average annual growth in sales over the previous three years was 10.5% and front shop (non-dispensary) sales represented a third of total sales on average.

Measures

All measures were based on existing survey instruments. To ensure relevance to the industry under consideration, minor changes were made to the instruments based on exploratory research, industry participant and academic review, and pretests. The scales and items used in the study are detailed in Appendix A.

PEU was measured with items adapted from Govindarajan's (1984) instrument. One item from the original instrument, 'labour union actions', was excluded as exploratory research indicated it was not relevant to the industry under study. One item, 'financial/capital market', was added to ensure this potential source of uncertainty, included in Miles and Snow's (1978) instrument, was covered.

Dimensions of strategic orientation were measured using Doty et al.'s (1993) instrument. Realised rather than intended strategy is the focus. Modification to the original instrument involved adding an item to each of the futurity and market scope dimensions in order to improve

reliability. The item added to the futurity measure, 'doing detailed planning before taking any action', was based on Miles and Snow's (1978) theory. The item added to the market scope measure tapped geographic scope and was drawn from Dess & Davis's (1984) instrument.

The importance of information scope was measured using the six scope items from Chenhall and Morris (1986). Respondents were asked to indicate the importance of the information to their business decision making.

Organisational effectiveness was measured with items taken from Govindarajan (1984; 1988) and Vorhies and Harker (2000). Following Govindarajan (1984), organisational effectiveness was measured using a comparison between performance and expectations on a number of financial and non-financial criteria, which are weighted by their perceived importance. While acknowledging that this measure is subjective and relative, there are several reasons supporting its use in this study. It is the predominant measure used in previous studies of information scope and so its use here aids comparison of results. There are also well-known difficulties associated with obtaining 'objective' performance data on small businesses. Publicly available data does not usually exist so this information must be sought directly from owner/managers who are often unwilling to provide it (Dess & Robinson 1984). Even where this data is provided, variations in accounting definitions and measurements make between-firm comparison difficult, even assuming no purposeful misreporting. Furthermore, a narrow focus on financial performance has been criticised because objective financial performance measures, despite their importance, 'do not seem to capture all of the salient elements of effectiveness' (Hitt 1988: 29). Finally, the other common approach taken in measuring subjective performance, in which respondents rate their firm's performance relative to competitors, assumes that respondents have this knowledge. Exploratory research in the pharmacy industry indicated that owner/managers of small, privately-owned pharmacy businesses operating in

disparate geographic locations have little knowledge of how their 'competitors' are performing.

RESULTS

Structural equation modelling (SEM) was used to test the hypothesised model depicted in Figure 1. A full measurement and structural model was too large to estimate given the available sample size so confirmatory factor analysis (CFA) was used to test a measurement model for each construct separately (Jöreskog 1993). Composite variables were then created and used in the structural model with their measurement properties fixed (Baumgartner & Homburg 1996; Hair, Anderson, Tatham & Black 1998; Loehlin 1998). Goodness-of-fit for both measurement and structural models was assessed using several fit indices. The significance of the chi-square statistic (χ^2) was considered along with the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and the standardised root mean square residual (SRMR). Levels representing adequate fit are 0.95 or greater for the CFI, 0.06 or less for the RMSEA and 0.08 or less for the SRMR (Hu & Bentler 1999). Maximum likelihood estimation was employed.

Measure validation

Measures were validated by demonstrating their adequacy in terms of unidimensionality, reliability, convergent validity and discriminant validity (Ping 2004). A split-sample strategy was employed to facilitate cross-validation (Byrne 2001; Cudeck & Browne 1983; DeVellis 1991) if the hypothesised measurement model did not fit the data and required modification. The full sample of 242 cases was randomly split into two and all initially hypothesised models were tested using Sample A. All modified models were tested using Sample B and all were validated. Estimates, reliabilities and validity testing for each accepted measurement model are reported based on the full sample. Table 1 provides measures of overall fit for each of the final measurement models and indicates that all models meet the levels required

for adequate fit (noted above) on CFI and SRMR. On RMSEA, all models except product-market development show adequate fit but it is noted that RMSEA has been found to over-reject when the sample size is under 250 (Hu & Bentler 1999). PEU was modelled as a second-order factor, with two first order factors being market environment and institutional environment. Organisational effectiveness was also modelled as second-order factor, with two first order factors, being financial and non-financial performance.

