WeCan! Industries, Inc. Cat Furniture Division: An Accounting Information Systems Case

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Abstract

The case involves the development of an accounting information system for sales/ marketing and cost control for a new product in a new business division. The client (WeCan!) has an effective financial accounting software system; however, the manager of the Cat Furniture Division (CFD) needs a secondary processing system in order to make decisions about the profitability of individual items in the product line and in order to have effective control over direct costs of production (materials and labor). The system solution can be developed with relational database or spreadsheet software, although the relational database solution is more practical.

Introduction—The Beginning

Matt Condin calmly closed the door to his office and let out a long breath. The board of directors of WeCan! Industries, Inc., had just given him the green light to start up the Cat Furniture Division (CFD). He had been very excited about the project and that enthusiasm was a key persuader in his presentation to the board. He knew he would have to deliver— literally! Excitement turned to anxiety as he had a new business to establish from the ground up.

CFD was experimental for two reasons. First, this was the first time that WeCan! would venture into manufacturing. All previous work was subcontract, such as maintaining highway rest areas, repackaging retail food product for display, etc. Agreements for these ventures were in hand prior to commencing work and so most uncertainties related to revenue recognition were effectively controlled. Second, this was the first time that WeCan! would deal with inventory because CFD would produce and then try to sell inventory.

The products CFD would make were cat scratching, climbing posts, and sleeping nooks. Three variables defined the product line: purpose, size, and decoration. The item was either a scratching post, climbing post, or sleeping nook. Product items ranged in height from 24" to 72". Lastly, the center post was decorated either with carpet or with a combination of carpet and sisal rope (an ornamental hemp).

A building already owned by WeCan! would be used as the production facility. No other

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WeCan! operations would be in this building. Electricity would be the only direct, unmeasurable overhead component. For the first year, Matt convinced the board that an overhead allocation would be unnecessary and only complicate the analysis of the project's profitability. The argument was that Matt would be able to trace all marginal costs and all of those would be included in the analysis.

Matt had built some of the items for the presentation. He knew the type and quantity of materials needed to make each model. He had performed some time studies to determine the amount of labor needed. He felt prepared, almost.

What he didn't have was a good accounting system. Lynn Neuman, the Chief Financial Officer (CFO), was a CPA and managed a very competent staff. But Matt wasn't sure that the accounting system in place would be able to pro-

Figure 1: Cat Furniture Division
Product Line Items

Item #	Item Description	Selling Price
101C	18" Carpet Scratch Post	9.00
101S	18" Sisal Scratch Post	10.25
102C	24" Carpet Scratch Post	10.50
102S	24" Sisal Scratch Post	11.75
103C	18" Carpet Hanging Scratch Post	8.00
103S	18" Sisal Hanging Scratch Post	9.25
104C	24" Carpet Hanging Scratch Post	9.50
104S	24" Sisal Hanging Scratch Post	10.75
105C	24" Dbl Scratch Carpet Post	17.00
105S	24" Dbl Scratch Sisal Post	20.50
112C	24" Carpet Scratch Post (Heavy Duty)	15.00
112S	24" Sisal Scratch Post (Heavy Duty)	18.00
200C	24" Carpet 2 Seat Climbing Post	16.00
200S	24" Sisal 2 Seat Climbing Post	18.00
201C	36" Carpet 3 Seat Climbing Post	21.00
201S	36" Sisal 3 Seat Climbing Post	23.00
202C	48" Carpet 4 Seat Climbing Post	26.00
202S	48" Sisal 4 Seat Climbing Post	33.00
203C	60" Carpet 5 Seat Climbing Post	31.00
203S	60" Sisal 5 Seat Climbing Post	38.00
204C	72" 6 Seat Carpet Climb Post	36.00
204S	72" 6 Seat Sisal Climbing Post	43.00
300C	36" Carpet 1 Seat Penthouse	25.00
300S	36" Sisal 1 Seat Penthouse	29.00
301C	48" Carpet 2 Seat Penthouse	33.00
301S	48" Sisal 2 Seat Penthouse	37.00
303C	60" Carpet 3 Seat Penthouse	41.00
303S	60" Sisal 3 Seat Penthouse	45.00
305C	72" Carpet 4 Seat Penthouse	49.00
305S	72" Sisal 4 Seat Penthouse	53.00
401C	Carpet A-Frame with Seat	18.00
402C	Carpet Single Condo	15.00
403C	Carpet Double Condo	22.00
404C	Carpet Triple Condo	29.00

Figure 2: Cat Furniture Division
Manufacturing Components

Comp #	Description	Units	Cost
500	Labor	Minutes	0.1128
502	Carpet	Sqr Foot	0.3610
503	Sisal Rope	Foot	0.0144
504	2x4: 12"	# of 12" Lengths	0.3575
505	3/4" 4'x8' Plywood	Sqr Foot	0.4481
506	1/4" 4'x8' Plywood	Sqr Foot	0.4809
508	1/2" 4'x8' Plywood	Sqr Foot	0.4441
509	Lag Bolts	Each	0.0389
510	Screws	Each	0.0047
511	Staples	Each	0.0003
512	Nails	Each	0.0026
513	Hot Melt Mix	Ounces	0.0058
514	Contact Cement	Ounces	0.0594
515	Liquid Nail	Ounces	0.1390
516	Toy Mouse	Each	0.4500
517	Elastic Cord	Each	0.0093
518	Label	Each	0.0490
519	Shipping Bag	Each	0.1200
520	Washers	Each	0.0044

vide him with adequate cost/managerial information on a timely basis. Accounting only had general ledger bookkeeping capabilities. Kim Adams, VP of Information Systems had stated that, with enough information, she and her staff could create a "secondary processing" system to address Matt's information needs. They agreed to meet next week.

Prior to the first meeting, Matt sent Kim a product listing (Figure 1), a list of components (Figure 2), a component report[1] (Figure 3) and an income forecast (Figure 4).

From their working relationship, Kim knew that Matt would need a simple, user-friendly, fully documented secondary processing cost/managerial accounting system to supplement the general ledger financial accounting system. Kim had researched existing accounting software and determined that nothing would be usable for Matt's purposes. The general ledger system would continue to process accounts receivable, invoicing, monthly statements, etc. Sales invoices and other data from the accounting system would be used as input for the new system. Because Kim was "the systems guru," she did not know what Matt would need from the new system and would; therefore, rely on him to adequately define those needs. She knew that she would be responsible for making many, if not all, of the design suggestions and decisions. Matt was in charge of all operating and marketing decisions.

Company Background

WeCan! Industries, Inc. is a not-for-profit corporation located in Janesville, WI. Their corporate mission is to provide employment opportunities for mentally retarded individuals (clients) and other hard-to-employ persons (e.g., those who are rehabilitating from a work-related accident).

