Due Diligence on Fast-Fashion Inventory through Data Querying

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ABSTRACT: In this simulation of a merger and acquisition due diligence engagement for a fast-fashion retailer's inventory account, learners develop IT audit skills by (1) preparing a business process representation, (2) identifying audit objectives for testing management assertions about inventory, (3) designing audit procedures to implement audit objectives, (4) querying data files to execute audit procedures, and (5) communicating results. The simulation develops skills for analyzing data to verify the internal consistency of accounting records and to detect conditions warranting further investigation. The simulation, workable with a database query tool or audit software, is appropriate for students with querying proficiency and audit procedure design capability. The simulation helps bridge the understanding gap between IT auditors and general auditors by enabling novice auditors to experience an auditing situation in which they apply IT audit tools to verify internal consistency of data and detect unusual conditions in an audit of financial statement assertions.

Keywords: audit program design; audit simulation; audit software; business process modeling; business process diagram; database querying; due diligence; fast fashion; integration of financial and IT auditing; query strategy; queries.

I. LEARNING OBJECTIVES AND IMPLEMENTATION GUIDANCE

Learning Objectives

The learning objectives for this audit simulation are for students to develop audit and analytical skills useful in analyzing data electronically to verify the internal consistency of accounting records and to detect conditions warranting further investigation. They develop these skills in the context of an audit of financial statement assertions. In order, the specific skills students develop are to:

1. gain an understanding of the client’s business situation by preparing a business process representation,
2. develop, by financial statement assertion, audit objectives for an inventory account,
3. design audit procedures to implement the audit objectives,

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4. execute the audit procedures with query or audit software, and
5. communicate audit objectives, audit procedures, results from executing audit procedures, and matters warranting follow up in a report format.

The case is set in the context of a merger and acquisition due diligence engagement (Brannen 2006) on a fast-fashion retailer’s inventory account. The objectives represent essential skills for audit expertise in situations where auditors are expected to use software tools to analyze data relationships in an accounting system. Materials for staging the simulation include an opening conversation among audit staff members, an audit program from an earlier non-automated engagement, results to date on the audit, files containing transaction and balance data pertaining to the company’s inventory, data attribute definitions, an audit report template, and readiness questions.

**Motivation for the Audit Simulation**

Increasing complexity of client IT environments and continuing pressure for more effective audits performed in less time at less cost have gradually increased demand for computer-related audit skills (McCollum 2002; Fennel 2003; Jackson 2004). Concurrently, expectations have been growing for auditors to increase their productivity with software (Elliott 2002; McCollum 2002). Some audit groups have been aggressively seeking to replace time-consuming manual procedures with more powerful electronic procedures executed with audit or analysis software that has become commonplace and affordable on PC desktops (McCollum 2002). Auditing standards now suggest that auditors can no longer justify strictly manual audit procedures for clients with complex computing environments (AICPA 2001). Business executives expect auditors to be as technically savvy as the systems they audit. Responding to these pressures and expectations sets up a demand for accounting graduates to have the analytical and querying skills that enable them to be productive in an increasingly technology-enabled business environment.

A promising approach to offering novice auditors experiences for developing audit expertise is audit simulation because it can replicate the essential elements of audit settings. IT auditing situations are especially suited for learning experiences through simulation because students can use query managers or audit software that are the same as or equivalent to those used by auditors. In simulations, students can experience the work of IT auditors analyzing client data to verify internal consistency of accounting records and detect conditions warranting further investigation.

An impediment to the productive application of analytical and querying expertise in auditing is the perennial difficulty that IT auditors and general auditors have had in integrating their efforts (Stazyk 1992; Vendrzyk and Bagranoff 2003; Carmichael 2004; Baker 2007; Chaney 2007). Carmichael explained the situation as, “There is often insufficient discussion between the computer auditors and general auditors for the general auditors to know what assurance is provided by the work being done by the computer specialists” (Carmichael 2004, 132). Different educational backgrounds and work experiences have led to different perspectives on auditing and information systems. Comparatively, IT auditors typically complete a higher proportion of college courses in IS while financial auditors typically complete a higher proportion of courses in accounting (Viator and Curtis 1998; Curtis and Viator 2000).

