

**The Impact of Strategic Positioning Evaluation on Auditor Judgments about  
Business Process Performance**

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# **The Impact of Strategic Positioning Evaluation on Auditor Judgments about Business Process Performance**

## **ABSTRACT**

International accounting firms have implemented new audit methods that rely on assessments of residual business risks as inputs to determine the nature and extent of substantive testing. Understanding strategic risks and the extent to which critical business processes mitigate or accentuate those risks is integral to these methods (Bell, Marrs, Solomon, and Thomas, 1997). However, little is known about how important task features of these new methods affect auditor judgments.

This paper presents the results of an experiment designed to test the effects of changes in a client's strategic positioning in unrelated areas (e.g., brand and image delivery) on evaluations of a client's critical business process performance (e.g., logistics and distribution). The results suggest that auditors superficially process information about the critical business process performance when the client's strategic positioning in unrelated areas is in-line with industry norms. This results in an apparent underweighting of problems present in the critical business process.

**Key Words:** audit methods, business risk, audit risk, expectancy violation, performance measurement

**Data Availability:** Contact the authors

## INTRODUCTION

Auditors have often encountered instances of fraud and earnings management at their clients, but over the past several years there have been several significant cases of financial misreporting at companies which were granted unqualified opinions by their auditors. Examples of these high-profile audit failures include Lincoln Savings & Loan, Sunbeam, Rite Aid, Cendant, and Microstrategy. One potential cause raised by audit critics for these, and other, audit failures was that audits were designed with too much emphasis on the financial statements and transaction level testing (e.g., Eilifsen et al. 2001; Erickson et al. 2000; Bell et al. 1997). Audit firms have reacted to this criticism by re-vamping their audit processes to improve auditors' understanding of client businesses and business risks at a more global level (e.g., Eilifsen et al. 2001; Lemon et al. 2000, Joint Working Group [JWG] Report 2000).<sup>1</sup>

An integral component of these business-risk oriented audit (BRA) approaches is auditor understanding of the client's business risk exposure and evaluation of the extent to which its financial statements adequately reflect such risk (JWG Report 2000, Bell et al. 1997). These approaches involve applying a top-down, holistic perspective that begins with an understanding of the client's strategy and an assessment of the viability of that strategy (e.g., Bell et al. 1997). This perspective enables auditors to evaluate a client within its industry, including how the client is positioned in its industry, and assess the extent to which risks are present that threaten the ability to attain strategic objectives.

After analyzing a client's strategy, auditors evaluate how the client manages its strategic business risks. This is typically accomplished through an analysis of the client's

critical business processes (e.g., Knechel 2001, Bell et al. 1997, Eilifsen et al. 2001), which represent allocations of resources put in place to manage strategic risks. This analysis helps auditors identify residual risks (i.e., risks not adequately controlled by critical business processes). In general, more (less) residual risk is associated with more (less) substantive testing of the accounts impacted by the business process.

In summary, BRA approaches are expected to better prevent audit failures by allowing auditors to better allocate their testwork to areas with the greatest degree of residual audit risk. Should auditors fail to appropriately evaluate the client's residual audit risks, however, testwork may be allocated in a manner which impairs audit effectiveness. Determining under what conditions BRA approaches are more or less likely to improve audit effectiveness requires an understanding of how auditor judgments are made in this new task environment.

This paper investigates how the sequential process of first evaluating a client's strategic positioning (a key component of strategic analysis) and then a business process (put in place to manage key strategic risks) affects auditor judgments. Our predictions are based on findings from cognitive psychology and auditing that individuals tend to expend more cognitive effort when evaluating situations that violate their expectations, and expend less effort in evaluating situations that are in-line with their expectations (e.g., Hastie 1984; Dunegan 1993; Earley 2001). Consistent with our predictions, we find that changes in the client's strategic positioning in areas *unrelated* to the critical business process being evaluated can influence auditors' judgments regarding whether client business process performance measures are in line with expectations. Specifically, auditors attend to or weight problems associated with a specific business process (i.e.,

logistics and distribution) when strategic positioning information relevant for unrelated business processes (e.g., brand and image delivery) *trails* industry norms. Conversely, auditors tend to ignore problems associated with a specific business process when strategic positioning information relevant for unrelated business processes is *in line with* industry norms

These results have implications for auditing research and accounting firms utilizing BRA methodologies. By ignoring the problems within the client's business process, auditors are more likely to accept a business process as successfully meeting the client's strategic objectives when in fact residual risks might be present. This may lead to inappropriately low levels of substantive testing, thus compromising audit effectiveness.