Figure 3: Cat Furniture Division
Component Report

Item #	Item Description	Component Number	Component Description	Standard Quantity	Std Cost per Unit	Standard Cost
101C	18" Carpet Scratch Post	500	Labor	25.0000	0.1128	2.8200
		502	Carpet	5.0000	0.3610	1.8050
		504	2x4: 12"	1.5000	0.3575	0.5363
		508	1/2" 4'x8' Plywood	1.7780	0.4441	0.7896
		509	Lag Bolts	1.0000	0.0389	0.0389
		511	Staples	70.0000	0.0003	0.0210
		512	Nails	3.0000	0.0026	0.0078
		513	Hot Melt Mix	0.2410	0.0058	0.0014
		514	Contact Cement	2.0000	0.0594	0.1188
		515	Liquid Nail	2.0000	0.1390	0.2780
		518	Label	1.0000	0.0490	0.0490
		519	Shipping Bag	1.0000	0.1200	0.1200
	101C				Total	6.5858
101S	18" Sisal Scratch Post	500	Labor	30.0000	0.1128	3.3840
		502	Carpet	4.0000	0.3610	1.4440
		503	Sisal Rope	29.0000	0.0144	0.4176
		504	2x4: 12"	1.5000	0.3575	0.5363
		508	1/2" 4'x8' Plywood	1.7780	0.4441	0.7896
		509	Lag Bolts	1.0000	0.0389	0.0389
		511	Staples	70.0000	0.0003	0.0210
		512	Nails	3.0000	0.0026	0.0078
		513	Hot Melt Mix	0.2410	0.0058	0.0014
		514	Contact Cement	2.0000	0.0594	0.1188
		515	Liquid Nail	2.0000	0.1390	0.2780
		518	Label	1.0000	0.0490	0.0490
		519	Shipping Bag	1.0000	0.1200	0.1200
	101S				Total	7.2064
102C	24" Carpet Scratch Post	500	Labor	25.0000	0.1128	2.8200
		502	Carpet	5.0000	0.3610	1.8050
		504	2x4: 12"	2.0000	0.3575	0.7150
		508	1/2" 4'x8' Plywood	1.7780	0.4441	0.7896
		509	Lag Bolts	1.0000	0.0389	0.0389
		511	Staples	70.0000	0.0003	0.0210
		512	Nails	4.0000	0.0026	0.0104
		513	Hot Melt Mix	0.2410	0.0058	0.0014
		514	Contact Cement	2.0000	0.0594	0.1188
		515	Liquid Nail	2.0000	0.1390	0.2780
		518	Label	1.0000	0.0490	0.0490
		519	Shipping Bag	1.0000	0.1200	0.1200
	102C				Total	6.7671

Figure 4. Cat Furniture Division
Project Income Statement

Item	Description	Projected Volume	Sales Revenue	Cost of Sales at Standard	Gross Profit
101C	18" Carpet Scratch Post	250	$2,250.00	$1,646.44	$603.56
101S	18" Sisal Scratch Post	200	2,050.00	1,441.27	608.73
102C	24" Carpet Scratch Post	350	3,675.00	2,368.49	1,306.51
102S	24" Sisal Scratch Post	300	3,525.00	2,311.35	1,213.65
103C	18" Carpet Hanging Scratch Post	50	400.00	216.06	183.94
103S	18" Sisal Hanging Scratch Post	35	323.75	174.48	149.27
104C	24" Carpet Hanging Scratch Post	200	1,900.00	912.79	987.21
104S	24" Sisal Hanging Scratch Post	25	268.75	139.33	129.42
105C	24" Dbl Scratch Carpet Post	150	2,550.00	1,638.09	911.91
105S	24" Dbl Scratch Sisal Post	150	3,075.00	1,973.46	1,101.54
112C	24" Carpet Scratch Post (Heavy Duty)	20	300.00	165.21	134.79
112S	24" Sisal Scratch Post (Heavy Duty)	10	180.00	94.43	85.57
200C	24" Carpet 2 Seat Climbing Post	250	4,000.00	2,725.71	1,274.29
200S	24" Sisal 2 Seat Climbing Post	175	3,150.00	2,041.80	1,108.20
201C	36" Carpet 3 Seat Climbing Post	225	4,725.00	3,284.19	1,440.81
201S	36" Sisal 3 Seat Climbing Post	150	3,450.00	2,444.19	1,005.81
202C	48" Carpet 4 Seat Climbing Post	200	5,200.00	3,485.62	1,714.38
202S	48" Sisal 4 Seat Climbing Post	75	2,475.00	1,486.13	988.87
203C	60" Carpet 5 Seat Climbing Post	175	5,425.00	3,524.74	1,900.26
203S	60" Sisal 5 Seat Climbing Post	50	1,900.00	1,263.03	636.97
204C	72" 6 Seat Carpet Climb Post	75	2,700.00	1,623.22	1,076.78
204S	72" 6 Seat Sisal Climbing Post	25	1,075.00	624.78	450.22
300C	36" Carpet 1 Seat Penthouse	100	2,500.00	1,766.98	733.02
300S	36" Sisal 1 Seat Penthouse	50	1,450.00	882.35	567.65
301C	48" Carpet 2 Seat Penthouse	150	4,950.00	3,541.74	1,408.26
301S	48" Sisal 2 Seat Penthouse	75	2,775.00	1,871.83	903.17
303C	60" Carpet 3 Seat Penthouse	250	10,250.00	6,566.67	3,683.33
303S	60" Sisal 3 Seat Penthouse	100	4,500.00	2,799.17	1,700.83
305C	72" Carpet 4 Seat Penthouse	50	2,450.00	1,408.68	1,041.32
305S	72" Sisal 4 Seat Penthouse	25	1,325.00	772.74	552.26
401C	Carpet A-Frame with Seat	250	4,500.00	3,469.95	1,030.05
402C	Carpet Single Condo	200	3,000.00	2,171.88	828.12
403C	Carpet Double Condo	150	3,300.00	2,381.10	918.90
404C	Carpet Triple Condo	100	2,900.00	2,100.14	799.86
	Total		$98,497.50	$65,318.07	$33,179.43

Budgeted Direct Expenses	Administrative Salaries	15,000.00
	Office Supplies	250.00
	Advertising	3,000.00
	Commission	1,000.00
	Equipment	500.00
	Depreciation	1,500.00
	Total Direct Expenses	$21,250.00
Budgeted Profit		$11,929.43

In order to provide those opportunities, WeCan! must research different work projects to assess the potential for clients. Cat Furniture was one such venture. If CFD was successful, Matt and the traditional labor force that would build the CFD inventory would determine which tasks could be performed by WeCan! clients.