Unidimensionality was indicated by overall model fit and by significant loadings for each indicator on the relevant construct (Gerbing & Anderson 1988). The significant indicator loadings also provided evidence of the convergent validity of the individual items making up the measure (Anderson & Gerbing 1988). The minimum loading (standardised coefficient) was 0.38 for the low cost item in the focus of efficiency model, while the average loadings ranged from 0.58 for focus on efficiency to 0.82 for market scope. Discriminant validity was examined by performing chi-square difference tests (Anderson & Gerbing 1988) and all difference tests were significant ($p < 0.001$), indicating that all constructs exhibited discriminant validity. The composite reliability for each construct (shown in Table 1) was above acceptable limits, indicating reliable measures.

Structural model testing

Composite variables were created using factor scores, with the confirmatory factor analysis indicator loadings used to weight items in the com-

posite. Means and standard deviations for each composite variable are presented in Table 2, along with the correlation matrix. Each composite measure was then standardised and specified with its measurement properties fixed as a single indicator of a latent variable represented in the hypothesised structural model (Baumgartner & Homburg 1996; Hair et al. 1998; Loehlin 1998). In addition to effectively reducing the necessary sample size, the use of composites in this manner has the added benefit of fixing the measurement properties of the model so that findings regarding structural relations can be unambiguously interpreted (Ping 2002) with 'distractions from the measurement model' eliminated (Loehlin 1998: 199).

The overall model fit indices suggested a well-fitting model ($\chi^2 = 5.4$, $df = 5$, $p = 0.36$; CFI = 1.00; RMSEA = 0.02; SRMR = 0.04). Altogether PEU and the dimensions of strategic orientation explained 15% of the variance in the importance of information scope and the model explained 43% of the variance in organisational effectiveness. With a well-fitting model established, hypotheses were tested using the structural parameter estimates from the model, presented in Table 3 and shown in graphical form in Figure 1.

There was no support for H₁ because, as indicated in the first line of Table 3, the path from PEU to the importance of information scope was not significant. This suggests there is no association between the importance of information scope and PEU. There was also no support for H_{2b} because, although the path from futurity to

TABLE 1: MEASURES OF OVERALL FIT AND COMPOSITE RELIABILITY FOR FINAL MEASUREMENT MODELS

Measurement model	χ^2	df	p	CFI	RMSEA	SRMR	Composite reliability	Min.
PEU	18.0	9	.04	.97	.06	.04	.73	
Product-market development	3.3	1	.07	.99	.10	.03	.86	
Focus on efficiency	.16	1	.69	1.00	.00	.03	.77	
Market scope	.01	1	.92	1.00	.00	.00	.88	
Futurity	.01	1	.94	1.00	.00	.00	.83	
Importance of info. scope	2.7	2	.26	1.00	.04	.02	.85	
Organisational effectiveness	56.2	27	<.01	.97	.07	.05	.86	

TABLE 2: MEANS, STANDARD DEVIATIONS AND CORRELATIONS OF STUDY VARIABLES

Composite Variable	Mean	Std. Dev.	Correlations ^a						
			(1)	(2)	(3)	(4)	(5)	(6)	
(1) PEU	3.56	0.89	1.00						
(2) Product-market development	4.77	1.32	-.10	1.00					
(3) Focus on efficiency	5.72	0.96	-.24	.37	1.00				
(4) Market scope	4.42	1.55	-.04	.06	.15	1.00			
(5) Futurity	4.32	1.32	-.23	.49	.26	.04	1.00		
(6) Importance of information scope	5.02	1.20	-.08	.28	.18	.18	.24	1.00	
(7) Organisational effectiveness	29.32	6.90	-.31	.40	.39	.25	.37	.26	1.00

^a For correlations ≥ 0.13 , $p < 0.05$ (two-tailed)

the importance of information scope was positive as hypothesised, it was not significant. This suggests there is no association between the importance of information scope and futurity.