We believe that experiencing an audit simulation like the one used here offers some promise for bridging the understanding gap between financial auditors and IS auditors by enabling novice auditors to experience a financial auditing situation in which they apply IT audit tools. It is a small step toward achieving the integration of financial and IT auditing
that has long been desired but rarely observed (Stazyk 1992; Vendrzyk and Bagranoff 2003; Arens and Elder 2006). As system complexity and the pace of system evolution increase, we believe that leveraging auditors’ efforts with technology will become more important (O’Donnell et al. 2000; Winograd et al. 2000; Vendrzyk and Bagranoff 2003). By affording students an opportunity to apply IT audit tools to financial statement audit objectives, this simulation offers some potential for bridging the understanding gap between IT auditors and general auditors. Thus, this case can be helpful in developing an understanding of IT audit techniques in general auditors, and in developing financial statement audit skills in IT auditors.

Enabling general auditors to understand IT audit techniques would be useful in helping them comply with the criteria in Statement on Auditing Standards No. 94 (AICPA 2001) for the use of technology specialists on a financial statement audit. According to the standard, general auditors must themselves understand technology issues well enough to supervise technology specialists, including assigning tasks and understanding the implications of findings.

In practice, IT auditors are more expensive than regular audit staff, which means the budget for their time sets up the expectation that their services will be valuable in ways that regular audit staff are not. Thus, students have the opportunity to develop skills with analysis and query software to differentiate themselves in the market for audit talent. Awareness of the market for IT audit skills might prompt more students to work harder at developing these skills in this simulation.

Contribution to the Case Literature

Audit simulations with data for querying are not plentiful in the literature. We are aware of three other cases with data. The earliest one is Gelinas et al.’s (2001) case in which students are introduced to ACLTM through a tutorial exercise and use ACL to perform a financial statement audit of Norwood Office Supplies, Inc. The case is posed as an introduction to using computer-assisted auditing techniques (CAATs). The second case is an audit of People State University’s payroll, included as an appendix to Hunton et al.’s (2004) textbook. Although it incorporates use of ACL, the case gives students the audit objectives and detailed procedures they are to execute. Like Gelinas et al (2001), Hunton et al. (2004) serves as an introduction to using CAATs. In contrast, our audit simulation requires learners to already have entry-level CAAT skills, e.g., at the level of Gelinas et al. (2001) or Hunton et al. (2004). Furthermore, our case requires students to make sense of an unstructured, ambiguous business situation and to develop their own audit objectives and procedures.

A third case is Borthick and Bowen’s (2008) Organofood system development audit. It is like our case in requiring students to develop audit objectives and procedures after making sense of an unstructured, ambiguous business situation but unlike our case in that it features a system development rather than a financial statement account audit. Because they concern different kinds of audits, the cases could be used in the same IT audit course. Gelinas et al. (2001) or Hunton et al. (2004) could be used to help students develop the IT audit skills needed to begin work on our case.

Learning Theory: Building Situation Models for Situated Action

The design of the case stems from the theory of situation models, in which learners construct their own mental models of a situation by making inferences and elaborations as they encounter new information. Situations devoid of ambiguities and conflicts do not prompt the inferences and elaborations necessary to construct robust mental or situation models. In the absence of ambiguities and conflicts, there is no need to make connecting
inferences about intentionality, causality, or probabilities surrounding assumptions in order to update the current model (Myers et al. 1987). When a situation is straightforward, the ease of comprehension comes at the expense of model building. Because easy comprehension does not prompt elaborations or inferences, the subsequent value in having experienced the situation is low (Duffy et al. 1990).

This simulation was designed to prompt learners to make the substantial inferences and elaborations required to make sense of the audit situation. The insights do not, however, come all at once. Instead, learners integrate new knowledge from the conversation, the data files, and other materials a piece at a time into their existing situation models (Gernsbacher 1997; Zwaan and Radvansky 1998). Although the inferences and elaborations are subtle, they represent the kinds of situation model updating that auditors are expected to do as they make sense of nuances emerging from audit situations. For example, while it distinguishes due diligence engagements from audits of financial statements, the opening conversation does not spell out the kinds of ambiguities embedded in the data files. As in real audit engagements, auditors do not know ahead of time what inconsistencies, if any, they will find. Inconsistencies emerge through analysis of relationships represented in the data files. Making the inferences required to resolve or document the ambiguities or inconsistencies gives learners practice in making the kinds of inferences and elaborations expected of auditors.

The simulation requirements prompt students to make the inferences and elaborations that auditors would make. They answer readiness questions, construct a business process representation, and develop audit objectives before designing and executing audit procedures. Constructing a business process diagram (BPD) serves as a focal point for learners’ understanding of the business processes associated with the company’s inventory. Creating an explicit representation of the business processes prompts learners to distinguish this company’s inventory processes from those of other companies so that they can design audit objectives tailored to this specific company’s processes. Uncertainties are embedded in the data, from which unresolved conditions emerge. The learner’s problem is to investigate and characterize the unresolved conditions to the extent data are available. The learner gets practice in recognizing information that might help resolve open questions and indicating how they would analyze it.