The remainder of the paper is organized as follows. The second section presents a more detailed overview of BRA approaches. The theory and hypothesis development is provided in section three. The fourth section presents the research method. The fifth section reports the results of our analysis. Finally, the sixth section discusses the results and implications of the study.

## **OVERVIEW OF BUSINESS RISK ORIENTED AUDIT APPROACHES**

While each firm's new audit method is unique, there are some steps that they have in common (Lemon et al. 2000, Ballou and Heitger 2001). Figure 1 illustrates the general structure of a BRA approach (Knechel 2001). In BRA approaches auditors first view clients from a top-down, holistic, business-risk management perspective (e.g., Bell et al. 1997). Viewing clients from this perspective helps auditors identify critical business processes that need to be analyzed to assess residual business risks.<sup>2</sup> Rather than beginning with a company's financial statements, auditors first obtain an understanding

of an entity's business and industry by constructing a business model, which can be depicted in numerous forms (e.g., Bell et al. 1997, Boulton et. al 2000, Knechel 2001). Auditors use the knowledge obtained through construction of the business model to understand which threats are most serious to the client's key strategic objectives. At this point the auditors assess strategic risk.

Insert Figure 1 About Here

To understand the client's ability to manage strategic risk and appropriately reflect such management in financial statements, auditors next identify which business processes are in place to mitigate risks associated with meeting strategic objectives (Lemon et al. 2000; JWG Report 2000). Business processes represent allocations of client resources put in place to mitigate strategic risks through effective initiatives and carefully designed controls. Business processes provide a direct link to financial statements because transactions are generated within them. One way that auditors assess the effectiveness of controls and effective process performance within a business process is through the analysis of process performance measures (Bell et al. 1997, Knechel 2001). As illustrated in Figure 1, to the extent that business processes have significant residual (i.e., unmitigated) risks and are critical for achieving key strategic objectives, there is increased risk of errors or fraud associated with transactions generated from the process (JWG Report 2000, Bell et al. 1997). Thus, as auditor perceptions of residual risks associated with critical business processes increase, the extent of substantive testing for transactions generated within the process increases (Knechel 2001). Presumably, analyzing all business processes identified as critical for managing strategic risks should yield sufficient coverage for financial statement accounts most likely to be misstated.<sup>3</sup>

As illustrated by Figure 1, there are two key decision points in a BRA approach. The first relates to strategic risk assessments and their affect on business process analyses. The second relates to business process residual risk assessments and their impact on a substantive testing strategy for the accounts impacted by the process. Our study investigates the conditions under which information acquired during strategic risk assessments affects judgments made during business process analysis. Understanding how analyzing information about strategic risks of a client impact judgments about business process performance is important because this task is a critical aspect of BRA approaches. Knowledge of how critical features of the task affect auditor judgment begins to provide a more complete understanding of the conditions under which improved audit effectiveness is more (or less) likely to occur.