Hypothesis H_{2a} was supported, with the path from product-market development to the importance of information scope being positive and significant ($p = 0.01$). Thus greater orientation towards a product-market development strategy was associated with increasing importance of broad scope information for decision-making. There was also support for H_{2c}, with the path from market scope to the importance of information scope being positive and significant ($p < 0.01$). Thus a broader market scope was associated with greater importance of broad scope information for decision-making.

It is also noted that the model's standardised residual covariances provided no indication that an association between focus on efficiency and the importance of information scope should have been estimated. Thus earlier discussion suggesting that there was no theoretical reason to expect a link between these variables was supported by the data.

Turning now to the explanation of organisational effectiveness, the model estimates provided no support for the mediation hypotheses H_{3a} and H_{3b} because the path between the importance of information scope and organisational effectiveness, although positive as expected, was not significant (see Table 3, last line). Therefore, because the latter link in the indirect chain of causality (the importance of information scope to organisational effectiveness) could not be confirmed, there could be

TABLE 3: STRUCTURAL MODEL PARAMETER ESTIMATES

Path	Unstandardised estimate ^a	Critical ratio	p (2-tailed)
PEU → importance of information scope	-0.02	-0.27	0.787
Product-market development → importance of information scope	0.25	2.59	0.010
Futurity → importance of information scope	0.12	1.21	0.226
Market scope → importance of information scope	0.19	2.70	0.007
Focus on efficiency → organisational effectiveness	0.22	2.66	0.008
Futurity → organisational effectiveness	0.14	1.63	0.102
Product-market development → organisational effectiveness	0.21	2.29	0.022
Market scope → organisational effectiveness	0.21	3.41	<0.001
PEU → organisational effectiveness	-0.23	-3.07	0.002
Importance of information scope → organisational effectiveness	0.08	1.21	0.228

^a Unstandardised estimates are equal to standardised estimates to within three decimal places because composite variables were standardised.

no support for any of the mediation hypotheses. This becomes clear upon examination of an effects decomposition based on the standardised model, shown in Table 4. This table indicates that the bivariate correlation between the latent variables importance of information scope and organisational effectiveness ($r = 0.31$) was largely spurious (the standardised spurious effect being 0.23). This suggests that the zero order correlation between the importance of information scope and organisational effectiveness was the result of two common causes: market scope and product-market development. Essentially all of the effects of PEU and the dimensions of strategic orientation on organisational effectiveness were direct or spurious (unanalysed in the case of these exogenous variables) rather than indirect through the importance of information scope. Thus it can be concluded that there is no support for the mediation hypotheses H_{3a} and H_{3b} because the associations between PEU, product-market development, futurity and market scope, on the one hand, and organisational effectiveness on the other do not operate through the importance of information scope.

DISCUSSION AND CONCLUSIONS

The aim of this study was to investigate whether the perceived importance of information scope in decision-making mediates the relations between

PEU, dimensions of strategic orientation and organisational effectiveness in a previously unexamined context – the retail pharmacy industry. The results therefore extend our knowledge of the conditions under which the constructs of interest are linked in the manner suggested in the literature. It was found that the importance of information scope increases as retail pharmacies focus more on two dimensions of strategic orientation – product-market development and market scope. However, the direct organisational benefits and mediating role of increasing the importance of broad scope information in decision-making suggested in the literature were disconfirmed in this context. So, while pharmacy owner/managers pursuing such orientations consider broad scope information important for supporting their decisions, this does not appear to provide them with any direct benefits. This is in contrast to their owner/manager peers in manufacturing firms, where previous studies have found support for a mediating role for information scope (Chong & Chong 1997; Mia 1993) perhaps reflecting a longer history of competitiveness in those other industries. The threats facing the retail pharmacy industry in recent years may not yet have translated into effective incorporation of broad scope information into systems and decision-making processes.