Simulation Design

Part 1: Readiness Questions

In Part 1, five multiple-choice questions with feedback for each response (in the teaching notes) assess learners’ understanding of Threadchic’s situation and its representation in the data files. As an indicator of students’ readiness to complete the case, the questions can be administered any time after students have had an opportunity to become familiar with the simulation materials but before they begin executing audit procedures, e.g., the questions could be completed one week after students receive the materials, which might be one or two weeks before the project is due. The questions can be staged online (e.g., in WebCT or Blackboard) with automatic response-level feedback.

Part 2: The Simulation

In Part 2, learners (1) prepare a business process representation, (2) develop audit objectives, (3) design audit procedures for execution on data files, (4) implement audit procedures through data querying, and (5) communicate procedures, results, findings, unresolved conditions, and lessons learned. Although the simulation suggests a reporting format,
instructors might also require students to prepare a memo to the engagement partner summarizing their results. Materials for Part 2 can be staged on a website, which permits the opening conversation to offer links to supporting materials.

The case context was designed with the least number of tables and attributes necessary to represent the financial transactions and balances associated with the retailer’s inventory. Because the tables are in third-normal form (3NF), learners are faced with deciding which tables to join for different queries and how to join them. Instructors could assign an additional requirement to develop an REA diagram to help students make data relationships explicit. Then the diagram could be used to prompt identification of relationships to be tested for consistencies. An REA diagram that keys audit objectives to relationships between entities is included in the teaching notes.

The data sets are large enough to encourage learners to manipulate the data with software rather than manually. For example, the inventoryMaster and purchases tables have over 600 rows each.

Evidence of Efficacy: Student Reaction to Learning with the Audit Simulation

This case has been used by the authors and another faculty member in their IT audit courses at four universities on two continents over five years. Feedback from debriefing sessions suggests that students have been surprised at the depth of thought required to design the audit program, execute it with audit or query software, refine their audit programs, make sense of the results, and imagine procedures for resolving unusual conditions. The audit itself serves as a wakeup call to the level of reasoning required to verify internal consistency of accounting records and detect unusual conditions. Although it seems to be a straightforward audit of an inventory account, the simulation is sufficiently problematic to require strategic reasoning about data relationships (Wilks and Zimbelman 2004). Ironically, the stronger their audit programs are, the more likely students are to encounter the relationship anomalies embedded in the data. The realization that querying results might be spawning unresolved conditions rather than converging to a definitive outcome can be disconcerting to students because their prior classroom projects have typically resulted in neat, tidy outcomes.

Inheriting a prior audit program may predispose students to a false sense of security that belies the potential of this audit situation to be different. Students missing the unusual conditions in the data are much chagrined at their failure to detect them. Having been sensitized to the possibility of such conditions, students have tended to search more carefully for them in subsequent audit simulations. Learning experiences like this simulation might help auditors overcome a tendency to engage in less strategic reasoning with use of standard audit programs (Asare and Wright 2004).

The challenges of the simulation have prompted a range of student reactions. Some students embrace the simulation enthusiastically, saying they are delighted to be able to apply their thinking skills in an ambiguous situation like the ones they will face in their careers. Some of these students become aware, for the first time, of their ability to analyze a complicated situation and make sense of it (Weick 1995, 2001). These students thrive on the challenge afforded by the simulation and are eager for even more challenging simulations. Another kind of student is able, with hard work and persistence, to develop and execute a reasonably good audit program but unable to develop implications of unusual conditions or offer approaches for investigating unresolved conditions. A third kind of student executes the inherited audit programs in a perfunctory manner and misses unusual conditions. Students liked the readiness questions because they afford them an opportunity
to calibrate the level of their understanding of the audit situation early in their work on the simulation.

Implementation Guidance

Matching to Courses and Assuring Prerequisite Skills

The simulation was developed for information systems (IS) auditing courses and auditing courses. It can be used as an individual or a team assignment to (1) develop learners’ audit program design and execution skills with software or (2) assess learners’ competence in designing and executing audit programs with software. Depending on the learners’ analysis, querying, and auditing skills, the simulation takes between 6 and 15 hours to complete.