### **THEORY AND HYPOTHESIS DEVELOPMENT**

A great deal of research in social psychology (specifically in social cognition) has focused on how individuals make attribution (causal) judgments about the behavior of others (e.g. Pyszczynski and Greenberg 1981; Hastie 1984; Kanazawa 1992). This research suggests that initial information encountered about an individual enables others to form expectations about that individual. These expectations, in turn, affect subsequent judgments (e.g., Hastie 1984). The general finding is that when individuals encounter information about others that violates their expectations (e.g., a kind person does something mean), they tend to process additional, more detailed information (e.g., descriptions of the conditions surrounding the act) more deeply than if they encounter information that conforms to their expectations (Hastie 1984; Kanazawa 1992; Sanna and Turley 1996). That is, individuals demonstrate a deeper level of processing in order to

seek “explanation-relevant” (or causal) information when unexpected events occur (Pyszczynski and Greenberg 1981; Wong and Weiner 1981) because they need to explain “why” the individual exhibited the unexpected behavior. Further, this differential processing affects subsequent judgments. For example, Dunegan (1993) examined project-funding decisions among managers and found that when an incompatibility/expectancy-violation existed participants exhibited more thorough and controlled processing which affected the level of funding provided.

In an auditing context, Earley (2001) compared novice and experienced auditor judgments of the reasonableness of client-provided discount rates for a real estate valuation task. Although the experiment was focused on pattern recognition issues related to audit experience rather than expectancy violations, experienced auditors’ performed relatively poorly when the client-provided discount rate was in line with industry (i.e., as expected), but the property was underperforming (i.e., problems were exhibited). Because the industry information and additional property-specific information in Earley (2001) were provided all at once, she was unable to make conclusions regarding the effect of initially-encountered information on the subsequent evaluation of additional information.

In the current study, we posit that the initial evaluation of strategic positioning information in unrelated areas (during strategic analysis in Figure 1) triggers different levels of processing with respect to subsequent information regarding a particular business process (during process analysis in Figure 1). This differential processing leads to differences in auditors’ evaluations of specific business processes’ performance. We predict that when auditors encounter a client whose strategic positioning information in

unrelated areas is in-line with industry norms, they will engage in less deliberative processing of subsequent information regarding business processes because there is little reason to explain why the client is typical of others in its industry (i.e. the typical outcome is as expected, thus no expectancies have been violated in this case). If the client is actually experiencing subtle problems under this scenario, such constrained processing is expected to lead to the auditor overlooking or underweighting the importance of these problems.<sup>4</sup> Consequently, we expect insignificant differences in evaluations between a client scenario where no problems are indicated and one in which problems are indicated (holding all other client-specific information constant).

Conversely, when the client's strategic positioning information in unrelated areas indicates the client is trailing industry norms, the auditor's expectation of typicality will be violated and the auditor will engage in more thorough processing of subsequent business process information. In this case, the auditor would be able to determine with greater accuracy when problems are present or absent, and adjust his or her evaluations accordingly. Thus, we expect a significant difference in the evaluations of client business processes between a scenario where there are no problems indicated and one in which problems are indicated (again, holding all other client-specific information constant).

These expectations lead to the following hypothesized interaction:

**H1: When a client's strategic positioning in unrelated areas *trails* (is in line with) industry norms, auditors' evaluations of a client's business process performance measures *will* (will not) differ based on whether or not the client is experiencing problems.**

The hypothesis above predicts an interaction as shown in Figure 2. If this model holds, auditors are in danger of committing Type II errors (incorrect acceptance) in situations where the client's overall strategic positioning in unrelated areas is in-line with

industry norms, but critical business process information indicates that the client is experiencing problems (Cell 3 of Figure 2). Auditors in this case will first observe that the client's strategy in unrelated areas was in-line with the industry and proceed to process more detailed critical business process information insufficiently. Thus, they will ignore or underweight the problems when evaluating the critical business process performance as demonstrated by reaching similar judgments as in the case when no problems were indicated (Cells 1 and 2).

Insert Figure 2 About Here

When auditors observe that the client's strategy in unrelated areas is trailing industry norms, the more detailed critical business process information is processed more diligently. This heightened processing will still result in the critical business process performance measures being evaluated to reflect no problems when no problems are indicated (Cell 2). However, auditors are expected to view the critical business process performance measures as reflecting problems when problems are indicated (Cell 4).