The First Meeting

Matt met with Kim, Lynn, and Ken Lohff, the executive director of WeCan!. Production was set to begin in a few weeks, and Matt was anxious to have this piece in place. The purpose of this meeting was to articulate the information system needs of the new system and give Kim and her staff direction for the systems design. needs. They agreed to meet next week.

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The Problems

1. As Chief Operating Officer (COO) for the project (Matt Condin), what decisions will you be making and what will you need to know in order to make those decisions wisely? As CFO (Lynn Neuman), what suggestions would you have for Matt in terms of information and reports?

2. As VP of Information Systems (Kim Adams), what decisions will you be making and what do you need to know in order to design the system for the CFD project?

3. As VP of Information Systems, design a system that will efficiently serve the needs of the COO.

Endnotes

1. Only page 1 (of 12) is included in order to conserve space. Digital copies (Excel) of all data is available on request from the author.

Teaching Notes

Case Synopsis

The case involves the development of an accounting information system for a new product in a new business division of an established company. As the case narrative mentions, the current accounting information system is not equipped to generate cost/ managerial reports; therefore, analyzing the present system is not a component of this case.

Students are required to assume the roles of three players: Matt Condin, the Chief Operating Officer (COO); Lynn Neuman, Chief Financial Officer; and Kim Adams, the VP of Information Systems. As the COO, the problem requires students to articulate their needs of the system to be designed. If students have not had cost accounting, it may difficult for them to suggest variance analysis and other types of management reports. The "B" problem focuses on cost accounting. Therefore, because the focus of this case is on the information systems aspects of the problem, instructors can contribute more to the discussion of the output needs.

Learning Objectives

As was mentioned above, discussion question 1 requires a background and/or research in cost/managerial accounting. Students need to know that reports serve the decision making process. In addition to specifying the title and layout of the report, students should describe how the report would be used. For example, a report of sales volume, revenue, and profit by item number could be used to identify items in the product line to be discontinued. Variance reports are used to control costs, and so on. I remind students that accounting information systems connects to their other courses and cannot be taught (or learned) in isolation. Systems are designed to address marketing issues, human resource issues, financial accounting issues, cost accounting issues and so on.

In discussion questions 2 and 3, students focus on the role of the system analyst and designer. For question 2, the VP of Information Systems is like an external consultant brought in to perform the systems analysis and design. The conceptual answer to question 2 is another question: "What do you want the system to do?" The learning objectives behind question 2 included developing interviewing skills and a methodology for documenting and communicating your understanding of the needs of the user back to the user. With question number two, you can also address issues related to the systems development life cycle and the over-all process of systems analysis and design.

The learning objectives related to discussion question 3, designing a relational database system are more structured. They include:

1. Understand how the components of a relational database (tables, forms, queries, and reports) work together to create a management information system that supports decision making.

2. Develop a relational database system. The design of a database system involves the following decisions:
   - Define entities and attributes of entities
   - Define and normalize tables and fields
   - Construct tables; define fields and field properties.
     1. Understand data types: text, numeric, date/time, etc.
     2. Understand field sizes, input masks, and validation rules.
     3. Understand how to define look-up relationships.
   - Define relationships
     1. Apply the concepts of one-to-many, one-to-one, and many-to-many
     2. Understand and apply the concept of referential integrity
   - Design simple, one-table forms

- Design complex, multi-table forms
- Modify form properties, including properties related to internal control and aesthetics
- Identify, construct and modify queries
- Design simple, one-table reports
- Design complex, multi-table reports
- Modify report properties, including properties related to internal control and aesthetics
- Construct macros to facilitate data entry and system navigation
- Document the system from a user perspective
- Document the system from a designer perspective

Intended Course and Level

The case is suitable for accounting information systems that is offered as a prerequisite for advanced accounting courses (i.e., a course with more of a microcomputer applications focus) or as a senior level capstone course that relies on the students' understanding of accounting, finance, etc. to more actively address the first two discussion questions.

However, if the student is to be in a position to make managerial suggestions in terms of reporting needs, then they should have completed at least one cost/managerial accounting class that treated variance analysis. If the student has no or limited accounting experience, then the instructor can decide whether they want to explain variances or whether they would be willing to ignore that part of the system.

Additional Company Background

WeCan! Industries, Inc. The company is real and the problems addressed are real also. However, I was not brought in as a consultant at the beginning of the project to design the system that they could have used. I was brought in, essentially, to conduct the *post mortem*—to determine where and why things went wrong from a cost/managerial accounting perspective and to see if the project could be saved. The *post mortem* aspect of WeCan! is the focus of the [B] case where the focus is on the COO and CFO. Here, the focus is on the VP of Information System and the first two discussion questions are really, "What if?" kinds of questions. "What if we were at 'Day 1' of the CFD project? What should we have known all along, so that we wouldn't have been so unpleasantly surprised?"

Customers. Because the time frame of problem is at its beginning, a list of customers was not available. It would be built over time as customers are added. Therefore, it was not included in the students' material. The customer list (see Figure 5) has very attributes because little management analysis using customers. The customer base is limited to a 90-mile radius around the WeCan! facilities.

Figure 5: Cat Furniture Division Customer List

Customer #	Name
4003	Proper Pets
4007	Great Snake Pet Supply
4008	Dick and Jane's Garden
4009	Hawkeye Pet Co
4010	Mad City Distributors
4011	Hounds Pet Food Warehouse
4012	Hounds Pet Food West
4013	Peat's Pet Supplies #60
4014	Peat's Pet Supplies #90
4015	Andersen's Animal Care
4016	PW Pet Centers
4018	Zippy Pets
4019	Berlyn's Best Beasts
4020	Cooper's Cat Supply
4021	Ernst Ecological Supply
4022	Deloitte's Den
4023	Price Pets Supply
4024	McGladrey House of Animals
4025	Jones & Co., Pets
4026	Baggins Pets
4500	WeCan!: In-House Sales

Sales. The company uses other software for its primary processing system. That software serves WeCan! well for daily processing of financial accounting data. It is used to process all aspects of the financial accounting function, including billing, cash receipts and accounts receivable; purchasing, inventory and accounts payable. Invoices generated by the primary system will be used to input data for the proposed system. The new system will not need to generate invoices or keep track of receivable balances. This input will allow the system to track sales volume in units and dollars by item, customer, and date. One page of sales data is included as Figure 6. A complete digital set is available from the author.

[Remaining figures are at the end of the article.]

Sales Returns. There were no sales returns.