The simulation is appropriate for students with (1) querying proficiency, (2) data analysis skills, (3) sufficient understanding of management assertions in financial statements to adapt a generic audit program to a specific situation, and (4) knowledge of inventory-related processes in retail sales. The requisite query skills include joining tables, building expressions, using built-in functions, grouping records by data characteristics, and sorting and formatting results. A learning experience that develops querying skills is Borthick et al.’s (2001) case on assuring compliance for responses to website referrals, which can be used in AIS or auditing courses.

The requisite data analysis skills are (1) identifying risks in a business situation, (2) deciding which risks can be investigated with transactional data, and (3) querying data to determine the extent to which risks have been realized. A learning experience that develops the data analysis skills is Borthick and Jones’ (2005) case on investigating a potential budget overrun for warranty service call center operations, which can be used in AIS or auditing courses. This case assumes basic querying skills, such as those developed in Borthick et al. (2001).

Students can obtain knowledge of inventory-related processes in sales from study of revenue and expenditure cycles, which are covered in Perry and Schneider (2005) and many AIS textbooks and in many auditing textbooks. The simulation requires students to integrate their understanding of the two cycles. Many students will likely already be familiar with sales procedures in retail stores through work experience or their experience as customers. Students that seem unfamiliar with the retail environment could be encouraged to observe sales activities in local stores.

Understanding the meaning of management’s assertions on financial statements can be obtained through the portion of an auditing course on financial statement auditing or careful reading of AU Section 326 Evidential Matter (AICPA 2004). If learners need more assistance developing the audit program, instructors could provide them with some or all of the audit objectives and procedures although doing so would limit the potential of the simulation to develop analytical skills for developing audit objectives and audit procedures to implement them.

Students will probably consult their audit textbooks for audit programs for the inventory account. Most of the procedures they find will likely be manual, such as drawing a sample for vouching and tracing. On the one hand, this may prompt them to convert manual audit procedures to automated ones. On the other hand, such references have the potential to limit student creativity because some IT audit procedures have no manual audit equivalent. For example, there is no manual equivalent to matching two files to determine the reasonableness of field values or matching across three files to find non-matching records.

Because of growing interest from faculty in using audit simulations in auditing courses, the discussion of prerequisite skills above attempted to show how the simulation might be made accessible to students in auditing courses. If learning experiences for developing
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querying expertise were included in an undergraduate AIS course that is a prerequisite for an undergraduate auditing course, then students could begin the simulation after learning about management assertions and audit procedures in the auditing course. This approach has the potential to accelerate students’ integration of financial statement auditing and software tool use to afford advances in audit efficiency and effectiveness.

Choosing an Approach to Representing Business Process

Although the business process representation for activities related to inventory can be developed with a technique such as flowcharting, an approach specifically developed for business process modeling is the Business Process Modeling Initiative (BPMI) Notation Working Group’s Business Process Modeling Notation (BPMI 2004). BPMN was developed as an approach to business process representation that would be understandable to business users, business analysts, technical developers, and business managers. White’s (2004) introduction to BPMN has been adequate for enabling students to apply this approach to develop their business process diagrams. The introduction (White 2004) and specification (BPMI 2004) are available at no cost from the BPMI website.

Selecting the Software Tool

Students have worked the simulation using a database query tool (Microsoft Access® QBE) and audit software (ACL). Use of either one enables achievement of learning objectives. Other audit software such as IDEA™ could be used (McCombs and Sharifi 2004). Using database querying has the advantage of affording students experience with querying relational databases, which will be helpful to them regardless of whether they become auditors or use the same or different query tools in the future. Using audit software has the advantage of familiarizing students intending to become auditors with the typical functions in audit software. Given that either kind of software enables students to achieve intended learning outcomes, software choice may be a function of practical considerations such as which software tool (1) is more readily available to students, (2) is associated with higher initial proficiency with querying, or (3) is used subsequently in the curriculum.

Realizing Learning Gains through Collaboration

The simulation can be assigned to individual learners or to teams of learners. In our experience, teams usually exhibit the advantages of more thorough analyses, less frustration on the part of individual learners, and higher satisfaction with the learning experience due to its collaborative nature, which enables students to learn from each other (Rogoff 1998; Borthick et al. 2003). Working with others also lets students experience the demand for business professionals to collaborate on problems for which new approaches or solutions are required (Schrage 1990; Raelin 1997).

A risk of team completion of the analysis in Part 2 is freeloading by individuals. Some tactics to deter freeloading we have used are requiring team members to rate each other’s contributions to the audit, using smaller teams, and selecting individuals at random to lead class discussion of the outcomes. To prompt greater effort from students, we have had student teams publish their work on the web before class discussion of outcomes. In our experience, although it does not ensure that all team members work equally hard, public visibility of work seems to elicit more participation from all team members compared to the situation of student work being a private performance only for the instructor. We believe public visibility of work leads to greater effort, on average, because team members wanting to do good work will encourage others on their teams to participate more fully.