## **METHOD**

### ***Participants***

Participants were asked to evaluate the appropriateness of performance measures related to the logistics and distribution process of a large grocery retailer. 117 auditors from an international accounting firm that has adopted a BRA approach volunteered to participate in the study. On average, the participants were at the supervising-senior level and had approximately three years of experience with the firm. Additionally, the participants averaged between eight and nine audit clients per year, of which

approximately half had fully implemented the new approach. All subjects had experience evaluating performance measures relating to critical business processes.

### ***Independent Variables***

Strategic Positioning (in-line with or trailing industry norms) and Critical Business Process Performance (experienced problems or no problems) were manipulated between subjects in a 2x2 full-factorial design as depicted in Figure 2. Strategic positioning was manipulated by providing participants with a table comparing evidence of strategic positioning of the client (e.g., the elements of a business model as described in Bell et al. [1997]) with industry norms. The description of the client's position was either consistently in-line or trailing the industry descriptions, except for the supply chain management description, which was identical in both conditions. All other information about strategic positioning provided to the participants was relevant for business processes (e.g., brand and image delivery and customer service) unrelated to supply chain management.

Logistics and distribution was chosen as a critical business sub-process of supply chain management.<sup>5</sup> Logistics and distribution performance was manipulated through a description of the client's logistics and distribution activities during the year. Included in this description was a statement that the client actively partnered with private-label suppliers. In the "problems indicated" condition, participants were told that following substantial delivery problems with the client's major private-label supplier during the first three quarters, suppliers were switched in November. Further, participants were told that client management *believes* the new relationship will be stable and productive but were given no more information regarding the viability of the new relationship. In the

“no problems” condition, no further statements about the client’s private-label suppliers were made beyond the comment that the client actively partnered with them.

### ***Overview of Materials and Procedures***

The materials were adapted from Greenwood and Salterio (1999). A partner and senior manager designated by the firm that supplied the participants as possessing expertise in its new methodology helped adapt the case materials. Participants first read instructions that stated they would be asked to evaluate performance measures related to the logistics and distribution process of a grocery retailer. They then read an industry overview that highlighted that reducing logistic and distribution costs were critical in the grocery industry. Next, participants evaluated information suggesting the client’s strategic positioning was either in-line or trailing industry norms. At this point, participants received detailed information about a business process deemed critical to the client by the audit team—logistics and distribution. After reading the case materials, the participants were first asked to assess the importance of the logistics and distribution process to the engagement under the new methodology. The participants then analyzed six performance measures related to the logistics and distribution process. These performance measures were selected from the participating firm’s Retail-Grocery industry database. Participants first assessed whether the client-prepared, unaudited performance measures were in line with expectations when compared to industry average and industry quartile information. If they believed the performance measure to not be in line with expectations, they then provided an acceptable range for the measure. Finally, the participants completed a post-experimental questionnaire, which included manipulation checks.

## RESULTS

### *Manipulation Checks*

The manipulation check for Critical Business Process Performance asked whether the client had changed private-label suppliers during the year. Nine participants in each condition failed the manipulation check leaving 81 usable responses. The results are unaffected by inclusion of these participants and no demographic data (i.e., audit experience, BRA experience, retail experience, retail grocery experience, level in the firm) were significantly correlated with failure of the manipulation check. The first manipulation check for Strategic Positioning asked how the client's strategy compared to the industry (1 = underperforming; 3 = average; 5 = outperforming). Responses by "in-line" and "trailing" participants were 3.670 and 2.636, respectively ( $p < .001$ ). A second manipulation check asked for the likelihood that the client's strategy will be successful in the grocery industry (0 = will not succeed; 100 will definitely succeed). Responses by "in-line" and "trailing" participants were 72.22 and 59.62, respectively ( $p < .001$ ). These results indicate that the strategic positioning manipulation was successful.

Although the client's strategic positioning impacted a number of business processes (e.g., brand and image delivery), positioning for supply chain management was identical in both industry-positioning conditions. To ensure that any observed effects on judgments of the logistics and distribution process' performance were not a result of different perceptions of risk exposure, we asked the participants to assess the firm's level of exposure in the logistics and distribution process to the audit *prior* to evaluating the performance measures.