Purchases, Cost of Sales, and Inventory. The primary accounting software system also keeps track of purchasing, cash disbursements, and accounts payable. Rather than enter individual purchases of inventory into the system, the inventory/cost of goods sold data will come from monthly, summarized journal entries generated by the financial system. That is, each month, accounting will generate a summary journal entry showing the amounts (quantity and dollars) of each component (e.g., labor, carpet, etc.) purchased. One page of purchase data is included as Figure 7. A complete digital set is available from the author.

[Remaining figures are at the end of the article.]

Raw materials are readily available in the Janesville area; e.g., Home Depot, The Carpet Barn, etc. Any material shortages were rectified by "a quick trip to the store."

Many of the items used similar components. For example all of the scratching posts used 2' x 2' squares of plywood. The record keeping in the shop did not use any type of job cost accounting. So there is no way to track counting. So there is no way to track component costs (i.e., labor, carpet, etc.) to individual items in the product line. That is, we know that there were approximately 853 hours of labor incurred in January. However, we do not know how many hours were spent making 101C's and so on.

WeCan! uses a periodic inventory system; and therefore, counts inventory only at year-end. The accumulation of costs of purchases will be only approximate the cost of goods sold. Cost of sales can be calculated and reported at standard cost. However, student will discover (at the end of the year) that the standard costs, especially for labor are horribly miscalculated. The result is that, by using standard costs throughout the year to create monthly income statements, WeCan! thought that they were making a profit. After all, the sales price per item less the total standard cost per item was positive! It wasn't until year-end, when variances were calculated and inventory and cost of sales were adjusted that the company realized that the project was very unprofitable and questionably managed by the production manager.

Purchase Returns. There were no purchase returns.

Anomalies in the data—voided and missing invoices. Students will eventually notice that there is a voided invoice listed in the data, and they will notice that not all invoice numbers are included. This provides the instructor with the opportunity for two areas of discussion: internal control and system design. The missing invoices are also voided. The instructor can talk about controls that should be in place to make sure that all transactions are recorded by the *primary* processing system *and* by the proposed system. Whether students need to "process" the voided invoice is a system design issue that students should think through. They should conclude that because the voided invoice does not contribute to any aspect of sales analysis, it should be ignored.

Personnel and Payroll. A production manager (salaried) and five hourly workers were hired for CFD production. If the project fails, these people will be let go and not reassigned within WeCan!. Monthly payroll amounts (total hours and total dollars) will be included in the journal entry described in the inventory paragraph. The manager participated in production in addition to supervising. The manager has experience working for companies like WeCan! that provide services for mentally retarded clients. An important part of his job is to evaluate the process to determine whether and where clients could be used in place of traditional laborers. For the time period of the case, only traditional labor was used.

Overhead. There is no overhead involved in the CFD project. Because the building was idle there is no marginal cost. Because WeCan! is not-for-profit, there are no property taxes. Matt, Lynn and Kim decided that the cost of allocating other common costs (e.g., accounting, executive salaries, etc.) would exceed the benefit. Therefore, only direct, marginal production costs would be used in the analysis. Because there was no way to determine a reasonable allocation procedure, there was no charge to the CFD project for utilities.

Discussion Questions

Question 1: As Chief Operating Officer (COO) for the project (Matt Condin), what decisions will you be making and what will you need to know in order to make those decisions wisely? As CFO (Lynn Neuman), what suggestions would you have for Matt in terms of information and reports?

Question: As VP of Information Systems (Kim Adams), what decisions will you be making and what do you need to know in order to design the system for the CFD project?

As the COO, Matt Condin has the authority to make all operating decisions. The most fundamental decision will be whether the CFD project is feasible for WeCan!, and secondly, whether it is a viable project for employing the services of clients.

This portion of the discussion is more relevant and therefore much longer in the [B] case. That is, because more of the focus of this case is on the physical construction of the system, the note presents report possibilities with less discussion.

As the VP of Information Systems, Kim's task is to make sure that Question 1 is answered very thoroughly. In order to be successful, Kim should have a broad understanding of the subject matter—enough to be able to participate in the conversation.

Sales Volume. The first issue, the feasibility of the project will require Matt to know the profitability of the venture. As was mentioned above, the primary accounting system will not be able to provide timely information for this question. Three reports would address this issue:

- Sales Journal Summary—See Figure 8.
- Sales, standard cost, and profit by product group, by item—Product group (scratching posts, etc.), item number, description, sales volume, sales dollars, total standard cost, and total profit. See Figure 9.
- Sales variance by product group, by item—Product group, item number, description, budgeted sales volume, actual sales volume, and the variance (in dollars). See Figure 10.

[Remaining figures are at the end of the article.]

Framed as decisions, the above reports would address the following issues. Should CFD manufacture carpet versions only, or sisal versions only, or both? Should they manufacture scratching posts only, or climbing posts, or sleeping nooks? Do they need to have so many different variations in height? A forecast was prepared (Figure 4) and included in the students'

material. How well did each product perform when compared to expected sales?

Cost Control. As was explained above, labor and material variances can be computed on a component-by-component basis and not on an item-by-item basis. Suggested reports for this area include a replicating the component report (Figure 3 in the case), a variance analysis (see Figure 11, and a graph of the variance analysis (see Figure 12).

[Remaining figures are at the end of the article.]

Question 3. As VP of Information Systems, design a system that will efficiently serve the needs of the COO.

The first role of the "systems" people is to make sure that the first two questions are answered thoroughly. It is at this point in the exercise that we discuss the process of systems analysis and design, consulting methodologies, and interviewing. It is at this point also that I spend time giving an overview of relational database systems and concepts. A complete Access solution is available from the author on request.

Tables—Defining entities and attributes; table normalization. The system uses the following entities

- Item
- Component
- Bill of Materials (or parts list)
- Invoice Header
- Invoice Detail
- Customers
- Actual Costs

Table descriptions are included in Appendix A. Lookup relationships have been established between Item and Invoice Detail, between Customer and Invoice Header. Attributes that are not listed are not relevant to the solution, usually because the information is kept by the primary accounting system; e.g., customer address, city, etc.

Referential Integrity. The case provides a good opportunity for a discussion of referential integrity. Strict referential integrity has been set for all relationships. The entity relationship diagram is shown in Appendix B.

Forms. The nature of the data suggests three forms—one for adding new items, one for entering invoice data, and one for entering actual cost data. Other forms, such as Enter Customers could be added to serve as an introduction to creating forms, however no other forms really necessary. An suggestion for the form to capture invoice data is shown in Appendix C.

Queries. The case presents a lot of opportunities for discussion and learning about queries. Appendix D includes two illustrations of queries that can be used to create the component report, and to create various reports that use selling price and standard cost per unit.