While this simulation has particular audit issues for students to address, the larger objective is for students to develop analysis and query skills that will let them develop and
execute audit programs in more challenging situations. The objective is for learners to internalize reasoning strategies that enable them to develop effective approaches to the next new problem they encounter (Kozulin 1998; Sfard 1998). Some of these long-lived skills appear to develop in the activity of tearing apart inferior solutions (Kruger 1993). Because they tend to implement the first solution approach that occurs to them, individuals, on their own, are unlikely to generate many opportunities to learn from inferior solutions. For this purpose, collaborating with peers is helpful because peers think of different approaches and push each other to justify their beliefs or abandon them (Bruffee 1999).

**Introducing the Simulation**

We encourage instructors to minimize their introductory comments but to be ready to respond to students’ questions by engaging them in discussions that enable them to answer their own questions. For example, we have found it helpful to prompt students for questions after they read the opening conversation, before and after they complete the readiness questions, and during the period they are working on the audit.

For students that seem bewildered at how to begin the audit, it is helpful to point out that the Threadchic Inventory Account Report form in Figure 4 can be used as a guide to what to do, i.e., develop audit objectives for each financial statement assertion, design audit procedures to implement the audit objectives, execute the audit procedures by querying the data, and communicate the results by completing the report. Thus, the report form can be used as an organizer for the work itself as well as a repository for portions in progress or completed.

**Posing as Single or Multiple Assignments**

The audit report can be completed as single or multiple assignments. As a single assignment, the simulation has a number of advantages: creating the opportunity for students to experience the audit as an integrative whole in which the effectiveness of sequences of audit objectives, audit procedures, and procedure executions matters; ensuring that students experience the audit as auditors would, as a whole task, without check figures at interim stages because real world situations do not provide them; and increasing the likelihood that students will develop the integrative thinking the simulation is designed to elicit. Because ineffective audits may fail to detect important unusual conditions or inconsistencies, we believe we advantage students by offering them this lesson in a course rather than letting them experience it first on the job.

Our preference for a single-assignment audit may not be appropriate for all learners. For a multiple-assignment audit, we suggest making the business process representation and audit objectives one assignment and audit procedures, procedure execution, and report completion a second assignment. A risk of this approach is that students might not fully grasp the significance of the integrated set of audit objectives if they did not develop them. These students might leave the simulation with an inflated sense of their auditing expertise.

**Closing the Simulation**

The most important aspect of closing the simulation is to ensure that students become aware of all the conditions embedded in the data and explanations for them. This debriefing could be driven by student presentations or discussion or by instructor summary. It is helpful to prompt students to characterize what they believe they learned from the simulation and especially how what they learned might be useful in the future.
Teaching Notes
The Teaching Notes for this case include:

1. Explanation of the unusual condition and query nuances
2. Grading guidance
   a. Part 1: Solutions and item feedback for readiness questions
   b. Part 2
      i. Business process diagram
      ii. Analysis of querying with results
3. REA diagram
4. A link to a zip file containing the following files:
   a. Access mdb file containing the data for student querying
   b. Access mdb file containing the data and QBE queries for instructor use that supports the Part 2 analysis of querying
   c. HTML files of the case text to enable instructors to stage the case on a website. Any websites used for this purpose should be password-protected, and the passwords should be given only to students enrolled in courses using the case.

II. THE SIMULATION
The Engagement
Scene: October 1, auditors planning the inventory account portion of a due diligence engagement on Threadchic, a fast-fashion phenom.

Pat (engagement partner): “As usual for due diligence work, we didn’t have advance notice. Because of the short time frame, the site team observed the company’s year-end inventory count, which is why we have count results before we developed the rest of the audit procedures. The team also downloaded copies of the full client data files for us. In addition to the data, here are data attribute definitions (Figure 1), results to date on the engagement (Figure 2), and the audit program for a manually-executed due diligence engagement similar to this one (Figure 3). Before I forget, Threadchic marks down inventory 21 days after no sales, automatic from corporate, with posting to G/L as a month-end adjustment.”

Sandy (audit senior): “This is my first due diligence assignment. How does it differ from a financial statement audit?”

Madison (audit manager): “About two months.”

Sandy: [Looking puzzled.]

Madison: “We have the same objectives as a financial statement audit, but instead of 75 days after year-end to sign off on the audit, there might be two weeks from offer to closing. Hence, two months’ difference.”

