INFORMATION SYSTEMS EDUCATION JOURNAL

Special Issue: Teaching Cases

In this issue:

The **Information Systems Education Journal** (ISEDJ) is a double-blind peer-reviewed academic journal published by **EDSIG**, the Education Special Interest Group of AITP, the Association of Information Technology Professionals (Chicago, Illinois). Publishing frequency is six times per year. The first year of publication is 2003.

ISEDJ is published online (http://isedjorg). Our sister publication, the Proceedings of EDSIG (http://www.edsigcon.org) features all papers, panels, workshops, and presentations from the conference.

The journal acceptance review process involves a minimum of three double-blind peer reviews, where both the reviewer is not aware of the identities of the authors and the authors are not aware of the identities of the reviewers. The initial reviews happen before the conference. At that point papers are divided into award papers (top 15%), other journal papers (top 30%), unsettled papers, and non-journal papers. The unsettled papers are subjected to a second round of blind peer review to establish whether they will be accepted to the journal or not. Those papers that are deemed of sufficient quality are accepted for publication in the ISEDJ journal. Currently the target acceptance rate for the journal is under 40%.

Information Systems Education Journal is pleased to be listed in the 1st Edition of Cabell's Directory of Publishing Opportunities in Educational Technology and Library Science, in both the electronic and printed editions. Questions should be addressed to the editor at editor@isedj.org or the publisher at publisher@isedj.org.

2015 AITP Education Special Interest Group (EDSIG) Board of Directors

INFORMATION SYSTEMS
EDUCATION JOURNAL

Editors

ISEDJ Editorial Board

Teaching Case

Coastal Pacific Doctor Associates: Implementation of a Purchased System

Dana Schwieger
dschwieger@semo.edu
Southeast Missouri State University
Cape Girardeau, MO

Michael McDonald
michael.mcdonald@wku.edu
Western Kentucky University
Bowling Green, KY

Abstract

Coastal Pacific Doctor Associates (CPDA) is a multi-physician medical practice located along the west coast. CPDA decided to replace their inadequate and outdated medical office system during a time of tremendous restructuring in the medical software industry. In their impatience, CPDA chose an electronic medical record (EMR) and practice management (PM) system that would better accommodate the needs of a hospital rather than a medical clinic. The system that they chose to purchase was under development and had not been fully tested before it was hurriedly installed as CPDA's main system during a cutover implementation.

EMR/PM software representatives failed to live up to their original promises as deadlines passed and the employees were trained in the last days before the go live date. Training took place on a portable network brought in by the sales representatives using manufacturer's test data. After the problems started to escalate, the manufacturer's help line stopped providing assistance and CPDA was left to solve its own problems.

The organization in this case faces a number of project management and technology implementation issues. These issues can be addressed in multiple courses including: enterprise architecture, project management, systems analysis and design as well as systems implementation.

KEYWORDS: acquiring information systems, business and IT strategies, implementation strategies, project management, EMR, practice management systems.

1. INTRODUCTION

Mike Andrews, a MIS student enrolled in the local university's graduate level MIS program, had been working as an intern at Coastal Pacific Doctor Associates (CPDA), a twenty-doctor medical clinic located along the west coast. As part of his graduate research thesis, Mike chose to analyze a local business and evaluate the organization from a managerial and technological perspective. For the past three months, he had been working with the business manager assisting with a "last ditch attempt" to

configure the non-working medical records module of the clinic's main computer system.

As his internship drew to a close, Mike and the business manager had made no significant headway on getting the module to work. While Mike regretted not being able to help the clinic solve their computing problems, he was looking forward to leaving the system and the headaches it had caused. Thinking over the events leading up to their current situation, Mike started wondering what could have been done to prevent the medical clinic's technology problems.

2. HISTORY OF COASTAL PACIFIC DOCTOR ASSOCIATES

Coastal Pacific Doctor Associates (CPDA) was founded in early 2000 by three primary care physicians who combined their independent private practices. Over the years, two additional practices merged into the operations of CPDA. By 2008, CPDA had grown to twelve doctors and over 15,000 patients. With the growing number of doctors and patients came increasing levels of associated paperwork. The practice's growth, coupled with the aging technology purchased in 2000, caused the system to respond slowly during peak operating hours of the day.

John Anderson, the Business Manager of CPDA, had worked for the practice in the role of Business/IT Manager for the past five years. He was familiar with the system as well as processing patient information. Prior to joining the organization, John had worked as the Business Manager in the billing office of a local hospital. Although he had no formal computer training, because CPDA only had one application, John served as the information technology (IT) department as well. Most problems were user errors or could be fixed by working with the vendor's support center. However when larger software issues, updates, or problems with the hardware arose, John contracted the services of one of the area's leading IT support providers. By late 2008, John was seeking their assistance on a regular basis and he was becoming concerned about how much longer the current system would last.

In early 2009, John obtained approval from the board of directors (consisting of the physicians in the practice) to purchase the needed hardware and software to replace CPDA's current billing system. He based his request upon the aging system, the increasing number of practice patients, the increasing number of calls for assistance and the need for better data collection and sharing. John had already been collecting brochures, reading journal reports and visiting vendor booths at health care conventions in anticipation of purchasing a new system.

Unfortunately, changes were taking place among the vendors in the industry. John would go to a vendor's booth at one convention and by the next month, the vendor had gone out of business or had been bought-out by another software developer. This happened multiple times to several different vendors. John had described the software search process as "shooting at a moving target."

By late 2009, John was getting a little anxious to purchase the new billing and patient medical record system. CPDA needed the system installed and running before the current system gave out and John felt that their time was limited.

John was also not very excited about any particular system he had researched. He did, however, find one that he felt could fulfill some of the needs of the organization. The system he found was developed by Xenia Medical Systems for hospital records and administration and had a nice patient medical records side which allowed the doctors and nurses to record extensive notes about their patients and their visits. Unfortunately, he did not like the billing side of the system. This, however, appeared to be the best system he could find after all his research and searching. Xenia was still working on their product but was willing to install the software at CPDA for a reduced price if they were willing to serve as a "Beta" test site and provide their input to enhance the system and work out the bugs.

2.1 Xenia Medical System

John presented his dilemma to the board of directors and received their approval to "purchase what he thought was best." He then contacted Xenia and accepted the offer, purchased the required hardware and settled on dates for installation and training. Prior to installation of the new hardware, the medical and billing staffs were called together to announce the upcoming technology change and anticipated timeline. Many of the employees

were upset with the surprise announcement of the replacement of the current system and could not understand why management would want to change something they were comfortable using. Others were angered that the company had made decisions for purchasing the new technology without any input from the people who would ultimately use the system. Several employees threatened to quit, and eventually did, when the new system was installed.

3. HARDWARE AND SOFTWARE INSTALLATION

On August 1, 2010, the new computer stations were installed so that employees could become acquainted with the hardware before they switched to the new system. Xenia was scheduled to install the new EMR/PM system as well as train the employees on test data during the last two weeks of August. The actual conversion would take place over Labor Day weekend. As Labor Day weekend approached, representatives from Xenia were not to be found. They finally appeared on the Monday preceding Labor Day and hurriedly set up a network of laptops containing manufacturer's test data in order to provide the promised training sessions throughout the week. On Labor Day weekend, the patient information would be uploaded and CPDA would cut over to the new system on the Tuesday after Labor Day.

At 9:00 a.m. on Friday morning, the representative began to install the entire application on CPDA's new server. Complications arose during the installation process and several of the modules would either not work at all or not interoperate with other modules in the system. Employees were partially trained on test data in the working modules, but the actual working data had never been tried in the system. Representatives from Xenia assured John that the billing modules were working and that the patient information would upload without any problems. As they quickly fell behind their installation schedule, John decided to proceed with the patient information upload and follow-up later on the nonworking modules.

At 9:30 p.m. on Friday night, John watched the Xenia technicians start the upload. Half way through the process, the system froze. Although the Xenia technicians repeatedly tried to upload the patient information all day Saturday and into Sunday, by Sunday afternoon the technicians

told John that there were compatibility issues between the new server and the data upload module of the application and the data would have to be entered manually if he wanted the system to be up and running by Tuesday morning. In the process of uploading the data, they had corrupted both the patient records as well as the old system rendering both the new and old systems unusable. There were no backups that could be used to restore the old system since Xenia's representatives had not had time to back up the system and had assured John that backups would not be necessary.

3.1 Data Entry

Sunday evening, John gathered family, friends and employees to begin entering the 15,000 patient records. Xenia representatives had already returned home and refused to answer John's repeated attempts to contact them for assistance via phone calls, texts, and e-mail messages. The system was a mess on Tuesday morning and patient information had to be processed manually. Rather than trying to enter patient information for all patients, John decided the billing clerks would enter only the patients having office visits each day on a daily basis.

Later that day, John asked his office staff to work extra hours in order to get all of the patients entered into the system as quickly as possible. The response he received from the already unenthusiastic office personnel was dismal as only a few employees volunteered to take on the extra hours. He then went to some local community colleges, business schools and temporary employment agencies in order to round up some data entry operators.

Once John had his data entry staffing situation under control, he was able to start concentrating on getting the rest of the application modules to work. The configuration for each module was a series of trials and errors. Calls placed to the Xenia's help line were never returned leaving John and his IT support person (outsourced from a local private PC support group) to configure the application on their own. They were able to get several modules running; however only a few were stable and ran satisfactorily. Eleven months after the new system was installed in CPDA's central office, Xenia discontinued development of the non-working modules that were provided in the original beta system. The product they brought to market offered a

significantly scaled down version of the original system.

As for CPDA, it took John and his staff almost a year to finish data entry of all of their patient information entering patients on an "as needed basis" and with temporary staff. Although they continued to tweak the configuration of the unstable and non-working modules, they eventually gave up and devised a set of business process workarounds in order to use the portions of the application that would work. Unfortunately, they could never get the medical record module of the system to work which was especially disappointing since it was the main reason that Xenia's system had been purchased in the first place. The board of directors was preparing to meet to discuss what to do next about the patient medical record system.

