

Using Top Cycle Modeling in Audit Analytical Procedures

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Overview

- Analytical Procedures in the Audit Process
- Risk-Based Audits
- The Audit Client's Value Chain
- Developing BETA Equations from the Value Chain
- Using the BETA Equations in the Audit Process

Analytical Procedures in the Audit Process

Definition of Analytic Procedures:

evaluations of financial information made by a study of plausible relationships among both financial and nonfinancial data.

Analytical procedures range from simple comparisons to the use of complex models involving many relationships and elements of data. A basic premise underlying the application of analytical procedures is that plausible relationships among data may reasonably be expected to exist and continue in the absence of known conditions to the contrary. Particular conditions that can cause variations in these relationships include, for example, specific unusual transactions or events, accounting changes, business changes, random fluctuations, or misstatements. (AU 329.02)

Analytical Procedures in the Audit Process

- Stages in the Audit Process where Analytical Procedures can be Performed:
 - Planning the audit (required)
 - Substantive testing (optional)
 - Final review (required)

Risk-Based Audits

- Audit risk is the risk that there will be a material misstatement in the financial statements after the auditor issues a clean opinion.
- A material misstatement is a variation in a reported value so great that a person relying on the value would have made a different decision had they known the true value

Risk-Based Audits

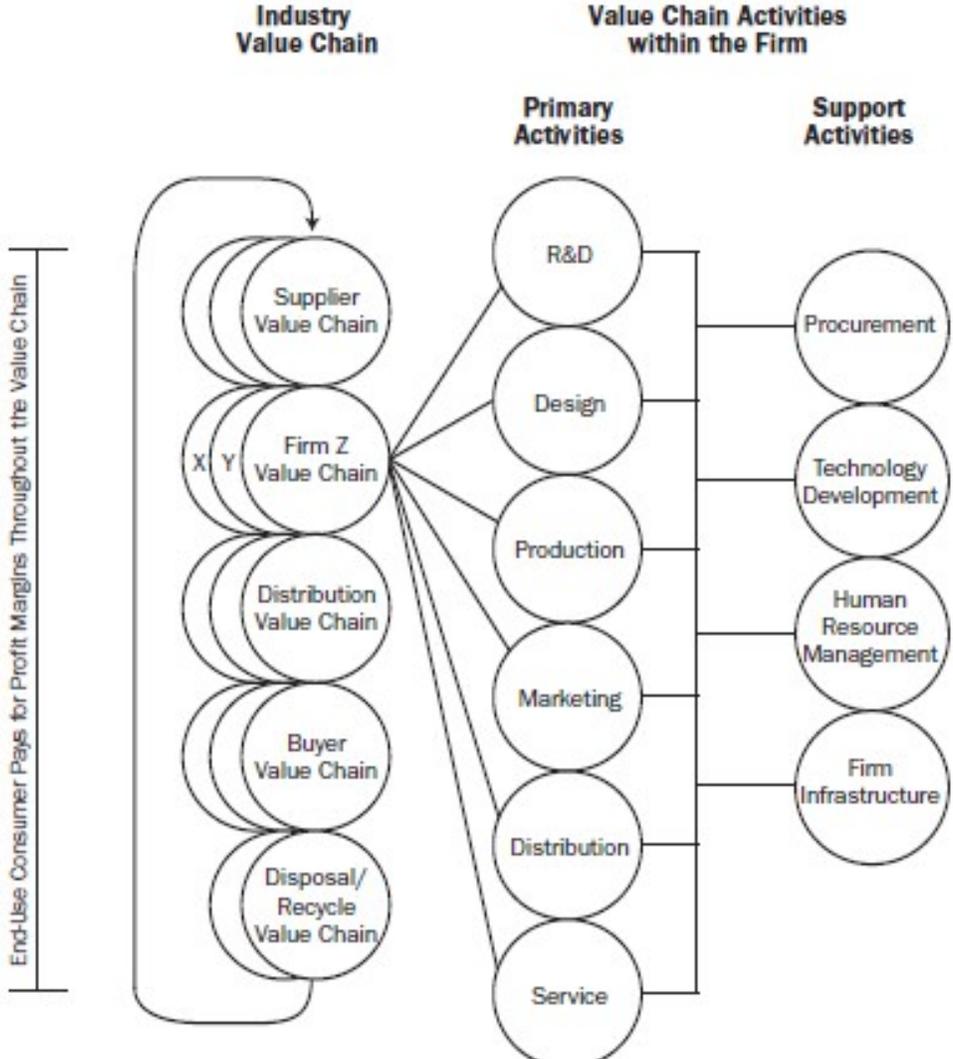
- Audit risk is controlled by adequate planning of the audit
- Audit planning considers, among other things:
 - Management assertion (e.g., completeness or valuation)
 - Disaggregated risk associated with those assertions
- In order to understand the assertion-associated risk, the auditor must understand their client's business