Sandy: “Why so short?”

Madison: “It’s the nature of the M&A [mergers and acquisitions] business—urgency to do the deal before anybody gets cold feet or other suitors spoil the duet.”

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1 Due diligence is the process of examining the financial underpinnings of a company for the purpose of assessing the risks associated with acquiring or merging with the company. Due diligence assurance engagements pertaining to financial statements address the same five management assertions as financial statement audits.

Pat: “To be specific, closing is ten days away, giving us a week for our work. Another
difference is that our client is the acquiring company, not the company being
audited. And, there’s no opportunity for testing controls. All the evidence we collect
will come out of the data.”
Fran (first-year audit staff member): “So that’s why we IT auditors are on this job—
to analyze the data electronically in just a few days.”
Pat: “Yes, your task is to find all the inconsistencies in the data with standard audit
tests and ones you create.”
Alex (second-year audit staff member): “To make sure we don’t overlook a data re-
lationship, we could prepare t-accounts or an REA diagram of the data structure.”
Fran: “And query to find inconsistencies in each relationship.”
Pat: “That’s the idea! We need your query expertise and the analysis it affords for jobs
like this where there’s only enough time for doing the most crucial analyses with
software. As companies have to accelerate their financial statement filings over the
next few years, I believe we’ll be increasing the proportion of audit hours devoted
to analysis of whole data files with query tools. More of our training will soon be
oriented this way.”
Madison: “Querying also has the advantage of enabling us to maintain an objective
perspective—no halo effect for anything about the company—it’s just data to us.”
Pat: “Good point! Regardless, we know a lot about the company. It’s been profitable
throughout its life, albeit short, as a fast-fashion retailer. Some audit procedures
have already been done—no problems in cutoff and no evidence of inventory being
pledged. Sarbanes-Oxley 404 compliance\(^3\) is not a concern because the acquirer
intends to replace all of Threadchic’s systems with its own. The company was
founded as an alternative source for fashion goods that are as stylish as the high-
priced threads but not nearly as expensive. It’s a ‘fast-fashion’ version of a
‘high-fashion’ retailer. The founders are getting their wish to cash out by being
bought by a larger retailer.”
Sandy: “Fast fashion?”
Fran: “Yes. Threadchic buys from companies that knock off designer fashions and
make them faster than the designer houses can. Threadchic started out selling
knock-off stuff to just anybody, but pretty soon the fashionistas caught on. Fashion-
istas buy but don’t tell anybody—except, of course, their closest fashionista
friends.”
Alex. “I can vouch for prices there being less than those of bigger, fully-integrated
companies like H&M and Zara. And stores get new styles every two to three weeks
direct from vendors, which go on the shelves from the shipping carton. Vendors
do everything, like attaching hang tags, putting on hangers, and sending electronic
invoices to corporate.”
Sandy: “Are you a fashionista?”
Alex: “Heavens, no. I hear the neighborhood kids talk about it. You know—kids
SKUing each other on cell phones. I can’t figure out what distresses them more—
not having the latest knock off or more than one of them wearing it at the same
time.”

\(^3\) See Public Company Accounting Oversight Board (PCAOB). 2004. An Audit of Internal Control Over Financial
Reporting Performed in Conjunction with an Audit of Financial Statements. Auditing Standard No. 2. Washington,
DC: PCAOB. Available at: http://www.pcaobus.org/Rules_of_the_Board/Documents/Rules_of_the_Board/
Auditing_Standard_2.pdf.
Pat: “Skew—what?”  
Alex: “Dropping the S-K-U, the inventory Stock Keeping Unit, into a text message they send through their cell phones.”  
Pat: “Thanks for the translation! So that’s what my kids are doing.”