4. QUESTIONS

1. What were the key IT organizational issues that contributed to CPDA's current problem?

2. What were some of the problems associated with the purchase process?

3. What could have been done to prevent the implementation problems?

4. What could have been done to prevent the support problems that CPDA encountered?

5. Mentally place yourself in John Anderson's position after implementing the Xenia system. What actions would you take to "cut your losses" or minimize the negative results of your decisions?

Note: Teaching Notes and Case Supplements are available by contacting the authors

Teaching Case

Slushie World
An In-Class Access Database Tutorial

Donald E. Wynn, Jr.
University of Dayton
dwynn1@udayton.edu
Dayton, OH 45469

Renée M. E. Pratt
Washington & Lee University
prattr@wlu.edu
Lexington, VA 24450

Abstract

The Slushie World case study is designed to teach the basics of Microsoft Access and database management over a series of three 75-minute class sessions. Students are asked to build a basic database to track sales and inventory for a small business. Skills to be learned include table creation, data entry and importing, form and report design, switchboards, and numerous single and multiple table query designs. The resulting application is sufficient for students to identify a number of basic functions available to the small business, including order entry, sales reports, customer information, and more. The case is designed to be used in a course where the students have little or no prior relational database experience, such as an Introduction to MIS course.

Keywords: Tutorial, Database Basics, Microsoft Access

1. BACKGROUND

Twins Ed and Elaine Milano grew up in Tampa Florida. Every year, they grew more and more tired of having to bring their wallet to the local beach to buy drinks, such as slushies and sodas. Invariably, they'd forget to bring their wallet or forget that they didn't have any money in it. To solve this issue, Elaine (a business student at a local university) came up with the bright idea of opening a stand to sell drinks, but only to residents and tourists that registered as members of the stand. Thus, Slushie World was born.

Slushie World sells 10 flavors of slushies, 4 sodas, lemonade, and water. Each member would be allowed to purchase drinks using their membership id, up to a preset limit. At the end of each month, each member would be billed for their purchases via email. Initially, each member would be given a $50 credit limit initially, which could increase over time based on their prompt payment history.

Ed and Elaine started out trying to track inventory, sales, and members on a spreadsheet, but soon realized that there were significant limits to how they were able to manage their business this way. After an introductory MIS course, Ed decided to have a Microsoft Access database designed and built to manage the sales process and generate a number of reports to help run Slushie World. Since you have taken this course, he has asked

you to help develop the database, including the desired tables, queries, forms, and reports.

2. FUNCTIONAL REQUIREMENTS

The owners need to track the following things:
- Membership information, including member standing
- Beverage sales information
- Beverage inventory

3. TUTORIAL STEPS – PART ONE

Prior to completing this lab, please download the **slushie.xlsx, member.xlsx**, and **OldSalesDB.accdb** files and save in a new subdirectory called **SlushieWorld** (or whatever else you wish to name it).

1. Create a new database called **SlushieDB**.
2. Create a new table within the **SlushieDB** database called **Member** consisting of four fields as shown in Figure 1.

   [See Figure 1, Appendix]

3. Enter the data in Figure 2, located in the Appendix, into the **Member** Table.

   [See Figure 2, Appendix]

4. Import the **Inventory** Table from the **Slushie.xlsx** spreadsheet.
5. Import members from the old member spreadsheet (**member.xlsx**) to the **Member** table.
6. Import the **SalesOrder** and **OrderLine** tables from the **OldSalesDB** database.
7. Build the relationships between the tables as show in Figure 3.

   [See Figure 3, Appendix]

8. Build a form to see information in the **Inventory** table.
9. Use the form to change the quantity of Raspberry Slushie on hand to zero.
10. Build a report to show all the inventory on hand (name the report "Product Inventory").
11. Build a report to show a current menu (name the report "Menu").
12. Build a form to see the order information.
13. Use the form to enter an order for Member #5, for 2 Lemon Slushies (prod #105) and 2 Orange Slushies (prod #107).

*** End of Part 1. See SlushieDB-Part 1 for the completed database to this point.

4. TUTORIAL STEPS – PART TWO

After seeing the progress made so far, Ed and Elaine have asked you to make a few changes to the member table in order to capture more information. They have added additional members and information, and also want to see more examples of the types of information that can be generated from the database. The names of the products can be found in parenthesis at the end of each step.

1. Add the following fields to the **Member** table: MemberCreditLimit, City, State.

   [See Figure 4, Appendix]

2. Modify the information in the member table to include the following information in the new fields.

   [See Figure 5, Appendix]

3. Generate a list of all members' first and last name, city, state, credit limit, and standing, sorted by last name. (*MemberList*)
4. Generate the same information, but sorted by state, then within state by credit limit (higher values first). (*MemberListByStateAndLimit*)
5. Generate a list of all members' first & last name, and credit standing, with a bad credit standing. (*BadCreditQuery*)
6. Generate to show all members' names and credit limit where their credit limit is over $50.00. (*HighLimitQuery*)
7. Generate a list of all members from Georgia or Florida. (*GAFLMemberQuery*)
8. Generate a list of all members NOT from Georgia or Florida. (*NonGAFLMemberQuery*)
9. Generate a list of all members with either a bad credit standing OR who are from Georgia or Florida. (*BadOrLocalMemberQuery*)
10. Generate a list of all members with a bad credit standing AND from either Ohio or Kentucky. (*BadAndLocalMemberQuery*)
11. Generate a list of members whose first name starts with "D". (*DNameMemberQuery*)
12. Generate a list of the order numbers and order dates, along with the id, first and

last name of the member who place the order, sorted by order number. (*OrderQuery*)

13. Generate the order and member information for order #5. (*OrderNum5Query*)

14. Generate the order and member information for a single order number, which Access will prompt us for. (*OrderPromptingQuery*)

15. Generate the same information, but with Access prompting us for the member ID. (*OrdersByMembersQuery*)

16. Show the product information (flavor, price, sales quantity) along with the previous order information from #11 above. (Note: Not the "product quantity") (*OrderAndProductQuery*)

17. Show the same product and order information, with the system prompting us for the order number. (*ProductsByOrderQuery*)

18. Generate a list showing the order number, quantity, and extended price (quantity * price) for each item on each order, sorted by order. (*ExtendedPriceQuery*)

19. Generate a list to show the total number of items and the total extended price by order, sorted in descending order (highest values first) by extended price. (*OrderTotalQuery*)

20. Modify the list to show only the five highest orders. (*FiveHighestOrderQuery*)

21. Build a report (not just a query), based on the information in problem #18. (*OrderTotalReport*)

*** End of Part 2. See SlushieDB-Part 2 for the completed database to this point.

5. TUTORIAL STEPS – PART THREE

Ed and Elaine really like the database application so far. But they would like a few more reports and queries to help with the management of the business, including getting information about best sellers and profit reports. They also want to make the application more user friendly.

1. Build a list to show how much each type of product (Slushie, Soda, and Other) have sold, both in terms of quantity and dollar sales. (*SalesByType*)

2. Show all the members that have ordered a "Lemon Slushie". We want to see their first and last name, member ID, the date they ordered this flavor, and how many they ordered. Sort this list by last name, first name order. (*LemonSlushieMembers*)

3. List all of the orders with more than 3 total cups sold, with orders having the highest quantity sales listed first. (*OrdersOver3Cups*)

4. Show the most sold beverages by quantity. (*Top3Beverages*)

5. Show the top 3 slushie flavors sold by quantity. (*Top3Slushies*)

6. Show the total sales revenue for each flavor, with the highest revenues listed first. (*SalesByFlavor*)

7. Show the total sales revenue by date. (*SalesByDate*)

8. Add a field to the **Inventory** table to show ProductCost, representing the costs for each beverage sold by SlushieWorld.

[See Figure 6, Appendix]

Enter data in the new table to show the following
   a. Slushies cost $3.00
   b. Sodas cost $2.00
   c. Lemonade costs $2.75
   d. Water costs $2.50

9. Now develop a query to see how much profit we've made. (*ProfitByOrder*)

10. Build a report around the ProfitQuery. (*ProfitReport*)

11. In order to better understand their customers, generate a list of all customers who have placed orders (first name, last name, city, then state), along with the total sales they have made, and the total number of orders they have made. Sort by state, then city. (*CustomerInfo*)

12. Build a form associated with the Member table. (*MemberForm*)

13. Make a switchboard with the items in Figure 6.

[See Figure 7, Appendix]

*** End of Part 3. See SlushieDB-Part 3 for the completed database.

6. CONCLUSION

Clearly, the existing process of recording information on paper and spreadsheets would not be enough to truly run Slushie World as a real business. Eventually, Ed and Elaine would like to add even more forms and reports to this database in order to add more functionality and outputs. For instance, they are considering

expanding to add more slushie stands on different beaches, which would change parts of the database to track each stand's sales and profits. But that is for later. For now, you will have developed a sufficient database for Ed and Elain's current needs by completing each of the above tasks. In addition, you should now have a working knowledge of developing Microsoft Access-based database applications for other uses.

Note: Teaching Notes and Case Supplements are available by contacting the authors

Appendix

Field Name	Data Type	Description
MemberID	Autonumber ; Primary Key	Member ID Number
MemberFirstName	Text; 25 characters	Member First Name
MemberLastName	Text; 25 characters	Member Last Name
MemberStanding	Yes/No Field	Does member have good credit?