Participants rated the firm's level of exposure in the logistics and distribution process (1 = low; 3 = medium; 5 = high). We tested for differences in the participants' perceptions of risk exposure for the logistics and distribution process across conditions by using this measure as a dependent variable in a 2x2 ANOVA with Strategic Positioning and Critical Business Process Performance as the independent variables. As shown in Table 1, all main effects and the interaction are insignificant at conventional levels. This result suggests that no differences in the perceived risk associated with the logistics and distribution process existed between conditions prior to evaluating the performance measures.

### ***Dependent Variable***

The dependent variable used to test the hypothesis was a summary measure of each participant's expectations with respect to the six performance measures. These six performance measures were taken from the participating firm's industry database. If a participant concluded that a performance measure was "in line with expectations," the response was coded as "0" for that measure. If a participant responded that a performance measure was "not in line with expectations," they then provided an acceptable range for the measure. If this range was higher than the client-provided performance measure (e.g., 1<sup>st</sup> quartile instead of 2<sup>nd</sup> quartile), the response was coded as "1." If the range was lower, the response was coded as "-1." The six coded responses were then totaled. This resulted in a variable that potentially ranged from -6 to +6 with 0 suggesting the performance measures were in line with expectations in total.

### ***Test of Hypotheses***

Results of the 2x2 ANOVA used to test the hypothesis and descriptive statistics are presented in Table 2, Panels A and B. The hypothesis predicts that auditors will evaluate the client's performance measures as reasonable regardless of whether any problems are indicated in the client's critical business process (Cells 1 and 2 in Figure 2) when the client's strategic positioning is in line with industry norms (Cell 3). The hypothesis also predicts that auditors evaluate the client's performance measures as unreasonable (Cell 4) only when the client's strategic positioning is trailing industry norms *and* problems were indicated in the critical business process.

Results of the ANOVA suggest that Strategic Positioning and Critical Business Process Performance interact to affect participants' performance measure expectations ( $F = 4.055$ ;  $p = .048$ ). To test whether this interaction pattern is consistent with our predictions, we used Tukey's post-hoc method of pairwise contrasts to analyze what occurred (Neter, Wasserman and Kutner 1985). As shown in Table 1, Panel C, Cell 4 results are significantly lower than results in the other three cells, while results in Cells 1, 2 and 3 are not significantly different at conventional significance levels. That is,  $Cell\ 1 \approx Cell\ 2 \approx Cell\ 3 > Cell\ 4$ , which is consistent with the predicted interaction pattern (See Figure 2).

## **DISCUSSION**

Our study suggests that a key feature of the BRA audit task—gathering and evaluating information regarding the strategic positioning of the client before evaluating the performance of critical business processes—can affect audit effectiveness. Consistent with results from psychology and auditing, auditors who encounter a client whose

strategic positioning in unrelated areas trails industry norms appear to process critical business process information more thoroughly than when the client's strategic positioning in unrelated areas is in line with industry norms. This differential processing affects auditor evaluations of critical business process performance. Specifically, auditors appear to weight problems for a critical business process when strategic positioning in unrelated areas trails industry norms, but not when it is in line with industry norms.

This apparent underweighting of problems when strategic positioning in unrelated areas is in line with industry norms may result in auditors committing Type II errors. Although in practice the critical business process will often perform in a manner consistent with a client's strategic positioning, problems within a business process may indicate a lack of controls over strategic risks. The residual risks created by those problems may materially impact financial statements, indicating that auditors must be careful to identify problems and consider their financial implications. This tendency to underweight problems would be particularly troublesome for clients who appear to be performing adequately compared to other companies in their industries, but are engaged in earnings management or strategically risky behavior. Auditors should remain vigilant to problems and risks, even when clients appear to be strategically well positioned.