TABLE 4: DECOMPOSITION OF STANDARDISED EFFECTS ON ORGANISATIONAL EFFECTIVENESS

Causal Variable	Correlation ^a	Direct effect ^b	Indirect effect ^c	Total effect ^d	Spurious effect ^e
Focus on efficiency	0.49	0.22	–	0.22	0.27
Futurity	0.44	0.15	0.01	0.16	0.28
Product-market development	0.47	0.22	0.02	0.24	0.23
Market scope	0.29	0.21	0.02	0.23	0.06
PEU	–0.39	–0.24	<0.01	–0.24	0.15
Importance of information scope	0.31	0.08	–	0.08	0.23

^a Latent variable correlation with organisational effectiveness from measurement model using composites as single indicators with measurement properties fixed.

^b Standardised coefficients of direct paths to organisational effectiveness from the reduced model.

^c Indirect effects were estimated as the products of the direct effects that comprise them (Kline 1998).

^d Total effects were calculated as the sum of direct and indirect effects (Kline 1998).

^e Spurious effects were calculated as the difference between the correlation and the total effect in the model. In the case of an exogenous variable, such an effect was due to overlapping variance with other exogenous variables with which it was correlated. In the case of an endogenous variable, such as information scope, a spurious effect suggested common causes.

This study also found no evidence of a link between PEU and the importance of information scope. Most of the previous evidence of a positive association, as well as the underlying theory, relates to a large firm context. The present study's results suggest that in the context of small firms with relatively few employees information and task workloads may be concentrated in such a way that information overload is reached at a much earlier stage than in large firms. This may lead to behaviours other than seeking broad scope information being used to deal with uncertainty. This would explain the lack of association found here.

These other behaviours might include smoothing actions (Thompson 1967), which have been shown to absorb PEU and are relevant across industries (Lev 1975). For example, coordinative actions such as coalitions (Galbraith 1969) with banner groups may assist retail pharmacies with stabilising their environment through supply agreements and marketing arrangements. Alternatively, greater PEU may drive decision making toward intuition. Decision makers are limited by their capabilities, attitudes and available resources, including less than perfect information (Simon 1955), and in larger firms they may have access to greater organisational resources such as specialist advice, more timely information from broad-based systems and pooling of resources during group decision-making. These factors could potentially lead to more and better quality broad scope information being effectively incorporated into the decision making process thereby increasing its importance. Furthermore, in a large organisation, information may be required to demonstrate intended rationality and legitimise decisions, even if those decisions relied initially on intuition (Vandenbosch 1999). Some managers make no attempt to reduce uncertainty (Jauch & Kraft 1986) and instead either ignore uncertainty or attribute it to factors outside of their control. Neither response involves seeking information but managers who are required to justify their positions to others (as in larger firms)

may be less able to assume away or ignore uncertainty, increasing their perceptions of the importance of information under such conditions.

Limitations and future research

While the results provide insights on the importance of information scope for decision making in small firms and its associations with certain strategic orientations, the study has several potential limitations. Some of these are common to all cross-sectional, survey-based research, including the inability to provide evidence of causal relations. One limitation of this research is that the results are limited to the industry studied and generalising the results to other contexts should be done cautiously. The single informant design of this study represents a further potential limitation because cognitive and other personal characteristics may have confounded results. Bias may also result from relying on a single informant to make accurate judgements about the business phenomena of interest. However, a single informant was the most feasible design for the nature of the population in that many of the businesses had only one owner/manager and this left the question as to whom else to sample. While common method variance effects are possible, Malhotra, Kim and Patil's (2006) analysis indicates this to be a less serious issue in information systems research than in some other disciplines. Another limitation is that, due to its cross-sectional nature, this research did not take into account any possible time lag of effects on organisational effectiveness yet decisions and strategies may not immediately affect performance.