Figure 1. Member Table Data Description

MemberID	MemberFirstName	MemberLastName	MemberStanding
(auto entered)	(your name)	(your name)	Yes
"	Darryl	Martin	Yes
"	Jerry	Campbell	No
"	Tony	Roland	No
"	Casey	Palmer	Yes

Figure 2. Member Table Data
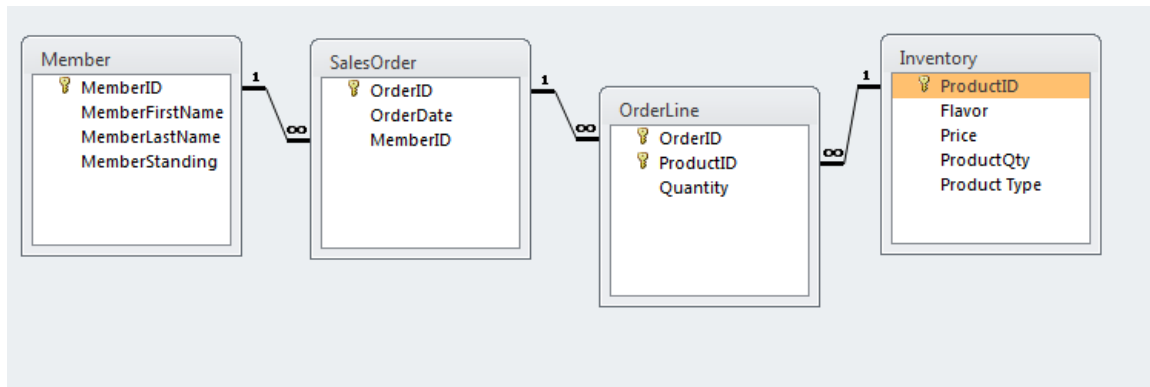
Figure 3. Relationship Table

Field Name	Data Type	Description
MemberCreditLimit	Currency	Member's Maximum Credit Limit
MemberCity	Text; 30 characters	City where Member lives
MemberState	Text; 2 characters	State where Member lives

Figure 4. Additional Member Table Attributes

MemberID	Member FirstName	Member LastName	Member Standing	Member City	Member State	Member CreditLimit
1	(Your)	(Name)	TRUE	Dayton	OH	$200.00
2	Darryl	Martin	TRUE	Houston	TX	$100.00
3	Jerry	Campbell	FALSE	West Palm Beach	FL	$100.00
4	Tony	Roland	FALSE	Orlando	FL	$100.00
5	Casey	Palmer	TRUE	Tampa	FL	$50.00
6	Dee	O'Durant	TRUE	Tampa	FL	$50.00
7	Terry	Dactle	FALSE	Savannah	GA	$50.00
8	Hal E.	Lewya	TRUE	Port St. Lucie	FL	$50.00
9	Nick	O'Teen	FALSE	Columbia	SC	$50.00
10	Izzy	Able	TRUE	Atlanta	GA	$50.00
11	Harry	Kerry	TRUE	Columbia	SC	$50.00
12	Moe	Turoil	FALSE	San Diego	CA	$50.00

Figure 5: Additional Member Data

Field Name	Data Type	Description
ProductCost	Currency	Cost of Goods Sold per unit

Figure 6. Additional Inventory Table Attribute

Main Menu	
*	Add New Member (*MemberForm*)
*	Review Current Members (*MemberForm*)
*	Review Product Inventory (*InventoryForm*)
*	Show Existing Orders (*SalesOrderForm*)
*	Add New Order (*SalesOrderForm*)
*	Reports Menu
+	Product Inventory Report
+	Menu
+	Order Total Report
+	Profit Report

Figure 7. Switchboard Menu Items

Teaching Case

Information Security in a World of Global Connectivity: A Case Study

Cameron Lawrence
Cameron.Lawrence@business.umt.edu

Garrett Olson
Garrett.Olson@business.umt.edu

Bambi Douma
Bambi.Douma@business.umt.edu

School of Business Administration
The University of Montana

Abstract

The widespread use of digital technologies such as smartphones, tablets, and notebook computers expose firms engaged in international business to risks that far exceed what most corporate technology users understand. This case study examines some of the technology-specific vulnerabilities managers face when engaged in international travel and introduces tools and technologies including HTTPS, two-factor authentication, VPNs and the use and management of complex passwords. The case concludes with a set of discussion questions and hands-on exercises that can be completed in or out of class. This case is intended for the Intro to MIS class and complements the model curriculum objectives in IS 2010.1 and IS 2010.7.

Keywords: Information Security, Security, Privacy, Hacked, Two-Factor Authentication

1. CASE SUMMARY

Seymour Power, Inc., is a multinational corporation headquartered in Dallas, Texas. Seymour specializes in designing and constructing large power production facilities, with a majority of its business stemming from government contracts, including a multi-year, $8.5 billion contract from the U.S. Department of Defense (DoD). In addition to designing and overseeing the construction of power production facilities in the United States, Seymour Power is capitalizing on China's booming economy and contracting with Chitze, Ltd., a corporation wholly owned by the Chinese government, to design and build a state-of-the-art hydroelectric facility on the Yangtze River.

2. INTRODUCTION

Mike Hamel was frustrated. Over the past 20 years he had devoted every minute of his life to Seymour Power only to be assigned once again to a new consulting project. Mike had worked in construction consulting for seven years before he began working for Seymour. He slowly worked his way up in rank in the Dallas office until he became one of the senior consultants at

Seymour. This process was difficult for Mike, but it was perhaps more difficult for the other Seymour consultants with whom he worked. Mike was well known for doing whatever it took to secure a contract with a customer, even at the cost of his personal life.

Four days ago Mike prepared to get on a plane to Beijing, China to meet with a low level manager of Chitze, Ltd.. The purpose of the trip was to discuss the options for the hydroelectric facility on the Yangtze River. Chitze had recently reached out to Seymour Power to design and construct the new facility, and Mike was the first member of the Seymour team to meet with representatives of the company in China. Initial estimates put the cost of the project at almost $5 billion.

Mike had been able to nod off for a few hours before his alarm sounded the morning he was to leave. After waking, he went through his mental packing list and double-checked that he had his Samsung Galaxy S4, Surface Pro, and Toshiba laptop. All three devices were issued by the company, and according to Mike's manager, they were "critical for his trip and his presentation with Chitze." Mike never understood the reasoning for bringing along so much technology on his project negotiations. To him, the company-issued technology was more of a hindrance than an added benefit because he didn't fully understand how to use the devices. Not only was Mike inefficient when typing, but he also didn't fully understand how all of his devices were linked through "the Cloud." For Mike, the easiest way to know that his notes would make it back with him to his office was to write them by hand and put them in his briefcase.

After taking a taxi to the airport and making his way to the plane, Mike settled into his seat and attempted to use the personal screen that was on the headrest in front of him. After unsuccessfully starting a movie, Mike became annoyed and pulled out his paperback book for the long flight to Beijing. Mike was completely oblivious to the breaches of security that were about to happen that would shake both his career and the security of Seymour Power.

3. WORK OR PLEASURE?

The flight to Beijing was smooth, arriving on time. Mike proceeded to Customs, where the officer asked, "Are you here for work or pleasure?" Mike responded irritably, "Work is pleasure." The Chinese Customs officer stared blankly at Mike. Mike informed the officer he was in China on behalf of Seymour Power to meet with an executive of Chitze. The Customs officer asked Mike to step into a small room that was not unlike an interrogation room in a movie, where he was asked to wait and then was left alone. Two other officers took Mike's bags into a separate room. Mike waited for ten minutes and without any further questions had his bags returned. The Customs officer smiled, and said, "Welcome to China!"

Mike didn't really think too much of the whole ordeal and proceeded through Customs and met his driver outside the main terminal. He was taken to his hotel on the other side of the city, and then he checked into his room. The attendant at the front desk welcomed Mike to the hotel, gave him his room key, and informed him that the WiFi in the hotel merely required him to log in using his room number and last name. Mike got settled in his room, took a quick shower, and decided to go out for a night on the town. Before leaving the room, Mike thought it would be prudent to check his email. He logged in to the WiFi on his Microsoft Surface Pro as the front desk attendant had instructed him and responded to a few emails, including one confirming his meeting the next day with Bo Xilai, the Director of Security for Chitze, Ltd. Mike set his Surface Pro on the desk and went downstairs to hail a cab.

Mike had limited free time in Beijing, and he wanted to make the most of it. He had the cab take him to Tiananmen Square, the Forbidden City, and even contemplated going to the Great Wall but determined he didn't have enough time to really enjoy it. Between stops, Mike decided to get a late dinner. At dinner he decided to check his personal email on his Galaxy S4. Lucky for him the restaurant he was at had free WiFi, so he used the web browser to log in to his Gmail account. Mike had a new email from his credit card company outlining the most recent billing cycle that had just come to a close. "I don't know why I even sign up for these online messages. They are only telling me information that I already know," Mike thought to himself.

Mike became tired and wanted to be well rested for the next day's meeting, so he returned to his hotel. He grabbed his Surface Pro and attempted to access documents related to the

project, hardly noticing that something was amiss. Mike had fine-tuned his attention to detail throughout his 20 years in consulting, and it seemed like the Surface Pro had been moved while he was out of his room. He wrote off this weird feeling as a side-effect of jet lag and continued to log into Seymour's server to access the files for the project.

The login procedure was complicated for Mike. First he had to enter in his username and password. Next, he had to use an app on his phone to create a code that he had to quickly input into the additional field before the code changed. Mike was not a fast typist, so the last step had always been difficult for him. Mike wanted to make some changes to the PowerPoint presentation his assistant had prepared and decided it would be more efficient to make the changes on his laptop. He powered up the laptop and again logged into Seymour's server. He went to bed when he was finally satisfied with the changes, sleeping much more soundly than his last night in Dallas.

The next day Mike woke up early to make sure he was on time for his meeting with Mr. Bo. He got a cab and headed towards the Chitze, Ltd., headquarters, in the heart of Beijing's financial district. Mike was relieved to finally arrive at Chitze, Ltd. headquarters and meet Mr. Bo. The initial negotiations looked promising for Mike, and he wondered if they would be able to finish before midday. After a few hours had passed, Mr. Bo's assistant arrived and announced that lunch would be served in the conference room next-door. Mike took this small break as an opportunity to transfer his handwritten notes from the morning's negotiations to his laptop and gather his thoughts about the way the morning negotiations went.

Mike was not familiar with the WiFi network within Chitze, so he called over the nearest executive assistant and asked for a way to access the internet. Mike then used his laptop to connect to the guest WiFi signal that was shown to him by the executive assistant. He then followed the directions on his laptop for connecting to the Seymour VPN and created a document on Seymour's server in which to save his notes. He was only able to get part of the way through transcribing his notes before he was called back into the board room. Mike asked if he could leave his personal belongings in the adjoining room while they finished their afternoon negotiations, and the assistant

assured him that the room would be locked for the remainder of the day. Mike left his laptop and briefcase on the table where he ate lunch and continued into the boardroom to finalize the first part of the construction contract.