The current study's results provide insights for previous studies in auditing, including those performed under traditional audit approaches (as opposed to BRA approaches). For example, although the results are consistent with those of Earley (2001), our study extends that study by addressing and correcting some of its aforementioned design limitations. It also may have implications for findings in "red flag" studies (e.g., Pincus 1989) in which auditors performing an analytical procedures task put forth more

effort in assessing misstatements after being exposed to conditions in which fraud has been found to occur in the past. Our results suggest that the effects of expectation development found in red flag studies may also extend to fraud found in unrelated areas, and the results of these studies may be stronger than previously believed.<sup>6</sup>

In terms of practical implications, this study is one of the first to empirically examine auditor judgment under a business risk approach. It illustrates one risk associated with relying on the knowledge obtained when understanding a client's fit within its industry to assess the level of audit risk on an engagement. However, this is a complex process and much additional research is needed to more fully understand the conditions under which process gains are more or less likely to be obtained (Ballou and Heitger 2001).

There are several limitations of this study, some of which offer opportunities for future research. First, given the relatively recent adoption of BRA approaches by audit firms—including the firm that supplied participants for this study—auditors may not have the necessary experience with the methods to avoid the problems encountered in this study. Research performed as auditors gain more familiarity with a BRA approach may demonstrate a relationship between experience (or lack of it) and susceptibility to the effect of expectations on levels of processing. Second, due to unique features present in each firm's BRA approach, the instrument was tailored to the participating firm. Generalizing the results of this study must be done with caution. However, BRA approaches generally view clients from a top-down, holistic perspective and base audit decisions about substantive testing on residual business risks (e.g., Lemon et al 2000), so we would expect to find similar results at other firms. Third, because we were interested

primarily in the link from strategic positioning to critical business process analyses, we measured judgments related only to business process performance. Additional investigation is needed to explicitly determine how residual risks are assessed for a critical business process and how they link to the audit testwork related to financial statement accounts impacted by transactions from within the process. Fourth, this study only looked at the link from a partial strategic analysis to a partial business process analysis and did not examine the link from business process analysis to financial reporting. A critical aspect of a business risk audit approach is an auditor's ability to develop expectations about financial reporting to reflect economic reality assessments derived from effective analysis of strategy and business process performance. Studies that collectively examine an auditor's ability to link strategic analysis to business process analyses to financial performance are needed to more fully understand the conditions which affect audit effectiveness in business risk audit approaches.

## ENDNOTES

<sup>1</sup> For more details regarding the forces impacting accounting firms and the evolution of audit methods into what are described herein, see Eilifsen et al. (2000).

<sup>2</sup> For descriptions of how two firms characterize this perspective see Bell et al. (1997) and Boulton et al. (2000).

<sup>3</sup> Another aspect common to new methods is an added emphasis on earnings quality and estimates, which helps firms evaluate the extent to which earnings management practices might be occurring at clients (e.g., Bell et al. 1997).

<sup>4</sup> This is consistent with Bonner and Pennington's (1991, 17) warning that "the preliminary interpretation of a situation can severely constrain the set of hypotheses considered."

<sup>5</sup> Often, auditors must subdivide business processes into subprocesses so that detailed analyses can be more focused. For example, Greenwood and Salterio (1999) document that Loblaw's subdivides supply chain management into category management, supplier selection, logistics and distribution, stock management, and price management.

<sup>6</sup> The difference between red flag studies and the current study is that in the current study the expectations are developed based on client information that is unrelated to the particular business process of interest.