The results of this research indicate the need for rethinking and investigating causal relations between concepts in theoretical models of management accounting and information systems. For example, the causal sequences suggested by mediating models such as that presented by Tymon et al. (1998) were not supported by this research for the importance of information scope. Potential alternative linkages were not tested in the present study because, following the extant

literature on information scope, they were not hypothesised. Although clearly a cross-sectional study such as this cannot provide proof on the issue of causation, the findings are, however, 'suggestive' (Pedhazur 1982: 579) of different causal linkages. Instead of strategies influencing the importance of information for decision making, the causal direction may be reversed or perhaps reciprocal. The work of Simons (1995) on interactive control systems in large firms may be a useful starting point in reconceptualising models of information scope, although qualitative research is needed to better understand the mechanisms by which interactive control systems might operate in small firms.

Implications for practice

The results of this study have several implications for owner/managers of retail pharmacies and for organisations interested in the effectiveness of those businesses. First, the supported hypotheses suggest that where an innovative and proactive orientation or a greater breadth of product and service provision is being pursued, broad scope information may be helpful for managerial decision making in this industry. This kind of information is often provided by banner groups (intermediaries in the retail pharmacy value chain, often referred to as business 'brands', that include, for example, 'Soul Pattinson' and 'chemworld'), other large suppliers, government and professional associations. The results of this study suggest that banner groups and professional associations seeking to improve relationships with retail pharmacies by providing them with business development services can add value through the provision of broad scope information relating to industry trends, competitor benchmarking, government policy initiatives, labour market trends, market research, and product and service innovations.

A second implication for practice is that the pursuit of certain strategic orientations may improve business performance. Retail pharmacy owner/managers could further pursue efficiencies or proactively innovate and experiment with new

products and services in an attempt to increase the breadth of their product and service range. They could also consider increasing the breadth of their market in terms of geographic and customer coverage (while working within the limits of regulation – at least for the time being).

Finally, because PEU was negatively associated with organisational effectiveness, the results suggest that high PEU should not be ignored. Yet the results suggest that retail pharmacy owner/managers with high uncertainty levels do not necessarily respond by an increased emphasis on broad scope information about their environment in their decision making. This needs to be recognised in business development services provided by banner groups and professional organisations. Education of retail pharmacy owner/managers about the need to deal with high PEU is required. Furthermore, research has suggested that business-to-business relationships become more fractious where there are increased perceptions of environmental uncertainty, such that commitment to those relationships is reduced (Harrison & Kelly 2006). Thus it would seem to be in the best interests of banner groups to clearly communicate the benefits to be derived from managing environmental uncertainty and provide mechanisms for this to occur. Planning and information services could be devised, for example, that make the need to deal with uncertainty explicit and provide relevant tools, techniques and information.

References

- Abernethy MA and Guthrie CH (1994) An empirical assessment of the 'fit' between strategy and management information system design, *Accounting and Finance* 34(2): 49-66.
- Anderson JC and Gerbing DW (1988) Structural equation modeling in practice: A review and recommended two-step approach, *Psychological Bulletin* 103(3): 411-423.
- Ashill NJ and Jobber D (2001) Defining the information needs of senior marketing executives: An exploratory study, *Qualitative Market Research: An International Journal* 4(1): 52-60.
- Baumgartner H and Homburg C (1996) Applications of structural equation modeling in