Five hours later, Mr. Bo signed the initial contract outlining Seymour's role as the designers and consultants in the hydroelectric project for $500 million. Mike was surprised at how aggressive Mr. Bo had been in the afternoon, particularly toward the end of the negotiations. It seemed that every point Mike attempted to make was countered immediately by Mr. Bo. It was almost as if Mr. Bo knew what Mike was going to propose before Mike even said anything. Mike knew that his boss would not be pleased to know that he had fallen well short of their goal of a $530 million deal. After spending the exhausting day at Chitze's headquarters, Mike gathered his belongings from the room next door and headed back to his hotel.

The next morning, Mike boarded the plane out of Beijing without any problems. He was neither stopped at Customs when leaving the airport, nor was he delayed at any point along the way. As the plane took off, Mike remembered that he never finished inputting his notes from the negotiation and opened his laptop as soon as the airline approved the use of electronic devices. The plane was equipped with WiFi and Mike decided to add another charge to his expense account to allow him to get work done on his flight home. Mike powered on his laptop, but nothing happened on his screen. He waited several minutes, but the screen was still blank and he could see no visible activity coming from the laptop.

As frustration began to set in, Mike powered on his Surface Pro and it booted up immediately. Mike strongly disliked typing on his laptop because of the size of the keys, and the keyboard for the Surface Pro was even smaller than the one on his laptop. Mike once again found the directions for connecting to Seymour's VPN on his Surface Pro and was able to connect using the WiFi on the airplane. After several long hours of transcribing his handwritten notes, Mike was finished with the work portion of his trip to China. Mike shut down his Surface Pro and closed his eyes for the remainder of the trip. As he drifted off to sleep, he decided that he would have a long conversation with the IT department upon his arrival in Dallas.

4. A SERIES OF BREACHES

Unbeknownst to Mike, the first breach of security took place less than 30 minutes after he initially arrived at the Beijing airport. The flight had been smooth and on time, and Mike proceeded through Customs. He took little note of the amount of time that his laptop, cellphone, and tablet were in the possession of Chinese Customs. In as little as 10 minutes, his laptop had been hijacked with a hardware keylogger that would track all of his keystrokes, including passwords and usernames. The Chinese Government was keeping a close eye on the U.S.-based company employee while he was on Chinese soil.

The second breach of security took place after Mike checked into his hotel. The WiFi connection that was offered to him by the hotel concierge service was being monitored by a hotel employee. The hotel had set up eavesdropping software on the wireless network that was able to intercept the traffic from all hotel guests that were logged in to the free WiFi service. The software took this information, decoded it, and output the information in a plain text format for the hotel employee to see. All information was visible to the hotel employee - websites that Mike visited, and the usernames and passwords associated with those websites. Mike's email account was the first account to be compromised on his trip, but it would not be the last.

The third breach of security happened while Mike was grabbing a quick bite to eat. The public WiFi that Mike used while seated in the restaurant was not provided by the restaurant. In fact, the restaurant had a free WiFi access point at the front of the building, but Mike was seated in the back of the restaurant and only received a signal from the WiFi network labeled "Free public Wifi" instead of the network name that was given to him by the hostess. Mike was receiving his wireless connection from a computer hacker looking to steal valuable information.

The Chinese government was very interested in the meeting between Seymour and the government owned company, Chitze, Ltd. There was little room for negotiation from the viewpoint of the Chinese government, and they needed to know exactly how much negotiating power Seymour had up their sleeves. The government waited until Mike left his hotel room and entered with plans to copy the hard drives from his computers. The government agents had two options for copying the contents of Mike's hard drives: a Unix command and the Windows Automated Installation Kit; however, both attempts were unsuccessful due to the encryption on Mike's company-owned laptop and Surface Pro. Without the encryption key, the government agents were not able to access any data before the negotiations began.

Perhaps the largest security breach for Seymour and Mike took place in his hotel room the evening before his negotiations began. Mike used the hotel WiFi to log into Seymour's VPN, resulting in the theft of his VPN username, password, and the VPN configuration on his laptop and Surface Pro. As discussed earlier, the eavesdropping software set up on the hotel WiFi service was able to translate the username and password that Mike used to log into the VPN but not the information that Mike was accessing once he accessed the VPN.

The final breach of security took place during the afternoon negotiations at Chitze, Ltd., Headquarters. The hardware keylogger that was placed in Mike's laptop at Customs was removed and connected to a Chitze-owned computer by one of the IT employees. By connecting to the hardware keylogger, the employee was able to retrieve all of the keystrokes that Mike had made on his laptop since his arrival in China, including usernames, passwords, and any notes that Mike had made on his work. In the process of removing the hardware keylogger, the inside of Mike's laptop was damaged, resulting in loss of functionality for the remainder of the trip.

5. LASTING EFFECTS AND REMEDIES

Mike returned to work at Seymour the following day and made sure to block out a period of time to visit the IT administrator. Jordan Klein, the IT admin, was diligent about making room in his schedule to help his colleagues with their tech issues. Mike walked into Jordan's office with his Surface Pro, cell phone, and laptop anxious to see what was going wrong with his new company-issued devices.

Mike explained to Jordan that his laptop and tablet had been acting weird since he arrived in Beijing for his trip. "I didn't notice anything out of the ordinary during my stay in Beijing. Except for the eerie feeling that my tablet had been moved while I was out of my hotel room," Mike told Jordan. "I even used the

secure WiFi provided by the hotel to access my work on my laptop and tablet."

"Was there another period of time where you were not in direct possession of your laptop, tablet, or cell phone?" Jordan asked Mike. "Perhaps at Customs on the way into or out of the country?"

"I was held up for about ten minutes when I arrived in Beijing, but that seemed pretty customary to me," Mike explained to Jordan.

"Leave your equipment here, and I will take a look at it and get back to you," Jordan told Mike. Jordan hooked up the laptop first and attempted to boot it up. Even though the laptop was plugged in, nothing was displaying on the screen. Jordan began inspecting the hardware inside the computer and quickly realized that something was not right. Several of the screws on the bottom of the laptop were missing, and many of the others were stripped. After opening up the laptop, Jordan saw several problems with the internal components of the laptop. First, the connection from the keyboard to the motherboard was loose; secondly, the connection from the battery to the motherboard was disconnected. Jordan reconnected both of the components and attempted to once again boot up the computer. The laptop immediately booted up, and Jordan couldn't help but think how odd it was that the internal components were disconnected on a laptop that was used by a man who had difficulty properly running a computer.

Jordan was unsure what other problems could be present with the laptop and decided to do a complete system restore in case there were any software-related issues. The first action that Jordan took was to make sure to disconnect the laptop from the internet and the internal Seymour network and turn off the WiFi on the Surface Pro. Jordan then backed up the information from Mike's laptop as well as on Surface Pro using a program built into the Windows operating systems called Easy Transfer. This program would safely back up all of Mike's documents and settings to an external hard drive without saving any malicious programs and files that may have been installed on his laptop and Surface Pro.

Jordan was quick to inform Mike that his laptop and tablet had been breached during his trip to Beijing and inquired deeper about other possible breach points. Mike informed Jordan that his Surface Pro had likely been moved while he was sightseeing soon after his arrival at his hotel. Mike also mentioned that he had also used the free WiFi at a restaurant that he had visited to check his email from his phone. Jordan knew that there was little chance that his cell phone had been infected with malicious software but advised Mike to change his Gmail password to make sure that everything was in order.

As Mike attempted to enter in a new password per Jordan's request, he kept getting an error message from the email homepage. "Password must contain an uppercase letter, a lowercase letter, and a number."

"What password were you trying to enter?" Jordan asked Mike. "Uhm… 'password,'" responded Mike. Jordan couldn't help but let out a small chuckle before beginning to explain the purpose of the password requirements. "If you use a known word such as 'password' it is much easier for someone to guess or steal. Your email account has those requirements in place to increase the security of your password. Try using a random password generator to create a password of any length. It may be more difficult to remember at first, but the added security will be well worth it."

"Now, on to your company username and password. Did you have any trouble with the company two-factor authentication when logging in your Seymour account?" Jordan asked Mike. Of course Jordan knew that all Seymour accounts had two-factor authentication enabled as an extra layer of security. When attempting to log into the Seymour secure servers from outside of the main campus, an extra step was added to the login procedure. All employees were required to enter a six-digit code in addition to their username and password. Without the six-digit code, Mike would not have been able to access his Seymour account.

"Every time I logged in to my Seymour account, I used that stupid app on my phone that you made us all install. It takes more time for me to log in, and I honestly don't see the need for that extra security. It's more trouble than it's worth," Mike vented to Jordan.

Jordan was surprised at how ignorant Mike had been during his trip. Mike was not afraid to let

everyone around the office know how he felt about using technology, and Jordan had heard one too many tales. Jordan decided not to press the issue with Mike on the day after his return from his business trip and told Mike to come back in the next day to meet with Jordan.

6. CONCLUSION

The next morning, Mike returned to the office with a note on his desk informing him about a meeting at noon with the IT department and Jerry Moothe, his boss. Mike was anxious to inform Jerry about the quick deal that he was able to negotiate while on short trip to Beijing; however, once he entered into the meeting room he noticed a feeling of tension from across the table.

The meeting lasted about two hours, and by the end Mike felt like he was back in school. Jerry spoke first about how disappointed he was that Mike had only secured a contract for $500 million when their goal had been $30 million higher. To Mike it had seemed odd that Bo Xilai had been able to counter nearly all of the offers that Mike made in the afternoon, but he finally settled on an amount toward the bottom of the contract threshold. This conversation then quickly moved over to Jordan who had quite a few things to add on the topic of technology.

Mike learned about HTTPS, a secure internet protocol that will protect his internet browser from other people listening in to his communications. Additionally, Jordan explained in more detail the process of logging in to the Seymour servers from outside the building using what he called a VPN. Mike knew that something like that existed, but after Jordan's explanation he understood a great deal more about how it worked and why it was used. The VPN that Seymour uses allows employees to securely access the intranet, or network within the company, from anywhere on the planet through the internet. Mike's company username, password, and six-digit code from his phone allowed him to log on to the VPN as long as his laptop or Surface Pro was connected to an internet connection. The VPN software protected all of the information going in and out of Mike's laptop or Surface Pro from being tampered with in any way.