The Audit Client's Value Chain

- Understanding a client's business includes:
 - Their business model
 - Their industry
- The value chain points out where value is generated by the client and throughout the client's industry

The Audit Client's Value Chain

EXHIBIT 1. THE VALUE CHAIN



The Audit Client's Value Chain

- Foci of the Value Chain
 - The firm can be considered both microeconomically and macroeconomically
 - Effect of management on the business process
 - Increasing customer value
 - Cost reduction activities

The Audit Client's Value Chain

EXHIBIT 2. COMPETITIVE ADVANTAGE THROUGH
LOW COST AND/OR DIFFERENTIATION

Relative Differentiation Position	Superior	Differentiation Advantage	Differentiation with Cost Advantage
	Inferior	Stuck-in-the-Middle	Low-Cost Advantage
		Inferior	Superior

Source: Shank and Govindarajan, 1993.

Developing BETA Equations from the Value Chain

- The auditor can focus on relationships within BETA equations representing the client's business model under risky conditions
- These conditions include:
 - parameters which historically have experienced relatively large fluctuations
 - parameters which might be expected to have fluctuations in the current period due to perturbations in the client's business model or business environment

Developing BETA Equations from the Value Chain

- Three conditions can be used to constrain the use of the TCM approach for developing analytic procedures during the planning stage of the audit process:
 1. Looking for conditions where the BETA equations will hold,
 2. Focus on value generating activities or cost drivers either in the clients business model or their business context, and
 3. Focus on parameters which experience variability in their measures within the audit period or across audit periods.

Using the BETA Equations in the Audit Process

- The core of the value cycle approach from this perspective is the set of so-called BETA equations

$$B - E + T - A = 0$$

- B = Beginning stock
- E = Ending stock
- T = Increases to stock
- A = Decreases to stock

Using the BETA Equations in the Audit Process

- Airline carrier example:
 - Part of the business model is the use of jet fuel to power the planes which generate revenue through the sale of seats to paying customers.
 - In a period of rapidly falling jet fuel prices, the auditor may be concerned that their client could use the situation to manipulate earnings.
 - The assertions involved are the completeness of the revenues expenses and their valuation

Using the BETA Equations in the Audit Process

- Auditors should consider:
 - The beginning and ending stock of jet fuel for their client
 - The contract purchases and uses of the fuel during the period of the audit
 - The client's use of derivatives to provide insurance in fluctuating commodity markets

Using the BETA Equations in the Audit Process

- The auditor can then set up A BETA equation modeling this situation:
 - Looking at physical stocks of fuel
 - The changes to those stocks during the period through purchase contracts and flight schedules
 - The final stock of fuel at the end of the period
 - The purchase contracts are used to value the fuel and fuel expense in monetary terms

Using the BETA Equations in the Audit Process

- In the Planning Stage of the Audit:
 - The auditor plans to collect evidence as to the stocks, flows and valuation of the fuel during the substantive phase of the audit
 - The auditor will use the TCM approach to help plan the procedures to perform during the audit
- So the three conditions are met:
 - There is a BETA equation
 - It focuses on miles flown and the use of fuel in an environment
 - The price of the fuel is fluctuating

Using the BETA Equations in the Audit Process

- The Substantive Phase
 - Completeness assertion:
 - Complete accounting for all of the fuel used by the airline during the audit period
 - Two measures are the beginning and ending balances of fuel inventories. The beginning balance is usually relied on as the audited ending balance of the prior period. The ending balance requires the auditor to test inventory measures at the various airports.
 - Two populations are the purchases of fuel (or fuel deliveries on contract) and the use of fuel. Contract volumes can be inspected and confirmed with the jet fuel providers. The use of fuel is recorded in the maintenance records of the airline which can be sampled.
 - Valuation assertion: the auditor can rely on the physical volume BETA equation and evidence gathered and confirmed from the purchase contracts concerning the pricing of the jet fuel.

Using the BETA Equations in the Audit Process

- Final Stage of the Audit
 - The importance of the auditor's evaluation of any difference at this stage will depend on:
 - The weight attached to the results of the substantive testing stage
 - Whether any additional procedures were performed to test the completeness and valuation assertions

Questions?