Epilogue. As students will see, the labor portion of the production process was tremendously out of line. However, by the time We-Can! management discovered this, the process had bee going on for 16 months. Soon after the problem was identified, the production manager (not Matt Condin) left the company and the Board of Directors shut the project down.

Suggestions for Future Research. As a case, "future research" related to this project is the cost accounting aspect presented in another write-up, yet to be published. Beyond that, the suggestion for future research is for instructors to construct and publish additional cases. This case was obtained through a small consulting practice that I maintain. Additionally, I have obtained reached a 3-summer internship position as a consultant with a regional CPA firm, Virchow Krause and Co., LLP, headquartered in Madison, WI. This will generate many more such cases and I encourage AIS instructors to pursue this kind of partnership.

Figure 6. Cat Furniture Division

Sales Data

Date	Invoice #	Customer			Quantity	Total Sale
1/12/00	4716	4007	Great Snake Pet Supply			
			301S	48" Sisal 2 Seat Penthouse	8	$296.00
			303C	60" Carpet 3 Seat Penthouse	1	$41.00
			303S	60" Sisal 3 Seat Penthouse	6	$270.00
1/12/00	4717	4007	Great Snake Pet Supply			
			300C	36" Carpet 1 Seat Penthouse	2	$50.00
			401C	Carpet A-Frame with Seat	7	$126.00
			402C	Carpet Single Condo	6	$90.00
			201S	36" Sisal 3 Seat Climbing Post	1	$23.00
			201C	36" Carpet 3 Seat Climbing Post	5	$105.00
			200S	24" Sisal 2 Seat Climbing Post	6	$108.00
			200C	24" Carpet 2 Seat Climbing Post	3	$48.00
			112S	24" Sisal Scratch Post (Heavy Duty)	5	$90.00
			105S	24" Dbl Scratch Sisal Post	12	$246.00
			105C	24" Dbl Scratch Carpet Post	10	$170.00
			102S	24" Sisal Scratch Post	15	$176.25
			102C	24" Carpet Scratch Post	7	$73.50
			101C	18" Carpet Scratch Post	14	$126.00
			101S	18" Sisal Scratch Post	8	$82.00
1/26/00	4718	4003	Proper Pets			
			112C	24" Carpet Scratch Post (Heavy Duty)	3	$45.00
			403C	Carpet Double Condo	9	$198.00
			201C	36" Carpet 3 Seat Climbing Post	1	$21.00
			403C	Carpet Double Condo	2	$44.00
			402C	Carpet Single Condo	2	$30.00
			303C	60" Carpet 3 Seat Penthouse	1	$41.00
			301C	48" Carpet 2 Seat Penthouse	1	$33.00
			300C	36" Carpet 1 Seat Penthouse	3	$75.00
			202C	48" Carpet 4 Seat Climbing Post	1	$26.00
			102S	24" Sisal Scratch Post	2	$23.50
1/31/00	4719	4007	Great Snake Pet Supply			
			102C	24" Carpet Scratch Post	2	$21.00
			101C	18" Carpet Scratch Post	2	$18.00
			203C	60" Carpet 5 Seat Climbing Post	1	$31.00
			202C	48" Carpet 4 Seat Climbing Post	6	$156.00
			201C	36" Carpet 3 Seat Climbing Post	4	$84.00
			403C	Carpet Double Condo	4	$88.00
			401C	Carpet A-Frame with Seat	6	$108.00

Figure 7. Cat Furniture Division
Labor Usage and Raw Material Purchases

Date	Component		Amount
31-Jan-00	500	Labor	$13,649.99
	502	Carpet	$3,950.00
	503	Sisal Rope	$325.00
	504	2x4: 12"	$1,650.00
	505	3/4" 4'x8' Plywood	$730.00
	506	1/4" 4'x8' Plywood	$493.00
	508	1/2" 4'x8' Plywood	$1,038.00
	509	Lag Bolts	$100.00
	510	Screws	$35.00
	511	Staples	$65.00
	512	Nails	$37.00
	513	Hot Melt Mix	$6.00
	514	Contact Cement	$125.00
	515	Liquid Nail	$225.00
	516	Toy Mouse	$45.00
	517	Elastic Cord	$6.00
	518	Label	$75.00
	519	Shipping Bag	$200.00
	520	Washers	$90.00
28-Feb-00	500	Labor	$6,452.57
	502	Carpet	$550.00
	503	Sisal Rope	$80.00
	504	2x4: 12"	$275.00
	505	3/4" 4'x8' Plywood	$100.00
	506	1/4" 4'x8' Plywood	$200.00
	508	1/2" 4'x8' Plywood	$282.00
	514	Contact Cement	$53.00
	515	Liquid Nail	$105.00
	516	Toy Mouse	$25.00
	519	Shipping Bag	$25.00

Figure 8. Cat Furniture Division
Sales Journal Summary

Invoice Date	Invoice #		Customer	Total Sale
1/12/00	4716	4007	Great Snake Pet Supply	$657.00
1/12/00	4717	4007	Great Snake Pet Supply	1,706.75
1/26/00	4718	4003	Proper Pets	363.50
1/31/00	4719	4007	Great Snake Pet Supply	1,170.50
1/31/00	4720	4007	Great Snake Pet Supply	1,028.00
1/31/00	4721	4007	Great Snake Pet Supply	1,697.75
1/31/00	4722	4007	Great Snake Pet Supply	849.00
	Total for January 2000			$7,472.50
2/23/00	4723	4007	Great Snake Pet Supply	$2,142.00
2/24/00	4725	4026	Baggins Pets	1,341.25
	Total for February 2000			$3,483.25
3/ 3/00	4727	4003	Proper Pets	$266.00
3/ 3/00	4728	4010	Mad City Distributors	1,550.00
	Total for March 2000			$1,816.00
4/25/00	4729	4003	Proper Pets	$108.00
4/30/00	4730	4500	Kandu: In-House Sales	41.00
4/30/00	4731	4010	Mad City Distributors	1,321.50
	Total for April 2000			$1,470.50
5/15/00	4732	4011	Hounds Pet Food Warehouse	$288.25
5/15/00	4734	4009	Hawkeye Pet Co	707.00
5/16/00	4736	4009	Hawkeye Pet Co	1,830.25
5/23/00	4737	4011	Hounds Pet Food Warehouse	237.75
5/23/00	4738	4010	Mad City Distributors	1,248.50
	Total for May 2000			$4.251.75