Jordan also took a moment to explain in detail why Mike was forced to use an additional code when logging into Seymour's network. The two-factor authentication system that Seymour used linked each employee's phone with their Seymour account and generated a new code every minute. Jordan explained further that even if someone were to steal an employee's username and password they would not be able to log in without the code from the phone.

Toward the end of the meeting, Jerry began to explain to Mike why this intimate meeting was necessary. "Jordan found evidence that your laptop hardware had been tampered with while on your trip and he further believes that information was stolen from you while you were in China. The only possible way that Chitze would have been able to so strongly negotiate the price down was by having our entire plan of action in their possession before the meeting. It is possible that a physical device of some sort was placed in your laptop, or they in some way stole information while you were out sightseeing. There is no way for us to know for sure, but we need to take every measure to make sure that nothing like this will happen again."

"We presume that Chitze was able to directly affect the outcome of the negotiation because of your lack of knowledge related to technology," Jerry continued. "In order to prevent anything like this from happening again, we are requiring that you attend the weekly technology help sessions taught by Jordan until you can sufficiently understand all of the technology that you are using."

Mike was shocked to hear that he had made such a terrible mistake. He was not looking forward to the weekly sessions with Jordan; however, he figured that if he was going to learn about all of the technology related to his job, he might as well get paid for his time. Seymour was never able to identify exactly what information was stolen, but additional steps were taken to ensure that all employees were aware of the threats that they faced when traveling overseas. The two controls that Seymour had in place, the VPN and two-factor authentication, prevented any additional loss of information or money.

7. Questions and Student Lab

1) Please research corporate data theft and identify three companies that have had systems compromised.

2) Using your Gmail account setup Google two-factor authentication.

    2a) If you have a smartphone install and configure the Google Authenticator App.

3. Install the HTTPS Everywhere extension in your favorite web browser (you will need Chrome, Firefox or Opera to do this).

4. Download and install an application such as LastPass, 1Password or KeePass.

Bonus activities

5. Create an online tutorial demonstrating the technologies featured in the case.

6. Choose one of the technologies mentioned in the case and put together a 15-minute presentation and demonstration for your peers.

8. REFERENCES

Chahrvin, S. (2007, April). *Keyloggers, pros and cons | Security, data and privacy | Subject areas | Publishing and editorial | BCS - The Chartered Institute for IT*. Retrieved from http://www.bcs.org/content/conWebDoc/11 115

dd (Unix) - Wikipedia, the free encyclopedia. (n.d.). Retrieved from http://en.wikipedia.org/wiki/Dd_(Unix)

Eaton, K. (2013, October 16). *Apps to Protect Your Array of Passwords - NYTimes.com*. Retrieved from http://www.nytimes.com/2013/10/17/techn ology/personaltech/apps-to-protect-your-array-of-passwords.html?_r=0

Fenton, J. (2013, April 1). *5 Myths of Two-Factor Authentication | Innovation Insights | WIRED*. Retrieved from http://www.wired.com/2013/04/five-myths-of-two-factor-authentication-and-the-reality/

Google 2-Step Verification. (n.d.). Retrieved from https://www.google.com/landing/2step/

McClain, C. (2012, October 18). *Fighting Hackers: Everything You've Been Told About Passwords Is Wrong | Opinion | WIRED*. Retrieved from http://www.wired.com/2012/10/passwords-and-hackers-security-and-practicality/

Microsoft Word - google-privacy-letter-v8 - google-letter-final2.pdf. (n.d.). Retrieved from http://www.wired.com/images_blogs/threatl evel/2009/06/google-letter-final2.pdf

Singel, R. (2010, March 24). *Law Enforcement Appliance Subverts SSL | Threat Level | WIRED*. Retrieved from http://www.wired.com/2010/03/packet-forensics/

Sterngold, J. (2011, January 27). *Say Goodbye to All Those Passwords - Businessweek*. Retrieved from http://www.businessweek.com/magazine/co ntent/11_06/b4214036537462.htm

Windows Automated Installation Kit for Windows 7. (2009, October 22). Retrieved from http://technet.microsoft.com/en-us/library/dd349343(v=ws.10).aspx

Wood, M. (2014, February 19). *Privacy Please: Tools to Shield Your Smartphone - NYTimes.com*. Retrieved from http://www.nytimes.com/2014/02/20/techn ology/personaltech/privacy-please-tools-to-shield-your-smartphone-from-snoopers.html

Zetter, K. (2010, November 18). *Another Hacker's Laptop, Cellphones Searched at Border | Threat Level | WIRED*. Retrieved from http://www.wired.com/2010/11/hacker-border-search/

Note: Teaching Notes and Case Supplements are available by contacting the authors

Teaching Case

USMCo Payroll System

Katrina Cohill
katrinacohill@gmail.com

Danielle Dudley
dani.dudley1@gmail.com

Jason Gregg
greggja@yahoo.com

Elizabeth Millette
millette.ea@pg.com

Adam Zinnecker
zinnecae@gmail.com

Douglas Havelka
douglas.havelka@miamioh.edu

Information Systems & Analytics Department
Farmer School of Business
Miami University
Oxford, OH 45056 USA

Abstract

The General Manager, Steve Gunderson, is currently charged with leading the decision on whether to outsource the payroll function of the USMCo (UltraSonic Machining Co) organization or to purchase a system and hire a full-time, experienced payroll staff member to manage the details of payroll for the company. There are differing opinions of stakeholders in the business units, and a staff member could lose their job. The objective USMCo is trying to meet is to have a payroll system that works correctly, minimize risk of entering wrong information, reduce the costs of running the payroll processes, and provide more time to the current HR staff for their more important duties. Financial services and HR have differing views on the solution based on their desired outcome and needs. Steve has the goal of streamlining processes and making sense of the business objectives.

Keywords: outsourcing, payroll, manufacturing, system selection

1. INTRODUCTION

It was the fall of 2014 on the morning of the World Famous Sausage Festival of Forestville, Ohio and Steve Gunderson was looking out his window, watching people pour into the fairgrounds while they were enjoying the beautiful weather outside. Steve, the General Manager of UltraSonic Machining Co. (USMCo), a manufacturer of semiconductors, has had great success since becoming General Manager five years ago. He was making great strides in getting the company to operate in lean manufacturing along with significant process improvement. Steve now found himself charged with approving one of the possibilities for a new payroll system. The current system wasn't working correctly.

The recent issue that triggered this evaluation was the current payroll cycle where all employees were given their paycheck prior to the Sausage Festival, along with a ticket to attend, and a note saying that Payroll incorrectly reported all employees' W-2's for 2013. This would require everyone to refile their personal state and federal income tax returns. The company agreed to pay the expense for any tax preparation needs and this would not be a small expense for the company. USMCo needed to determine if they should continue to invest time and money on improving their current in-house payroll system or if they needed to outsource the process to improve payroll system performance.

2. COMPANY HISTORY

Buckwald Ultrasonics started over 30 years ago as a small family-run business that specialized in ultrasonic machining technologies. Ultrasonic machining, also known as ultrasonic impact grinding, is a machining operation in which a vibrating tool oscillating at ultrasonic frequencies is used to remove material from the work piece, aided by an abrasive slurry that flows freely between the work piece and the tool.

In 1971 James Buckwald started a machine operation in his garage. He was fascinated with ultrasonic machining. While testing the capabilities of this technology he discovered that it could be used to machine hard brittle material such as glass or sapphire. He then started to machine glass, automotive sensors, and engineered ceramics for companies that saw benefit from the ultrasonic machining process.

In the early 1980's the company outgrew the family garage and a manufacturing facility was built on Camden Road. Marg Buckwald, a graduate of a local University, became more involved in the business and took over the human resource department. Steve Pickle, a shift manager, was promoted to manage operations. Marg wanted the business to be stable and to provide employees a secure job while Steve was interested in growing the business and taking on risk. By the end of the 1980's, the company had increased to approximately 30 employees with revenues of $15 million. James Buckwald retired and gave dual control of the business to Steve and Marg.

By the mid 1990's, ultrasonic machining was being applied to silicon, a material used by the fast growing semiconductor industry. Silicon, the second most abundant material in the earth's crust, was an ideal material to use in the machines that produced computer chips. Computer chips require precise regulation of voltage to manipulate data. According to the Cornell Center for Materials Research, silicon is ideal because it can be made into either an effective insulator or a semiconductor, both essential for controlling electrical current.

It was determined that a 100,000 square foot plant was needed to keep up with the growth from Silicon Valley. Revenues nearly tripled compared to the previous decade and the company's rate of growth concerned Marg. Steve assured her that there was little risk and was able to persuade her to invest in an additional plant.

During the 1990's, Buckwald had been purchasing silicon material from a German supplier rather than in-house production. Steve, confident he could capitalize on making the material in house, convinced Marg that buying a machine to produce silicon was the next step for the company. By the year 2000, Buckwald was successful in producing silicon material. They estimated they would need five incremental machines to meet the customer demand and to stop purchasing from an external supplier.

In 2005, the company started to outgrow the current manufacturing plant and underestimated the number of machines it needed to produce silicon by three times. By this time one major customer, SmallFast Inc, accounted for over 80% of Buckwald's $100 million in revenue. Marg felt the risks were starting to be too high

and did not know if they would be able to raise the needed funds to expand the plant, let alone the additional growers.

3. ACQUISITION OF BUCKWALD (USMCo)

SmallFast Inc was also concerned with Buckwald's ability to grow. As a result, SmallFast Inc started buying silicon parts from another supplier. This move by SmallFast Inc turned out to be disastrous because they received lower quality materials. They quickly realized how critical Buckwald was to its supply chain and some type of action needed to occur to mitigate their supply risk. Buckwald was a sole supplier for SmallFast Inc and a critical component to their business processes. SmallFast Inc came to the conclusion the best option to mitigate the risk was via acquisition in order to vertically integrate this portion of the supply chain. In December 2006, Buckwald was acquired by SmallFast Inc for approximately $100 million. Steve and Marg left the company for retirement shortly after the acquisition to pursue other opportunities. SmallFast Inc changed the name from Buckwald to USMCo.