<table>
<thead>
<tr>
<th>Table/Attribute&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| **inventoryCount**: All items observed in the year end inventory count | SKU Stock keeping unit, the unique identifier for each item in inventory  
storeID Unique identifier for each store  
obsvQOH Quantity on hand observed by the client in its inventory count  
obsvDate Date of inventory count |
| **inventoryMaster**: Master file for all items in inventory during the year | SKU Stock keeping unit, the unique identifier for each item in inventory  
storeID Unique identifier for each store  
QOH Quantity on hand  
date Date of inventory |
| **invoices**: All invoices for the year, sent by vendors to corporate | invoiceID Unique identifier for each invoice  
vendorID Unique identifier for each vendor  
invoiceTotal Total for this invoice  
invoiceDate Date invoice created by vendor |
| **markdowns**: Markdowns taken on inventory items | SKU Stock keeping unit, the unique identifier for each item in inventory  
vendorID Unique identifier for vendor  
cost Purchase cost of item  
lastSalesPrice Sales price for the last sale  
lastSalesDate Last date item was sold  
markedDownCost Value after markdown of cost, blank if no markdown |
| **payments**: Payments to vendors for merchandise | paymentID Unique identifier for a payment  
invoiceID Unique identifier for an invoice  
paymentAmount Amount paid  
paymentDate Date of payment |
| **purchases**: Line item information for each invoice, multiple lines per invoice | invoiceID Unique identifier for invoice  
lineID Line ID within this invoice  
SKU Stock keeping unit, the unique identifier for each item in inventory  
orderQty Quantity of this item ordered  
cost Cost per unit |
| **trialBalance**: General ledger account balances before markdown posting and inventory count adjustment | acctID Unique identifier for account  
acctTitle Account title  
storeID Unique identifier for each store  
acctBalance Account balance  
year Year and audit status |

<sup>a</sup> Table names in bold.
FIGURE 2
Threadchic: Audit Results To Date
(Materiality planning threshold: .004 × revenue)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Audit Procedure</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Count inventory</td>
<td>Observe inventory count on 9/30 year-end date; compare with pre-count records.</td>
<td>Counts were taken with sufficient accuracy. Counting errors were random.</td>
</tr>
<tr>
<td>2. Perform cutoff test on sales</td>
<td>Examine a sample of sales transactions for a few days before and after year-end for recording of sales in the proper period.</td>
<td>All sales transactions recorded in the proper period.</td>
</tr>
<tr>
<td><strong>Completeness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Perform yearend cutoff test on purchases</td>
<td>Examine a sample of receiving reports for a few days before and after year-end for recording of inventory purchases in the proper period.</td>
<td>All sampled receipts were recorded in the proper period. Only invoice 2708 is dated after yearend, and no SKUs from that invoice are included in purchases.</td>
</tr>
<tr>
<td><strong>Rights and Obligations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Determine whether any inventory is pledged for non-inventory purposes</td>
<td>Examine bank confirmations, debt agreements, and board minutes for evidence of inventory having been pledged.</td>
<td>No pledges of inventory were found in bank confirmations, debt agreements, or board minutes.</td>
</tr>
</tbody>
</table>

FIGURE 3
Prior Engagement Audit Program

<table>
<thead>
<tr>
<th>Objective</th>
<th>Audit procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existence</strong></td>
<td></td>
</tr>
<tr>
<td>1. Observe inventory count at year-end; compare with pre-count records.</td>
<td></td>
</tr>
<tr>
<td>2. Cutoff: Examine a sample of receiving reports for a few days before and after year-end for recording of inventory purchases in the proper period.</td>
<td></td>
</tr>
<tr>
<td><strong>Completeness</strong></td>
<td></td>
</tr>
<tr>
<td>1. Cutoff: Examine a sample of sales transactions for a few days before and after year-end for recording of inventory purchases in the proper period.</td>
<td></td>
</tr>
<tr>
<td>2. Observe inventory count at year-end date.</td>
<td></td>
</tr>
<tr>
<td>3. Trace test counts into inventory compilation.</td>
<td></td>
</tr>
<tr>
<td><strong>Rights and Obligations</strong></td>
<td></td>
</tr>
<tr>
<td>1. Determine whether any inventory is pledged for non-inventory purposes.</td>
<td></td>
</tr>
<tr>
<td><strong>Valuation</strong></td>
<td></td>
</tr>
<tr>
<td>1. Vouch a sample of inventory items to vendors’ invoices.</td>
<td></td>
</tr>
<tr>
<td>2. For a sample of the oldest inventory items, verify markdowns.</td>
<td></td>
</tr>
<tr>
<td>3. Verify reasonableness of client adjustments.</td>
<td></td>
</tr>
<tr>
<td><strong>Presentation and Disclosure</strong></td>
<td></td>
</tr>
<tr>
<td>1. Verify the mathematical accuracy of inventory computations:</td>
<td></td>
</tr>
<tr>
<td>a. Multiplication of unit times cost</td>
<td></td>
</tr>
<tr>
<td>b. Extensions and footings of the final inventory compilation</td>
<td></td>
</tr>
</tbody>
</table>

Required

**Part 1: Readiness Questions**

After you have become familiar with the Threadchic situation as represented by the
opening conversation, the data, data attribute definitions, audit results to date, and the audit program for a similar engagement, answer the following questions to assess your readiness to begin analyzing Threadchic’s inventory account. The questions illustrate the kinds of thinking that will enable you to understand the situation in order to develop productive audit objectives. Select the best choice for each question. The questions are independent of each other.