- marketing and consumer research: A review, *International Journal of Research in Marketing* 13: 139-161.
- Boulianne E (2007) Revisiting fit between AIS design and performance with the analyzer strategic-type, *International Journal of Accounting Information Systems* 8(1): 1-16.
- Bowens J and Abernethy MA (2000) The consequences of customization on management accounting system design, *Accounting, Organizations and Society* 25(3): 221-241.
- Byrne BM (2001) *Structural equation modeling with AMOS: Basic concepts, applications, and programming*, Lawrence Erlbaum, Mahwah NJ.
- Chenhall RH and Morris D (1986) The impact of structure, environment, and interdependence on the perceived usefulness of management accounting systems, *The Accounting Review* 61(1): 16-35.
- Chong VK and Chong KM (1997) Strategic choices, environmental uncertainty and SBU performance: A note on the intervening role of management accounting systems, *Accounting and Business Research* 27(4): 268-276.
- Craig JBL, Cassar G and Moores K (2006) A 10-Year longitudinal investigation of strategy, systems, and environment on innovation in family firms, *Family Business Review* 19(1): 1-10.
- Cudeck R and Browne MW (1983) Cross-validation of covariance structures, *Multivariate Behavioral Research* 18(2): 147-167.
- Dess GG and Davis PS (1984) Porter's (1980) generic strategies as determinants of strategic group membership and organizational performance, *Academy of Management Journal* 27(3): 467-488.
- Dess GG and Robinson RB (1984) Measuring organizational performance in the absence of objective measures: The case of the privately-held firm and conglomerate business unit, *Strategic Management Journal* 5: 265-273.
- DeVellis RF (1991) *Scale development: Theory and applications*, Sage, Newbury Park.
- Doty DH, Glick WH and Huber GP (1993) Fit, equifinality, and organizational effectiveness: A test of two configurational theories, *Academy of Management Journal* 36(6): 1196-1250.
- Ewusi-Mensah K (1981) The external organisational environment and its impact on management information systems, *Accounting, Organizations and Society* 6(4): 301-316.
- Fisher J (1995) Contingency-based research on management control systems: Categorization by level of complexity, *Journal of Accounting Literature* 14: 24-53.
- French SJ, Kelly SJ and Harrison JL (2004) The role of strategic planning in the performance of small, professional service firms: A research note, *Journal of Management Development* 23(8): 765-776.
- Gaidiene Z and Skyrius R (2006) The usefulness of management accounting information: Users' attitudes, *Ekonomika* 74: 21-37.
- Galbraith JR (1969) Solving production smoothing problems, *Management Science* 15(12): B-665-B674.
- Gerbing DW and Anderson JC (1988) An updated paradigm for scale development incorporating unidimensionality and its assessment, *Journal of Marketing Research* 25: 186-192.
- Gerloff EA, Muir NK and Bodensteiner WD (1991) Three components of perceived environmental uncertainty: An exploratory analysis of the effects of aggregation, *Journal of Management* 17(4): 749-768.
- Gordon LA, Larcker DF and Tuggle FD (1978) Strategic decision processes and the design of accounting information systems: Conceptual linkages, *Accounting, Organizations and Society* 3(3/4): 203-213.
- Gordon LA and Miller D (1976) A contingency framework for the design of accounting information systems, *Accounting, Organizations and Society* 1(1): 59-69.
- Gordon LA and Narayanan VK (1984) Management accounting systems, perceived environmental uncertainty and organizational structure: An empirical investigation, *Accounting, Organizations and Society* 9(1): 33-47.
- Gorry GA and Scott Morton MS (1971) A framework for management information systems, *Sloan Management Review* Fall: 55-70.
- Govindarajan V (1984) Appropriateness of accounting data in performance evaluation: An empirical examination of environmental uncertainty as an intervening variable, *Accounting, Organizations and Society* 9(2): 125-135.
- Govindarajan V (1988) A contingency approach to strategy implementation at the business-unit level: Integrating administrative mechanisms with strategy, *Academy of Management Journal* 31(4): 828-853.
- Guiding C (1999) Competitor-focused accounting: An exploratory note, *Accounting, Organizations and Society* 24: 583-595.
- Guiding C and Cravens KS (2000) *An empirical study of the application of strategic management accounting techniques*. Paper presented at the 2000 Annual Conference of the Accounting