4. NEW MANAGEMENT

After the acquisition, Steve Gunderson took the role of General Manager (GM) responsible for all aspects of USMCo business including manufacturing, production, engineering, procurement, quality control, line management and product development. He joined the company with more than 20 years of applicable global leadership experience and a solid technical and operational background. In his previous position, he was the Global Division Vice President and General Manager of Roofer Powder Products. Prior to that, he held a variety of leadership positions at other Fortune 1000 companies. He earned his MS Degree in Engineering from a large state university.

Steve had immediate gains shortly after starting as the GM. One of his first focus areas was in production where the production floor was transitioned from work centers to manufacturing cells. Before this transition all similar machines and processes were grouped together. For example, all CNC machines were in one area. The transition created an area where a family of items were produced and contained the machinery needed to process the item through several stages. After this was implemented the company embarked on a lean journey modeling the Toyota Performance system. Inventory on hand before the journey was nearly 6 months to a year in some areas. After the manufacturing cell and lean improvements, inventory decreased to 30 days. With the changes in the manufacturing process gaining traction and starting to show real improvements, Steve knew that there were several administrative areas that needed the same attention and the most pressing of these was payroll processing.

Steve's key accounting employee was Rob Carter. Rob had been brought over to the company when Steve joined shortly after the acquisition. Rob is a CPA and has years of accounting experience with manufacturing companies. Rob had been briefed multiple times regarding the current payroll issue and need for a new system, however Rob was not 100% on board with the need for a new system - he needed to be convinced with data. Rob was one of the key approvers of the new payroll system, so it was important that the team got his buy-in and passion.

5. OLD PAYROLL SYSTEM

When USMCo (then Buckwald) purchased and implemented Unicorn Payroll Pro in 2002, it was a top of the line payroll system. However, ten years later it was no longer supporting the company's needs. The most immediate problem was the amount of manual entry that was required to keep the system up to date. Tax tables could not be uploaded into the software and needed to be manually adjusted with any changes. This was not only a time consuming job, but the potential for error was high. To ensure compliance, it was part of the payroll clerk's job to check for any changes in tax tables from all taxing authorities, federal, state and local. Compounding this issue, the payroll clerk was not an expert in payroll. She knew how to use the Unicorn software and the basics of payroll, but did not have any background in the many compliance and tax issues that were needed. Unicorn Payroll Pro was also now obsolete software and no longer supported by the software provider and could not be updated to meet USMCo's needs. The software was experiencing very slow processing times and at times would completely freeze and have to be restarted. When this happened, any unsaved

data, like a payroll that is in the middle of being entered, could be lost.

In addition, USMCo needed a system that could transition to a paperless check stub, could track benefits and Paid Time Off (PTO) and would also allow for employee self-service online. Employee self-service would allow employees to log onto the system and make changes to their direct deposits or tax withholdings, or to view their benefit accruals. Placing that responsibility in the hands of the employees would free up a significant amount of time in payroll processing and have available time to be used on more strategic tasks. Unicorn Payroll Pro did not have the capability to handle any of these transitions.

6. CONFLICTING VIEWS

After meeting with Human Resources and Finance, Steve realized that the only thing anyone agreed upon is that the current payroll system was no longer viable. Currently, there was a finance clerk/payroll specialist, Kathy, who reported to the Controller, but really worked in the HR department using Unicorn Payroll Pro to process payroll. The clerk was not a payroll expert and problems, such as the costly incorrect W2s, were likely to continue as long as this position was staffed at a clerk level and not with a highly trained payroll administrator.

On the surface, it seemed like a simple set of options: buy a new system or outsource. Steve was finding out that there was not an easy answer. Whether they decide to buy or outsource, the future of Kathy at the company was not certain. In either case, it was questionable whether she would have enough work to justify her salary. Were any of her other duties critical functions and could they be moved to someone else within the company? If they decided to let Kathy go, who would be the process owner for payroll? Even with an outsourcing option, someone had to transmit the data to the provider and act as a liaison.

The HR benefits administrator, Tammy, wanted to hire a new payroll administrator that had the expertise to handle all the reporting requirements. She also wanted to install a new payroll system that had all the functionality to handle the new requirements the company required. By hiring a payroll administrator and having a system that could track benefits and PTO, Tammy would be able to spend more time evaluating benefits programs and ensuring that the programs were the best fit and value for both the company and the employees. Currently, Tammy was spending so much time tracking benefits and PTO, answering employee questions about their benefits, and helping Kathy with the payroll, that she had little time left over to do a thorough evaluation on current programs and research new programs.

With the looming Affordable Care Act deadlines, Tammy needed all the extra time she could get. A system that could track benefits with a self-service feature for employees and a payroll administrator that was qualified to handle the remaining employee inquiries and problems would free up a significant amount of time to concentrate on trying to mitigate potentially costly changes in healthcare. Tammy also knew from past experience that even with an outsourced payroll provider, there can still be significant time needed to input the payroll data to the provider and the providers often charge based on the number of employees. She knew that as the company continued to grow it will become more costly to process payroll. She felt that outsourcing was not the most advantageous option. As the company grew, it would become more cost efficient to have payroll processed in-house. Tammy also knew that even with a self-service feature, there would still be employees with questions and there would still be payroll errors to be dealt with and all those issues would be directed to her.

The HR Manager, Linda, however, was in favor of outsourcing payroll to a third party provider and letting Kathy go from her position. The HR manager felt that there were not enough employees in the company to warrant hiring a payroll administrator and upgrading to a new in-house system. She thought that a new system that would meet their requirements would be far more costly than the cost of outsourcing the payroll. Outsourcing providers could meet all the system requirements that USMCo needed and payroll was their core competency. Outsourced providers had the expertise to manage all payroll functions and to stay up to date with all tax and compliance issues. Once payroll is sourced to an outside provider, the Company's payroll processing requirements are to only send the employee hours to the provider. These hours would be gathered by the department managers and should take someone a small amount of time to input for processing. The provider systems could eliminate the need to

track benefits and PTO manually and the self-service feature would alleviate the amount of employee questions being directed to the HR department. Linda felt that the time needed for managing payroll would be minimal and that Kathy would no longer be needed.

Susan, the Finance manager, agreed with Linda that the outsourcing option would the most cost efficient solution, but disagreed over the future of Kathy, the finance/payroll clerk. In addition to the payroll processing, Kathy was also a backup for accounts payable, accounts receivable and the front desk. Susan thought Kathy should be kept on staff to maintain the status as a backup and to be the payroll point person to the outsource provider. Susan agreed with Tammy that while an outsource option would help to alleviate the problems and diminish the workload of the payroll clerk; it would not eliminate the need for a payroll clerk. Susan also agreed that Tammy could not be the point person for the entire payroll because she was well aware of the large cost associated with the company's current health care. Tammy should be using her expertise to try and mitigate future costs rather than sending payroll information to a provider. The question for Susan was whether or not Kathy would have enough work to justify her salary with a diminished payroll job.

7. PAYROLL CHALLENGES

The Unicorn payroll system has several challenges associated with it. Most critically, the system is not in proper legal compliance. It generated errors in last year's W2s and needs to be addressed ASAP. USMCo could face fines from the IRS if this misreporting issue was not promptly fixed. In addition to compliance, there are operating and performance issues with Unicorn. Unicorn is antiquated and no longer has active support available. In addition, USMCo does not have an in-house expert that can work through the challenges of Unicorn. Kathy is a finance coded employee that HR wants to remove from her position - and is only a clerk and does not have payroll expertise. However, the Accounting department sees the benefit of having a liaison between HR and Accounting in order to ensure there is proper finance representation in the process.

The HR and Accounting organization has started dedicating time and effort to evaluating the various options. There are clear pros and cons for each option that both organizations felt very passionate about with supporting legitimate reasons. Additionally, an objective comparison of costs between alternatives was needed. However, Rob Carter was not engaged in payroll system conversations and did not participate in the meetings. His disengagement created more effort for the team as data collecting and effort continued to grow in order for HR and Accounting to influence Mr. Carter to recommend the "right" decision to Steve.

8. CONCLUSION

Steve knew that a tough decision lay ahead of him in determining the future of the payroll systems for USMCo. He needed to be sure that the future payroll system, whether it was kept in-house or outsourced, would meet the current and future expanding needs of the company. The new processes needed to have significantly less manual upkeep, be easily updated with federal, state and local taxes, have improved processing times, have greater reporting functionality and be able to provide an employee self-service function. After hearing the opinions of multiple people in Finance, Accounting and HR, Steve knew that his decision wasn't as simple as deciding which option USMCo should pursue to fix their payroll problems. Steve also needed to determine which department would maintain the ownership of the payroll function and what should be done with the current payroll/finance clerk, Kathy.

As Steve looked out his window at the hordes of people at the Sausage Festival and thought about how they recently broke the news to their employees about the payroll error, he knew he needed to make a change, and fast. Steve was certain that USMCo could not have another year of payroll errors that would cost the company additional money to resolve and potential fines from the government for inaccurate taxes being withheld. He decided that a decision would be required by the end of the week to present to the various departments along with the pros and cons of this approach. Steve would outline the ownership of the system and as a result employee's responsibilities would change. He had a tough week ahead of him and knew that he unfortunately wouldn't have enough time to attend the Sausage Fest this year.

Note: Teaching Notes and Case Supplements are available by contacting the authors

Teaching Case

The Cocoa Shop:
A Database Management Case

Renée M. E. Pratt
prattr@wlu.edu
Washington and Lee University
Lexington, VA 24450

Cindi T. Smatt
cindi.smatt@ung.edu
University of North Georgia
Dahlonega, GA 30597

Abstract

This is an example of a real-world applicable case study, which includes background information on a small local business (i.e., TCS), description of functional business requirements, and sample data. Students are asked to design and develop a database to improve the management of the company's customers, products, and purchases by emphasizing effective business rules and professional database development. In addition, this case will explore the benefits of working with MS Access, data population, creation and development of forms, queries, reports and a switchboard to complete the requirements express by TCS. This case can be used in a course where the students have little or no prior relational database experience, as well as a more intermediate/advance level of experience. Teaching notes containing suggested guidelines, deliverables, and the resulting database containing data, forms, queries, reports, and switchboard are provided upon request.