Figure 9. Cat Furniture Division

Sales, Cost and Profit by Product Group by Item

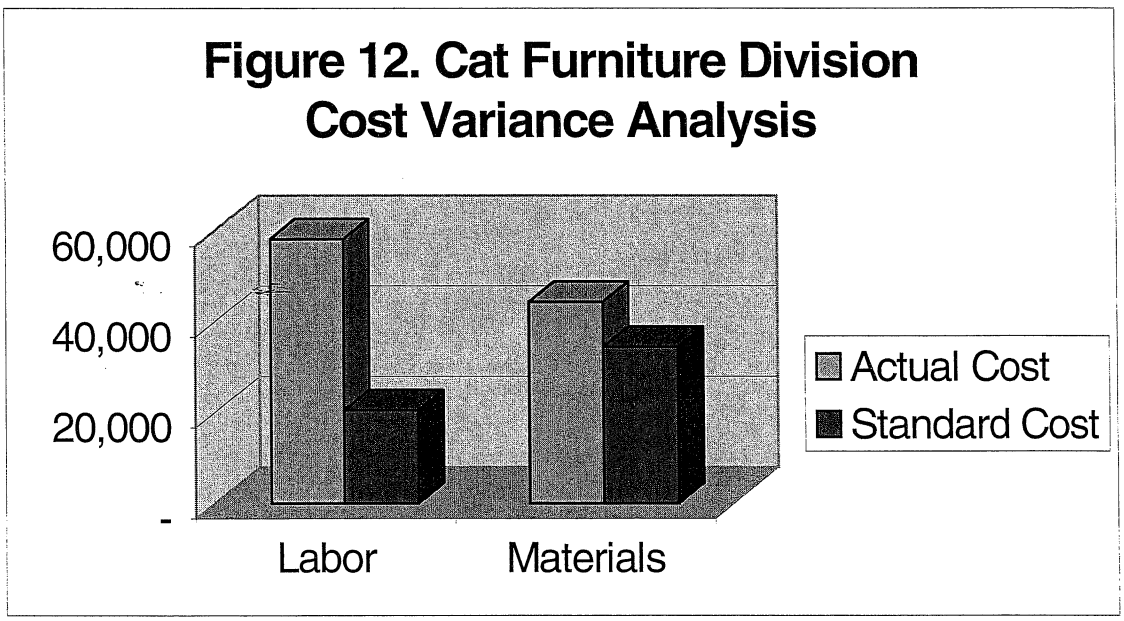
Group Name	Item		Qty Sold	Sales	Cost	Profit
Scratching Posts	104S	24" Sisal Hanging Scratch Post	10	$107.50	$55.73	$51.77
	101C	18" Carpet Scratch Post	180	1,620.00	1,185.44	434.56
	112S	24" Sisal Scratch Post (Heavy Duty)	23	414.00	217.19	196.81
	112C	24" Carpet Scratch Post (Heavy Duty)	9	135.00	74.35	60.65
	105C	24" Dbl Scratch Carpet Post	161	2,737.00	1,758.22	978.78
	104C	24" Carpet Hanging Scratch Post	175	1,662.50	798.69	863.80
	103S	18" Sisal Hanging Scratch Post	13	120.25	64.81	55.45
	103C	18" Carpet Hanging Scratch	10	80.00	43.21	36.79
	102S	24" Sisal Scratch Post	334	3,924.50	2,573.31	1,351.20
	102C	24" Carpet Scratch Post	369	3,874.50	2,497.06	1,377.44
	101S	18" Sisal Scratch Post	143	1,465.75	1,030.51	435.23
	105S	24" Dbl Scratch Sisal Post	165	3,382.50	2,170.81	1,211.69
				$19,523.50	$12,469.33	$7,054.17
Climbing Posts	202S	48" Sisal 4 Seat Climbing Post	29	$957.00	$574.64	$382.36
	202C	48" Carpet 4 Seat Climbing Post	119	3,094.00	2,073.94	1,020.06
	200C	24" Carpet 2 Seat Climbing Post	161	2,576.00	1,755.36	820.65
	200S	24" Sisal 2 Seat Climbing Post	103	1,854.00	1,201.75	652.26
	201C	36" Carpet 3 Seat Climbing Post	213	4,473.00	3,109.04	1,363.97
	203C	60" Carpet 5 Seat Climbing Post	164	5,084.00	3,303.19	1,780.81
	203S	60" Sisal 5 Seat Climbing Post	53	2,014.00	1,328.22	685.78
	204C	72" 6 Seat Carpet Climb Post	16	576.00	346.29	229.71
	204S	72" 6 Seat Sisal Climbing Post	9	387.00	224.92	162.08
	201S	36" Sisal 3 Seat Climbing Post	53	1,219.00	863.61	355.39
				$22,234.00	$14,780.96	$7,453.07
Sleeping Nooks	301C	48" Carpet 2 Seat Penthouse	130	$4,290.00	$3,048.71	$1,241.29
	305S	72" Sisal 4 Seat Penthouse	10	530.00	307.50	222.50
	305C	72" Carpet 4 Seat Penthouse	23	1,127.00	644.31	482.69
	303S	60" Sisal 3 Seat Penthouse	102	4,590.00	2,838.83	1,751.17
	301S	48" Sisal 2 Seat Penthouse	76	2,812.00	1,884.63	927.37
	300S	36" Sisal 1 Seat Penthouse	44	1,276.00	769.43	506.57
	300C	36" Carpet 1 Seat Penthouse	154	3,850.00	2,696.51	1,153.49
	303C	60" Carpet 3 Seat Penthouse	194	7,954.00	5,064.70	2,889.30
				$26,429.00	$17,254.62	$9,174.38
Condos	404C	Carpet Triple Condo	120	$3,480.00	$2,472.17	$1,007.83
	401C	Carpet A-Frame with Seat	307	5,526.00	4,236.54	1,289.46
	402C	Carpet Single Condo	184	2,760.00	1,968.69	791.31
	403C	Carpet Double Condo	109	2,398.00	1,699.75	698.25
				$14,164.00	$10,377.15	$3,786.85