- Association of Australia and New Zealand, July, Hamilton Island Queensland.
- Hair FJ, Anderson RE, Tatham RL and Black WC (1998) *Multivariate data analysis*, 5th edn. Prentice Hall, Upper Saddle River NJ.
- Harrison JL and Kelly SJ (2006) *Business relationships and perceived environmental uncertainty: Should I stay or should I go now?* Proceedings of the 20th Annual Conference of the Australian and New Zealand Academy of Management, December, Yeppoon Queensland.
- Hindle K and Cutting N (2002) Can applied entrepreneurship education enhance job satisfaction and financial performance? An empirical investigation in the Australian pharmacy profession, *Journal of Small Business Management* 40(2):162-167.
- Hirsch PM and Levin DZ (1999) Umbrella advocates versus validity police: A life-cycle model, *Organization Science* 10(2): 199-212.
- Hitt MA (1988) The measuring of organizational effectiveness: Multiple domains and constituencies, *Management International Review* 28(2): 28-40.
- Hu L-t and Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives, *Structural Equation Modeling* 6(1): 1-55.
- James LR, Mulaik SA and Brett JM (2006) A tale of two methods, *Organizational Research Methods* 9(2): 233-244.
- Jauch LR and Kraft KL (1986) Strategic management of uncertainty, *Academy of Management Review* 11(4): 777-790.
- Jöreskog KG (1993) Testing structural equation models, in Bollen KA & Long JS (Eds) *Testing Structural Equation Models*, pp. 294-316, Sage, Newbury Park CA.
- Kald M, Nilsson F and Rapp B (2000) On strategy and management control: The importance of classifying the strategy of the business, *British Journal of Management* 11: 197-212.
- Kaplan RS and Norton DP (1992) The balanced scorecard: Measures that drive performance, *Harvard Business Review* 70(1): 71-79.
- Kaplan RS and Norton DP (1996) Using the balanced scorecard as a strategic management system, *Harvard Business Review* 74(1): 75-85.
- Ketchen DJ, Thomas JB and Snow CC (1993) Organizational configurations and performance: A comparison of theoretical approaches, *Academy of Management Journal* 36(6): 1278-1313.
- Langfield-Smith K (1997) Management control systems and strategy: A critical review, *Accounting, Organizations and Society* 22(2): 207-232.
- Larcker DF (1981) The perceived importance of selected information characteristics for strategic capital budgeting decisions, *The Accounting Review* 56(3): 519-538.
- Lev B (1975) Environmental uncertainty reduction by smoothing and buffering: An empirical verification, *Academy of Management Journal* 18(4): 864-871.
- Levitin AV and Redman TC (1998) Data as a resource: Properties implications and prescriptions, *Sloan Management Review* 40(1): 89-101.
- Lachman R and Wolfe RA (1997) The interface of organizational effectiveness and corporate social performance: Opportunities for research and theory development, *Business and Society* 36(2): 194-214.
- Lindsay RM (1995) Reconsidering the status of tests of significance: An alternative criterion of adequacy, *Accounting, Organizations and Society* 20(1): 35-53.
- Loehlin JC (1998) *Latent variable models: An introduction to factor, path, and structural analysis*, 3rd edn. Lawrence Erlbaum, Mahwah NJ.
- Lowry JF (1990) Management accounting and service industries: An exploratory account of historical and current economic contexts, *Abacus* 26(2): 159-184.
- Malhotra NK, Kim SS and Patil A (2006) Common method variance in IS research: A comparison of alternative approaches and a reanalysis of past research, *Management Science* 52(12): 1865-1883.
- Mangaliso MP (1995) The strategic usefulness of management information as perceived by middle managers, *Journal of Management* 21(2): 231-251.
- Mia L (1993) The role of MAS information in organisations: An empirical study, *British Accounting Review* 25: 269-285.
- Miles R and Snow C (1978) *Organizational strategy, structure, and process*, McGraw-Hill, New York.
- Miller D (1988) Relating Porter's business strategies to environment and structure: Analysis and performance implications, *Academy of Management Journal* 31(2): 280-308.
- Miller D, Dröge C and Toulouse J-M (1988) Strategic process and content as mediators between organisational context and structure, *Academy of Management Journal* 31(3): 544-569.
- Milliken FJ (1987) Three types of perceived uncertainty about the environment: State, effect, and response uncertainty, *Academy of Management Review* 12(1): 133-143.
- Morgan RE and Strong CA (1997) Market orientation and dimensions of strategic