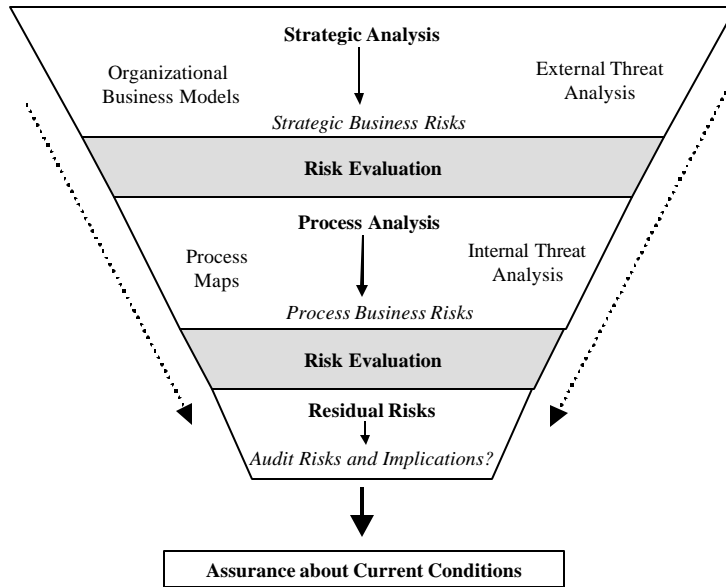
## REFERENCES

- Ashton, A., and R. Ashton. 1988. Sequential belief revision in auditing. *The Accounting Review* 63 (4): 623-641.
- Ballou, B., and D. Heitger. 2001. Potential impacts of recent developments in audit methodologies on how audit evidence is gathered, documented and evaluated. Working Paper. Auburn University.
- Bell, T., F. Marrs, I. Solomon, and H. Thomas. 1997. *Auditing Organizations Through a Strategic-Systems Lens*, New York, NY: KPMG LLP.
- Bonner, S. E., and N. Pennington. 1991. Cognitive processes and knowledge as determinants of auditor expertise. *Journal of Accounting Literature* 10: 1-50.
- Boulton, S., B. Libert, and S. Samek. 2000. *Cracking the Value Code: How Successful Business are Creating Value in the New Economy*. New York: Arthur Andersen.
- Dunegan, K.J. 1993. Framing, cognitive modes, and image theory: Toward an understanding of a glass half full. *Journal of Applied Psychology* 78: 491-503.
- Earley, C. E. 2001. The differential use of information by experienced and novice auditors in the performance of complex audit tasks. Working Paper. The University of Connecticut.
- Eilifsen, A., W. R. Knechel, and P. Wallage. 2001. Application of the business risk audit model: A field study. *Accounting Horizons* 15 (3): 193-208.
- Erickson, M., B. W. Mayhew, and W. L. Felix, Jr. 2000. Why do audits fail? Evidence from Lincoln Savings and Loan. *Journal of Accounting Research* 38 (1): 165-194.
- Greenwood, R., and S. Salterio. 1999. *Loblaw Companies, Ltd.* Available on KPMG/University of Illinois Business Measurement Case Development and Research Program website (<http://www.cba.uiuc.edu/kpmg-uiuc/cases/index.html>).KPMG: Montvale, NJ.
- Hastie, R. 1984. Causes and effects of causal attribution. *Journal of Personality and Social Psychology* 46: 44-56.
- Hogarth, R., and H. Einhorn. 1992. Order effects in belief updating: The belief-adjustment model. *Cognitive Psychology* 24 (1): 1-55.
- Joint Working Group of the International Auditing Practices Committee, the Assurance Standards Board of the CICA, the Auditing Practices Board of the United Kingdom and Ireland, and the Auditing Standards Board of the AICPA. 2000.

Recommendations arising from a study of recent developments in the audit methodologies of the largest accounting firms (May) New York: AICPA.