Figure 10. Cat Furniture Division
Sales Variance by Product Group, by Item

Group Name	Item #		Target Sales	Actual Sales	Variance	
Scratching Posts	101C	18" Carpet Scratch Post	250	180	$630.00	U
	101S	18" Sisal Scratch Post	200	143	584.25	U
	102C	24" Carpet Scratch Post	350	369	(199.50)	F
	102S	24" Sisal Scratch Post	300	334	(399.50)	F
	103C	18" Carpet Hanging Scratch	50	10	320.00	U
	103S	18" Sisal Hanging Scratch Post	35	13	203.50	U
	104C	24" Carpet Hanging Scratch Post	200	175	237.50	U
	104S	24" Sisal Hanging Scratch Post	25	10	161.25	U
	105C	24" Dbl Scratch Carpet Post	150	161	(187.00)	F
	105S	24" Dbl Scratch Sisal Post	150	165	(307.50)	F
	112C	24" Carpet Scratch Post (Heavy Duty)	20	9	165.00	U
	112S	24" Sisal Scratch Post (Heavy Duty)	10	23	(234.00)	F
					974.00	U
Climbing Posts	200C	24" Carpet 2 Seat Climbing Post	250	161	$1,424.00	U
	200S	24" Sisal 2 Seat Climbing Post	175	103	1,296.00	U
	201C	36" Carpet 3 Seat Climbing Post	225	213	252.00	U
	201S	36" Sisal 3 Seat Climbing Post	150	53	2,231.00	U
	202C	48" Carpet 4 Seat Climbing Post	200	119	2,106.00	U
	202S	48" Sisal 4 Seat Climbing Post	75	29	1,518.00	U
	203C	60" Carpet 5 Seat Climbing Post	175	164	341.00	U
	203S	60" Sisal 5 Seat Climbing Post	50	53	(114.00)	F
	204C	72" 6 Seat Carpet Climb Post	75	16	2,124.00	U
	204S	72" 6 Seat Sisal Climbing Post	25	9	688.00	U
					$11,866.00	U
Sleeping Nooks	300C	36" Carpet 1 Seat Penthouse	100	154	$(1,350.00)	F
	300S	36" Sisal 1 Seat Penthouse	50	44	174.00	U
	301C	48" Carpet 2 Seat Penthouse	150	130	660.00	U
	301S	48" Sisal 2 Seat Penthouse	75	76	(37.00)	F
	303C	60" Carpet 3 Seat Penthouse	250	194	2,296.00	U
	303S	60" Sisal 3 Seat Penthouse	100	102	(90.00)	F
	305C	72" Carpet 4 Seat Penthouse	50	23	1,323.00	U
					$2,976.00	U
Condos	305S	72" Sisal 4 Seat Penthouse	25	10	$795.00	U
	401C	Carpet A-Frame with Seat	250	307	(1,026.00)	F
	402C	Carpet Single Condo	200	184	240.00	U
	403C	Carpet Double Condo	150	109	902.00	U
	404C	Carpet Triple Condo	100	120	(580.00)	F
					$331.00	U

Figure 11. Cat Furniture Division
Cost Variance Analysis

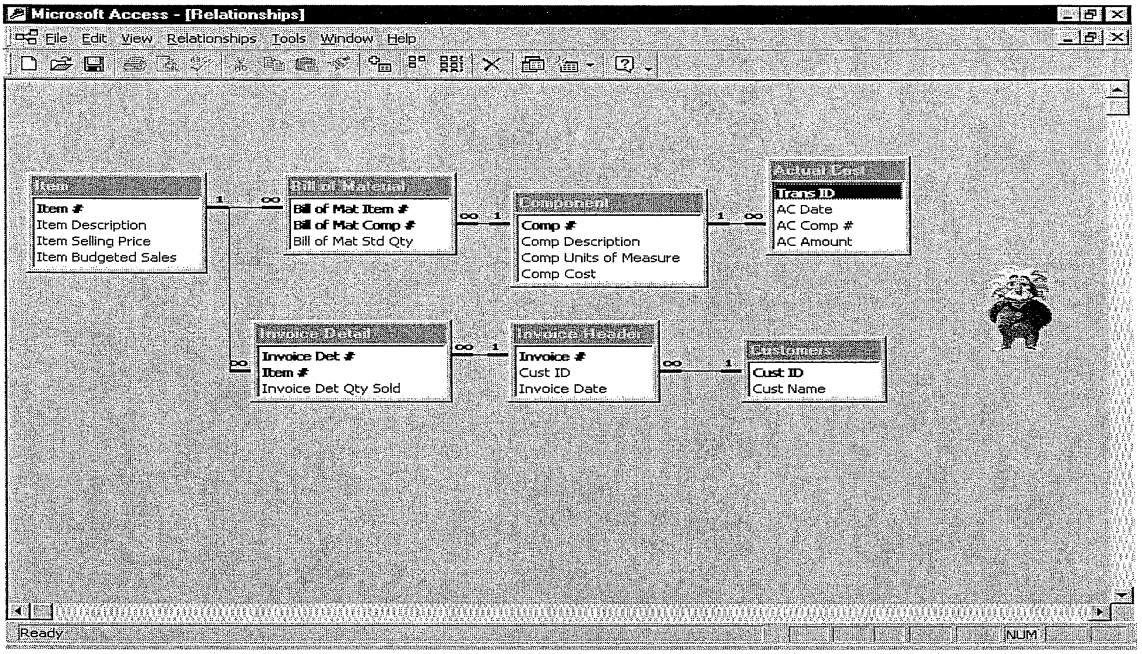
Component	Total Act Cost	Total Std Cost	Variance	
500 Labor	$58,226.22	$20,454.59	$37,771.63	U
502 Carpet	$17,550.00	$13,482.06	$4,067.94	U
503 Sisal Rope	2,220.00	1,244.98	975.02	U
504 2x4: 12"	9,050.00	5,854.78	3,195.22	U
505 3/4" 4'x8' Plywood	3,750.00	2,735.35	1,014.65	U
506 1/4" 4'x8' Plywood	3,050.00	2,870.26	179.74	U
508 1/2" 4'x8' Plywood	5,105.00	5,161.03	(56.03)	F
509 Lag Bolts	200.00	199.60	0.40	U
510 Screws	75.50	61.80	13.70	U
511 Staples	175.00	136.93	38.07	U
512 Nails	77.25	55.06	22.19	U
513 Hot Melt Mix	18.00	5.79	12.21	U
514 Contact Cement	975.00	841.22	133.78	U
515 Liquid Nail	1,195.00	945.62	249.38	U
516 Toy Mouse	150.00	146.70	3.30	U
517 Elastic Cord	4.00	3.03	0.97	U
518 Label	195.00	194.29	0.72	U
519 Shipping Bag	485.00	475.80	9.20	U
520 Washers	98.25	13.14	85.11	U
	$44,373.00	$34,427.44	$9,945.57	U