- orientation, *European Journal of Marketing* 32(11/12): 1051-1073.
- Morgan RE and Strong CA (2003) Business performance and dimensions of strategic orientation, *Journal of Business Research* 56(3): 163-176.
- Otley D (1980) The contingency theory of management accounting: Achievement and prognosis, *Accounting, Organizations and Society* 5(4): 413-428.
- Otley D (1999) Performance management: A framework for management control systems research, *Management Accounting Research* 10(4): 363-382.
- Pedhazur EJ (1982) *Multiple regression in behavioral research: Explanation and prediction*, 2nd edn. Harcourt Brace Jovanovich, Fort Worth TX.
- Pharmacy Guild of Australia (2001) *2001 Guild digest: Financial survey of Australian community pharmacy performance*, CD-ROM.
- Ping RAJ (2002) Relationship commitment and opportunistic behavior, paper presented at the 2002 Summer American Marketing Association Conference, *Robert Ping's Research Page*, accessed at <http://www.wright.edu/~robert.ping/research1.htm> on 23 July 2002.
- Ping RAJ (2004) On assuring valid measures for theoretical models using survey data, *Journal of Business Research* 57(2): 125-141.
- Porter M (1980) *Competitive strategy*, Free Press, New York.
- Segev E (1989) A systematic comparative analysis and synthesis of two business-level strategic typologies, *Strategic Management Journal* 10: 487-505.
- Simon HA (1955) A behavioral model of rational choice, *Quarterly Journal of Economics* 69(1): 99-118.
- Simon HA (1987) Making management decisions: The role of intuition and emotion, *Academy of Management Executive* 1: 57-64.
- Simons R (1987) Accounting control systems and business strategy: An empirical analysis, *Accounting, Organizations and Society* 12(4): 357-374.
- Simons R (1995) *Levers of control: How managers use innovative control systems to drive strategic renewal*, Harvard Business School Press, Boston.
- Steers RM (1975) Problems in the measurement of organizational effectiveness, *Administrative Science Quarterly* 20(4): 546-558.
- Thompson JD (1967) *Organizations in action*, McGraw-Hill, New York
- Tymon WG, Stout DE and Shaw KN (1998) Critical analysis and recommendations regarding the role of perceived environmental uncertainty in behavioral accounting research, *Behavioral Research in Accounting* 10: 23-46.
- Vandenbosch B (1999) An empirical analysis of the association between the use of executive support systems and perceived organizational competitiveness, *Accounting, Organizations and Society* 24: 77-92.
- Venkatraman N (1989) Strategic orientation of business enterprises: The construct, dimensionality, and measurement, *Management Science* 35(8): 942-962.
- Venkatraman N and Ramanujam V (1986) Measurement of business performance in strategy research: A comparison of approaches, *Academy of Management Review* 11(4): 801-814.
- Vorhies DW and Harker M (2000) The capabilities and performance advantages of market-driven firms: An empirical investigation, *Australian Journal of Management* 25(2): 145-171.

Received 13 August 2007 Accepted 9 February 2009

CALL FOR PAPERS

Educating for Sustainability and CSR: What is the role of business schools?

A special issue of *Journal of Management & Organization*

Deadline for Papers: 30th April 2010

ISBN 978-1-921348-76-1 ~ iv+112 pages ~ Publishing July 2011

Edited by: Suzanne Benn, Robin Kramar and Janelle Thomas, Macquarie University, Sydney, Australia

This special issue of *Journal of Management & Organization* (ISSN 1833-3672) explores the role of business schools, institutions of higher education and other relevant organisations in fostering change for Corporate Social Responsibility (CSR) and Sustainability.

eContent Management Pty Ltd, PO Box 1027, Maleny QLD 4552, Australia
Tel.: +61-7-5435-2900; Fax: +61-7-5435-2911; subscriptions@e-contentmanagement.com
www.e-contentmanagement.com

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.