FIGURE 4
Threadchic Inventory Account Report

<table>
<thead>
<tr>
<th>Assertion and Audit Objective</th>
<th>Audit Procedure</th>
<th>Results from Execution of Queries</th>
<th>Matters Warranting Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identity of the management assertion</td>
<td>Explanation of the audit procedure for implementing the audit objective in terms of the data attributes in the database.</td>
<td>For each procedure: 1. The name(s) of the query(ies) that executes the audit procedure 2. A statement of the query results 3. An explanation the meaning of the query results in the context of the audit</td>
<td>1. Unresolved conditions that preclude signing off on the inventory account. Show “N/A” for no unresolved conditions. 2. For each unresolved condition, an explanation of how the matter could be investigated.</td>
</tr>
<tr>
<td>2. Statement of the audit objective</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Existence

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Count inventory(^a)</td>
<td>Observe inventory count on 9/30 (year-end date; compare with pre-count records.</td>
</tr>
<tr>
<td>2</td>
<td>Perform cutoff test on inventory transactions(^a)</td>
<td>Examine a sample of receiving reports for a few days before and after year-end for recording of inventory purchases in the proper period.</td>
</tr>
</tbody>
</table>

### Completeness

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Perform yearend cutoff test on purchases(^a)</td>
<td>Examine a sample of receiving reports for a few days before and after yearend for recording of inventory purchases in the proper period.</td>
</tr>
</tbody>
</table>

(continued on next page)
1. SKUs appearing in the purchases table but not in the inventoryCount table is most likely attributable to inventory:
   a. having been sold earlier for those SKUs
   b. not being accounted for or counted properly
   c. being lost before being placed on store shelves
   d. records being lost sometime during the year
   e. being stolen before or after reaching store shelves

2. Suppose for one vendor there is a concentration of observed inventory counts lower than the system’s counts. The audit implication of this outcome would be to:
   a. suggest that Threadchic staff be especially careful when they count inventory for this vendor
   b. base calculations for this vendor’s items on the counts observed at year-end for the items
c. prompt the adjustment of counts for other items downward, consistent with the
counts for this vendor
d. create the need for the auditor to investigate whether this vendor’s items are
more theft-prone
e. call into question whether the counts for the items from the other vendors can
be relied upon
3. The risk of employee theft of items during the year is a threat to the inventory
account at year-end with respect to the assertion of:
a. existence
b. completeness
c. rights and obligations
d. valuation
e. presentation and disclosure
f. none of the assertions is threatened
4. Comparing current-year manufacturing costs with those of the prior year might
reveal:
a. trends over time in manufacturing costs
b. discrepancies in records of manufacturing costs
c. how Threadchic’s cost structure differs from that of other companies in its
industry
d. symptoms of runaway costs soon enough for Threadchic to bring them under
control
e. that Threadchic has no manufacturing costs
5. Suppose item costs in the markdowns file did not match the costs in the purchases
file. If the reason for the mismatch was that Threadchic had already marked down
items to the lower of cost or market, which audit procedure would most likely
detect that condition?
a. Match purchased items to invoice totals to verify correctness of vendor in-
voices. Investigate any invoices whose total does not match the sum of line
items for that purchase.
b. Calculate the difference between cost and the most recent sales price for all
items. Recommend financial auditors investigate items sold for a price different
from the standard markup.
c. Obtain data about returns and allowances from vendors and verify that costs
have been adjusted to agree with credit given by vendors for item purchases.
d. Ask for an explanation of the approach to marking down items. Recompute
to verify that all item costs in the markdown file adhered to Threadchic’s
approach.
e. Compare prior year inventory costs to current year inventory costs, compare
prior year inventory turnover to current year turnover, and investigate any dif-
fferences larger than 10 percent.

Part 2: Analysis

1. Prepare a one-page business process diagram (BPD) for Threadchic’s processes
concerning inventory to the extent you can infer them from the materials provided.
2. By financial statement assertion, develop audit objectives for Threadchic’s inven-
tory account.
3. Design audit procedures to implement the audit objectives.
4. Execute the audit procedures by querying the data.
5. Communicate audit objectives (by assertion), audit procedures, results from execution of queries, matters warranting follow up, lessons learned, and time spent by completing the report in Figure 4. The report form shows the results of work already performed.

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REFERENCES