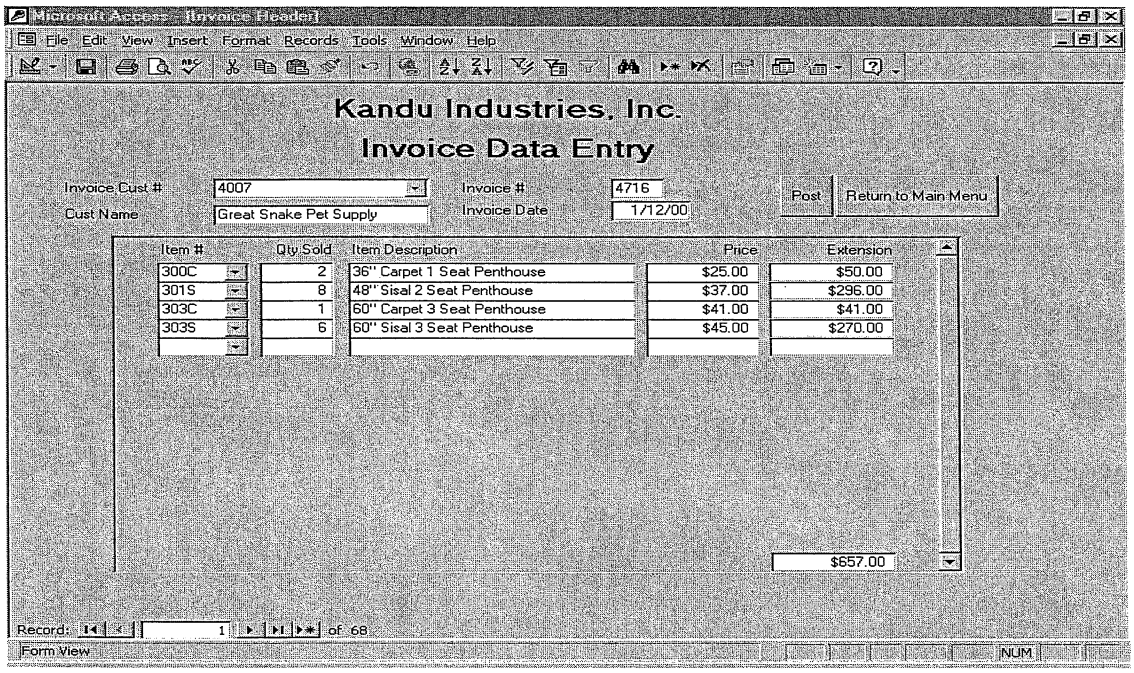
Appendix A: Cat Furniture Division
Suggested Solution—Table Structure

Table: Item				
Field name	Data Type	Mask	Key	Comments
Item #	Text, 4 characters	000>L	Primary	
Item Description	Text, 40 characters			
Selling Price	Currency, 2 decimals			I make a simplifying assumption that the selling price remains constant. Without this assumption, selling price is also an attribute of a sale.
Target Sales	Numeric, 0 Decimals			
Table: Component				
Field name	Data Type	Mask	Key	Comments
Comp #	Text, 3 characters	000	Primary	
Comp Description	Text, 20 characters			
Unit of Measure	Text, 20 characters			
Std Cost per Unit	Currency, 4 decimals			
Table: Bill of Materials				
Item #	Text, 4 characters		Composite	
Comp #	Text, 3 characters		Composite	
Std Quantity	Numeric, 4 decimals			
Table: Customer				
Customer #	Text, 4 characters	0000	Primary	
Customer Name	Text, 25 characters			
Table: Invoice Header				
Invoice #	Text, 4 characters	0000	Primary	
Invoice Date	Date, short date			
Customer #	Text, 4 characters			
Table: Invoice Detail				
Invoice #	Text, 4 characters		Composite	
Item #	Text, 4 characters		Composite	
Qty Sold	Numeric, 0 decimals			
Table: Actual Cost				
Transaction #	Autonumber		Primary	
Trans Date	Date, short date			
Component #	Text, 3 characters			
Cost	Currency, 2 decimals			

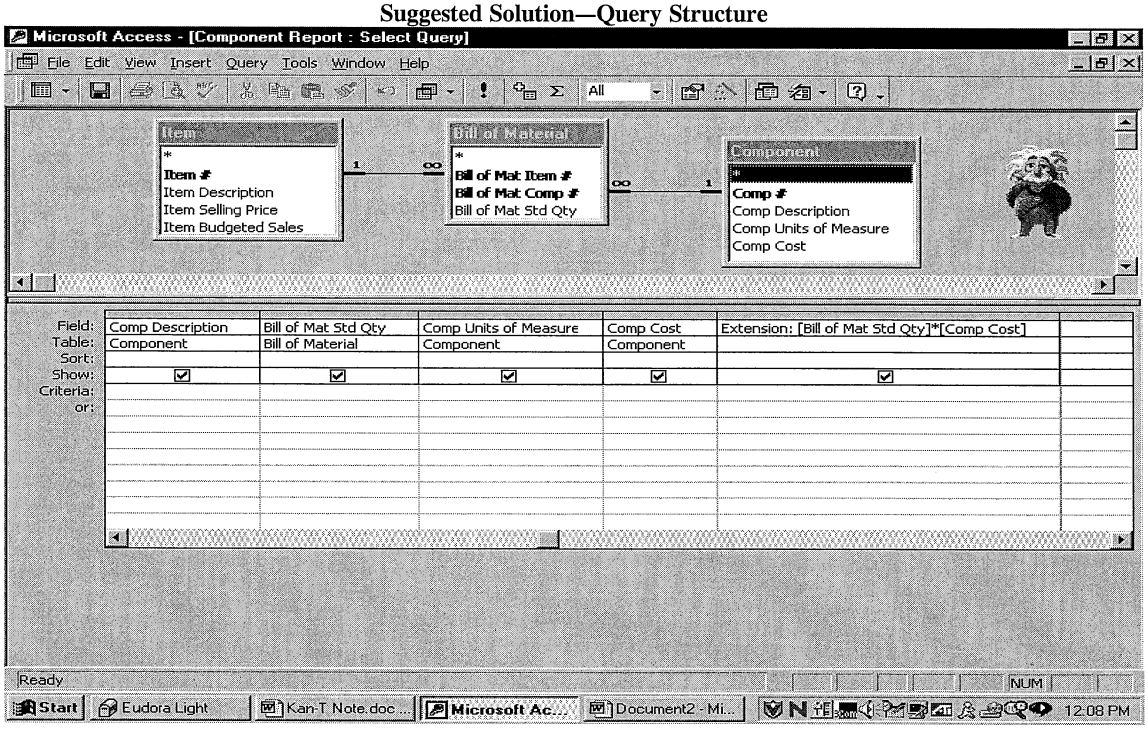
Appendix B: Cat Furniture Division
Suggested Solution—Entity Relationship Diagram



Appendix C: Cat Furniture Division
Suggested Solution—Data Entry Form



Appendix D: Cat Furniture Division
Suggested Solution—Query Structure



Appendix D: Cat Furniture Division
Suggested Solution—Query Structure