Keywords: Case Project, MS Access, Database Development, Macro, Management Information Systems, Switchboard

1. CASE OPENER

The Cocoa Shop (TCS) is a chocolate boutique in a small town in Mandeville, Virginia. It is a specialty candy shop that makes unique candy and chocolate from the cocoa plant located in Indonesia, Ghana, Brazil, and Ecuador. Once the bean is processed and treated, TCS makes some of the most delicious and tasty candies and chocolates. The shop has been in business for almost 20 years and has continued to do very well. TCS is a family owned business. There are currently five employees – the owner, the store manager, the chocolatier, and two support staff members. At the back of the store, their kitchen produces all of their handmade confectionary. Over the past few years, TCS has experienced tremendous growth and has managed the growth fairly well. The owner has decided to open a second retail shop in a nearby city (Christiana, Virginia). The original boutique will supply all of the products to this new location.

Management faces two main challenges: TCS needs to (1) determine if their business is ready to expand and (2) prepare their current database management system (i.e., spreadsheets) to include the new customers while preserving the existing customer base;

specifically, the management of tracking their customer's purchases and interests. The business is growing faster than anticipated and their lack of customer data collection and antiquated method of spreadsheets will no longer be feasible to address their needs of maintaining data, reaching out to old and new customers, and searching for information.

As a small family owned business, TCS now has the opportunity to reach new heights. With the right system in place, TCS has the capability of opening more boutiques and increasing sales globally via outlets such as QVC or Home Shopping Network. Thus, TCS has decided to maintain information in a database to provide adequate support for their customers.

The owner of TCS recognizes the importance of evaluating customers' needs and wants. After interviewing several customers and employees, she prepared a functional requirements report, which included a sample of the data required for the system and specifications of the business processes and information to be collected. Below is the detailed TCS Functional Requirements Report.

2. FUNCTIONAL REQUIREMENTS REPORT

The owner of TCS wants a database that allows her to track customers (in store & online) and monitor inventory levels of the company's products (current levels, product costs, & selling prices) and sale transactions. She needs simple, effective forms for entering data about her products and customer information. She needs reports that explore customer loyalty, product information, and revenue. She also needs to extract specific information about customers from the database for newsletter and survey purposes.

TCS has two types of customers – individual and wholesale. All customers are retained in a single customer table with an option showing customer type. TCS customers may purchase chocolate either in person or online (descriptions of these experiences are provided below). A wholesale customer completes all purchases online. A customer may purchase multiple products on a single transaction (both individual and wholesale customers). All wholesale transactions need to be represented in a separate table in the database. Each wholesale transaction consists of transaction ID, wholesaler ID, and a discount field (set at a default of $10.00 unless otherwise

stated). All wholesale transactions are delivered by one of TCS's trucks.

TCS hand-makes all of their chocolate products (see Product Table in Appendix). Each product has a name, cost, price, quantity on hand, quantity per unit, a product picture and an indication of whether it is a wholesale item or not. In order to preserve the handmade chocolate, TCS ships all wholesale purchases via a personalized, temperature controlled trucking service. TCS has 3 trucks (Toyota, Ford, and Benz) designated for deliveries and for transporting products from one TCS location to another.

Below are two descriptions of a customer experience:

In Store Experience:
The customer goes to the boutique and may select loose chocolates, pre-made bagged products, or pre-made boxed products. TCS would like to track all payment transactions to maintain their sales records. Each transaction may be paid by credit card, cash, or check.

Currently, there is no personal information gathered about the customer. Management would like to learn more about their customers (i.e., name, email, full address, phone, location preference (Mandeville, Christiana, or online) and chocolate preferences (see Table 2)). Currently, the customer's email address is a unique identifier. Each customer may only have one preference, as it is their most preferred chocolate category.

Table 2. Chocolate Categories	
Code	*Category Name*
TRU	Chocolate Truffles
GTP	Gift Towers and Pails
AST	Chocolate Assortments
SPE	Chocolate Specials
CAN	Chocolate and Nuts
SKT	Survival Kits
FRU	Chocolate Covered Fruit
WED	Wedding Favors
COR	Corporate Gifts
SFC	Sugar Free Chocolate

Online Experience:
The customer opens the website on their local browser and chooses a category. Within each category, there are several types of products for the customer to choose from. The customer then selects the quantity of the purchase and clicks Add to Cart. The product is added to the

cart and the customer has the option of continuing to shop or checking out. Once the customer has completed their selections, then the customer clicks Check Out.

The customer is asked to log in (as a returning customer) or select First Time Customer. If the customer is an existing customer, they are taken to the checkout screen. If the customer is a first time purchaser, they are asked to provide their personal information (i.e., name, full address, phone, email, location preference and chocolate preferences). The login is the customer's email address (see sample Customer Table in Appendix).

At the checkout screen, the customer may review their purchase, select shipping method, and provide payment information. A customer has multiple shipping options (see Shipping Options Table in the Appendix).

Similar to the in-store experience, each transaction may be paid by credit card, cash, or check. The customer is presented with a receipt that includes all the transaction information (purchase date, customer name, product(s), purchase price, shipping, tax, total amount, and expected delivery date) for confirmation to complete the purchase. Since all items are shipped from Virginia, tax is held at 8%.

Forms Requirements
TCS administrators and employees need several user-friendly forms to enter data into the database. Two types of forms are needed – input forms and application forms. The input forms are data entry forms or forms that replicate the information in the database. The application forms combine information from multiple tables to produce related table information. The functional requirements for TCS input and application forms are provided below.

Input Forms
Input forms are to allow the employees to enter, edit, or query data in given table. These forms are to be columnar type forms that display data or allow for input of one record at a time. The forms are to be user friendly with all the field labels consisting of user-friendly descriptive names.

Input/Query forms are to be developed for the following tables:

- Chocolate Categories
- Customer Information
- Location
- Payment Method
- Transportation (trucking information)
- Shipping Options

Application Forms
1. **Product Entry Form:** This form is an entry form for new products. This form should include the Product ID, Name, Cost, Price, Category, Product Type, Quantity on Hand, and Thumbnail Image. The category and product type should be dropdown boxes displaying the current information in those tables.

2. **Product Availability Form:** This form provides a view of product quantities on hand and price by category. The upper portion of the form contains the chocolate category name. The lower portion of the form includes the product name, image, quantity on hand, and price (in datasheet view).

3. **Customer Login:** This form is an entry for the customer to view their purchases and personal information. The form should display the Customer Email and Customer Name in the upper portion. The lower portion of the form should include the Transaction ID, Purchase Date, Product, Quantity and Price. The bottom portion of this section is to contain a textbox that keeps a running total of the member's purchasing amounts. This field should look like a total field on a report and appear under the price column and be labeled: Total Purchased.

4. **Transaction Entry Forms:** These forms are entry forms for both types of transactions, individual and wholesale. (1) The main transaction form should display Transaction ID, Purchase Date, Customer ID, Payment ID, and Shipping ID in the upper portion. The lower portion of the form should include the Product ID and Quantity (i.e., the transaction details subform). The bottom portion of the main form should contain a checkbox for the Wholesale field. This field should be directly below the transaction details subform. Upon checking this box, a second form – wholesale – will open. This occurs through the use of a macro (Hint:

Data Mode should be set to "Add"). (2) The wholesale transaction form should include Transaction ID, Discount, and Truck ID.

Queries Requirements

A variety of queries is required to extract meaningful and accurate data. In order for TCS management and staff to be more efficient and effective with their customers, packaging and logistics, data must be extracted and filtered to answer fundamental and essential questions. We have determined that the initial queries to be included in the database are below:

All query column headings are to be clear, concise and accurately describe the contents of the column to the average user. Only universally accepted abbreviations are to be used. All queries, when printed out, should fit on standard paper when printed in landscape mode (11" by 8 ½"). The queries are to be named as they are listed below.

1. **Customer Chocolate Preference List:** List the customers and their chocolate preferences. Label the columns: Customer Name and Preferred Chocolate. Order by Preferred Chocolate.

2. **Location Preference Count:** Count how many customers prefer a particular location. Display the Location Name and Customer Count. Label headings appropriately.

3. **Customer List:** List the customers and their contact information (complete address and email). Create two lists – (a) one for individual customers and (b) one for wholesalers. Label the columns in the appropriate queries: Customers and Wholesalers.

4. **Customer Loyalty List:** A customer list that displays the customer's ID, last name and first name separated by a comma and a space, their preferred location and email address for customers who have been with TCS two for more years (prior to 1/1/2006). Label the column headings: Customer ID, Customer's Name, and Preferred Location.

5. **Product List:** List product id, names, price, quantity on hand, wholesale item, quantity per unit, and thumbnail image. The price is to be formatted as currency. Sort list ascending by name and quantity per unit.

6. **Wholesale Products:** What products are wholesale items? Display Product ID, Name, and Quantity on Hand. Only display wholesale products.

7. **Chocolate Categories:** A listing of The Cocoa Shops chocolates and their respective categories. Display Product ID, Product Name, and Chocolate Category. Sort descending by Chocolate Code (not category).

8. **Customer Product Statistics:** A query to display the cost, revenue, and total amount for each transaction (including tax and shipping). Be sure to format the appropriate columns as currency and label the columns appropriately.

9. **Shipping Stats:** A query to display the customer's minimum, maximum, and average shipping costs incurred. Be sure to format the appropriate columns as currency and label the columns appropriately.

10. **Customer Retention:** A listing of customers that have been with the business over five years. Display Customer Name and Number of Years.

11. **Profit Margin:** Which products have a unit profit margin less than $2.00? For each product, include the product's name, number and unit profit margin. (No other fields should be included.) Sort in descending order (highest to lowest).