- Kanazawa, S. 1992. Outcome or expectancy? Antecedent of spontaneous causal attribution. *Personality and Social Psychology Bulletin* 18: 659-668.
- Knechel, W. 2001. *Auditing: Assurance & Risk*. Second Edition. Cincinnati: South-Western College Publishing.
- Lemon, M., K. W. Tatum and W. S. Turley. 2000. *Developments in the audit methodologies of large accounting firms*. Hertford, UK: Stephen Austin & Sons, Ltd.
- Neter, J., W. Wasserman and M. Kutner. 1985. *Applied Linear Statistical Models: Regression, Analysis of Variance and Experimental Designs*. Homewood, IL: Irwin.
- Pincus, K. 1989. The efficacy of a red flags questionnaire for assessing the possibility of fraud. *Accounting, Organizations, and Society* 14: 153-164.
- Public Oversight Board. 2000. *The Panel on Audit Effectiveness: Report and Recommendations*. Stamford, CT: Public Oversight Board.
- Pyszczynski and Greenberg. 1981. Role of disconfirmed expectancies in the instigation of attributional processing. *Journal of Personality and Social Psychology* 40: 31-38.
- Sanna, L. J. and K. J. Turley. 1996. Antecedents to spontaneous counterfactual thinking: Effects of expectancy violation and outcome valence. *Personality and Social Psychology Bulletin* 22: 906-919.
- Tubbs, R., W. Messier and R. Knechel. 1990. Recency effects in the auditor's belief-revision process. *The Accounting Review* 65 (2): 452-460.
- Wong, P. T. P. and B. Weiner. 1981. When people ask "why" questions, and the heuristics of attributional search. *Journal of Personality and Social Psychology* 40: 650-663.

Figure 1  
A Top-Down, Business-Risk Perspective for Understanding a Client's Business



Source: Knechel (2001)

**FIGURE 2**  
**Experimental Predictions for the Effect of Strategic Positioning and Critical Business Process Performance on Performance Measure Evaluations**

		STRATEGIC POSITIONING	
		CLIENT IN-LINE W/ INDUSTRY NORMS	CLIENT TRAILING INDUSTRY NORMS
		<i>(Cognitive Processing Low)</i>	<i>(Cognitive Processing High)</i>
<b>CRITICAL BUSINESS PROCESS INFORMATION</b>	NO PROBLEMS INDICATED	Cell 1  CONCLUDE CLIENT-PROVIDED MEASURES ARE REASONABLE (no change from given measures)	Cell 2  CONCLUDE CLIENT-PROVIDED MEASURES ARE REASONABLE (no change from given measures)
	PROBLEMS INDICATED	Cell 3  CONCLUDE CLIENT-PROVIDED MEASURES ARE REASONABLE (no change from given measures)	Cell 4  CONCLUDE CLIENT-PROVIDED MEASURES ARE <b>NOT</b> REASONABLE (negative change from given measures)

TABLE 1  
ANOVA Results for the Effect of Strategic Positioning and  
Critical Business Process Performance on Risk Exposure  
in Supply Chain Management

<u>Source of Variation</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>p-value</u>
Critical Business Process Performance (CBPP)	.091	1	.091	.093	.761
Strategic Positioning (SP)	.425	1	.425	.433	.513
CBPP * SP	1.359	1	1.359	1.385	.243
Residual Error	72.602	74	.981		

TABLE 2  
Results for the Effect of Strategic Positioning and  
Critical Business Process Performance on Performance Measure Evaluations

**Panel A: ANOVA**

<i>Source of Variation</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>p-value</i>
Critical Business Process Performance (CBPP)	.492	1	.492	.235	.629
Strategic Positioning (SP)	13.304	1	13.304	6.373	.014
CBPP * SP	8.464	1	8.464	4.055	.048
Residual Error	160.735	77	2.087		

**Panel B: Descriptive Statistics (Mean, Standard Deviation)**

		Strategic Positioning	
		In-Line	Trailing
Critical Business Process Performance	No Problems	Cell 1 .62 (1.02)	Cell 2 .45 (1.41)
	Problems	Cell 3 1.11 (1.81)	Cell 4 -.35 (1.50)

**Panel C: Tukey's post hoc pairwise contrasts**

Comparison	Mean Difference	Probability that mean difference not equal to 0
Cell 1 vs. Cell 2	.17	.664*
Cell 1 vs. Cell 3	.49	.294*
Cell 1 vs. Cell 4	.97	.010**
Cell 2 vs. Cell 3	.66	.204*
Cell 2 vs. Cell 4	.70	.040**
Cell 3 vs. Cell 4	1.46	.005**

\* Hypotheses predict no difference, so p-values are for a two-tailed test.

\*\* Hypotheses predict Cell 4 is lower, so p-values are for a one-tailed test.