12. **Daily Revenue and Shipping Costs:** A query to display the in-store and online revenue by day. Display Transaction Date, Location, Total Product Cost, Total Product Revenue (quantity * price), Total Shipping Fees, and Total Revenue. Total Revenue is the difference of Product Revenue and Product Cost. Sort the query by transaction date and Group by location. *(Bonus: combine the two store locations to represent in-store. Only have the query display in-store versus online revenue for location.)*

13. **Customer Revenue:** An electronic listing to display revenue received by customer. Display Customer Last Name, Customer First Name, Total Product Revenue, Total Product Cost, and Total Revenue per Customer.

14. **Highest Selling Product:** List the top five selling products for the past 3 years. Display the Product Name and price. *(Bonus: Display the products per quarter)*

15. **Store Sales:** A listing to display total sales by store. Display Store Name, City, Total Sales. Sort by highest sales generated.

Report Requirements
TCS require a number of reports for the management team to analyze. The report requirements appear below. Label all sub-totals and grand totals appropriately with user-friendly descriptions to the left of the totals. Finally, to provide a more detailed and accurate appearance, all sub-totals should have a line above the subtotal and the grand total should have a double line above the total.

1. **Customer Loyalty Report:** This report is based on the Customer Loyalty List Query and is to display each customer's ID, Name, and Preferred Location. Sort by Preferred Location and ID.

2. **Category Status Report:** This report is based on the Chocolate Categories Query. The report is to display the Chocolate Category, Product ID, and the Product Name. The data is to be grouped by Chocolate Category. Sort by Product Name.

3. **Potential Product Revenue Report:** Create a report to display the revenue earned on each product. The report should include the Product ID, Product Name, Cost, Price, Quantity on Hand, and Potential Revenue. Group by Chocolate Category. Sort by Potential Revenue and Product Name. Also provide a grand sum at end of report.

4. **Customer Revenue Report:** This report is based on the Customer Revenue Query. Display the Customer Last Name, First Name, Total Product Revenue, Total Product Cost, and Total Revenue per Customer. Group by Customer. All total columns are to be totaled by Customer and a Grand Summary for all Customers.

5. **Daily Detailed Revenue Report:** This report is based on the Daily Revenue and Shipping Costs Query. Display the Transaction Date, Location, Total Product Cost, Total Product Revenue (quantity * price), Total Shipping Fees, and Total Revenue. Group by Transaction Date and Location. Provide totals of the Revenue by Location and the full report.

6. **TCS Receipt:** The form allows the employee or customer to review their transaction purchase prior to finally submitting payment. This form is like a receipt and is to be formatted in columnar format. The display of transaction and payment information should include the following fields: Purchase Date, Transaction ID, Product Number, Product Name, Quantity, Price, Amount, Subtotal, Sales Tax, Shipping Fee, Total Amount Due, and Payment Method. The Subtotal, Sales Tax Amount, and Total Amount Due should be calculated fields based on amount and shipping fee totals. Recall, the sales tax rate is 8%. Each transaction should be on a single page when viewed in print preview.

3. DELIVERABLES

Deliverable One
Deliverable One should include all of the following:

1. Create a data flow diagram (DFD) and an entity-relationship diagram (ERD). Use the suitable graphical modeling representation discussed in class and indicate the correct cardinalities where suitable. Normalization (i.e., the process of assuring a database structure can be implemented as a series of two-dimensional tables) should be applied to all many-to-many relationships to ensure all fields are derived from its entity and the relationship created.

2. Create the database structures (tables and relationships) necessary to meet the requirements set by The Cocoa Shop scenario. Create appropriate field names (columns) for the tables (entities). This includes having data types and sizes appropriate for the data as described in the scenario.

3. The tables are to be populated with the data contained in The Cocoa Shop scenario with sample information in the Appendix.

4. There are NO queries, forms, reports or menus due for Deliverable One.

Deliverable Two
Deliverable Two should include all of the following:

1. Correct ALL errors from Deliverable One of the project that impact Deliverable Two. Failure to do so will result in points being deducted from this assignment.

2. Create forms, queries, and reports as discussed in the write-up of Deliverable Two.

3. You are to incorporate The Cocoa Shop logo into your forms and reports.

4. All queries are to use ONLY the tables or other queries necessary to make the query fully functional. The use of unnecessary queries and/or tables will result in points being deducted.

Deliverable Three
Deliverable Three should include all of the following:

1. Create a navigational menu using the Switchboard Manager to navigate between forms and reports.

2. Insert additional data to demonstrate how the employees will use these forms to enter new information. Additional data will be provided by Instructor.

3. Insert value-added features, such as text formatting, text alignment, and color shading, to increase the readability of the information.

4. CONCLUSION

The Cocoa Shop's management needs your help. The business has been successful. However, as the business has grown, so have the demands on the family. The owner's decision to open a second chocolate boutique in nearby city, Christiana, has strained the current system. Not surprisingly, the spreadsheet software program and hard copies of other documents is no longer an efficient or effective way to address their needs of maintaining data, reaching out to old and new customers, and searching for information. TCS management is hoping you can help with the desired database needs.

Editor's Note:

This paper was selected for inclusion in the journal as the ISECON 2014 Best Case

Note: Teaching Notes and Case Supplements are available by contacting the authors

Appendix
The Cocoa Shop – Sample Product Information

Product Name	Cost	Price	Quantity on Hand	Quantity Per Unit	Wholesale Item	Chocolete Category
15 piece Truffles	$ 16.54	$ 28.95	901	105	yes	Chocolate Truffles
3 Pack of Chocolate Golf Balls	$ 39.40	$ 68.95	0	1	no	Corporate Gifts
Almond Bark Dark	$ 1.43	$ 2.50	795	105	yes	Chocolate and Nuts
Almond Bark Milk	$ 1.43	$ 2.50	901	105	yes	Chocolate and Nuts
Assorted Chocolates	$ 17.69	$ 30.95	894	105	yes	Chocolate Assortments
Assorted Sugar Free Chocolates	$ 28.54	$ 49.95	25	105	yes	Sugar Free Chocolate
Bronze Pail of Chocolate	$ 17.69	$ 30.95	997	1	no	Gift Towers and Pails
Business Gift Box - 15 Handmade Truffles	$ 13.69	$ 23.95	1000	1	no	Corporate Gifts
Caramels	$ 0.71	$ 1.25	975	105	yes	Chocolate Specials
Cashews with Milk Chocolate	$ 16.54	$ 28.95	625	60	yes	Chocolate and Nuts
Chocolate Bunnies - Large	$ 6.26	$ 10.95	0	1	yes	Chocolate Specials
Chocolate Bunnies - Small	$ 3.40	$ 5.95	0	1	yes	Chocolate Specials
Chocolate Business Cards - 10 pieces	$ 19.97	$ 34.95	998	1	yes	Corporate Gifts
Chocolate Cigars	$ 29.11	$ 50.95	0	12	yes	Corporate Gifts
Chocolate Covered Apricots	$ 1.95	$ 7.95	964	10	yes	Chocolate Covered Fruit
Chocolate Covered Strawberries	$ 1.43	$ 2.50	902	12	yes	Chocolate Covered Fruit
Chocolate Dipped Ginger	$ 1.43	$ 2.50	981	45	yes	Chocolate Covered Fruit
Chocolate Dipped Mints	$ 6.26	$ 10.95	931	30	yes	Chocolate Specials
Chocolate Dipped Orange Peel	$ 1.43	$ 2.50	976	45	yes	Chocolate Covered Fruit
Chocolate Dipped Oreos	$ 0.71	$ 1.25	936	12	yes	Chocolate Specials
Chocolate Dipped Pretzels - 12 pieces	$ 7.40	$ 12.95	139	12	no	Survival Kits
Chocolate Santa Boxes	$ 14.29	$ 25.00	994	2	yes	Chocolate Specials
Chocolate Survival Kits	$ 21.11	$ 36.95	1	1	no	Survival Kits
Chocolate Wedding Favors - Truffles Boxes	$ 29.11	$ 50.95	1000	1	no	Wedding Favors
Chocolate Wedding Tower	$102.26	$178.95	931	1	no	Wedding Favors
Coffee Lover - Espresso & Cappuccino Truffles	$ 10.95	$ 34.95	964	105	yes	Chocolate Assortments
Coffee Lover Survival Kits	$ 25.69	$ 44.95	994	1	no	Survival Kits
College Exam Chocolate Survival Kits	$ 14.29	$ 25.00	988	1	no	Survival Kits
Corporate Ultimate Assortment	$120.00	$210.00	1000	12	no	Corporate Gifts
Custom Wedding Favor Boxes	$ 37.11	$ 64.95	0	1	no	Wedding Favors
Dark Chocolate Lovers	$ 38.83	$ 67.95	963	1	no	Chocolate Assortments
Dark Chocolate Truffles	$ 1.43	$ 2.50	985	105	yes	Chocolate Truffles
Dark Chocolated Truffles	$ 0.71	$ 1.25	919	105	yes	Chocolate Truffles
Easter Chocolate Pail	$ 14.26	$ 24.95	0	1	no	Gift Towers and Pails
Fruit and Nut Clusters	$ 19.97	$ 34.95	961	12	yes	Chocolate and Nuts
Gold Pail of Chocolate	$ 29.11	$ 50.95	918	1	no	Gift Towers and Pails
Heart of Chocolate	$ 21.69	$ 37.95	1000	1	no	Chocolate Specials
Heart Wedding Favors	$ 2.83	$ 4.95	936	1	no	Wedding Favors
Milk Chocolate Truffles	$ 0.71	$ 1.25	881	105	yes	Chocolate Truffles
Nonpareils	$ 7.40	$ 12.95	942	105	yes	Chocolate Assortments
Peanut Butter Cups	$ 0.57	$ 1.00	995	105	yes	Chocolate and Nuts
Pecans with Milk Chocolate	$ 17.69	$ 30.95	754	12	yes	Chocolate and Nuts
Platinum Pail of Chocolate	$ 34.83	$ 60.95	953	1	no	Gift Towers and Pails
Positively Nuts	$ 1.43	$ 1.95	979	45	yes	Chocolate and Nuts
Roasted Macadamia with Milk Chocolate	$ 19.97	$ 34.95	985	12	yes	Chocolate and Nuts
School Begins Survival Kits	$ 21.11	$ 36.95	152	1	no	Survival Kits
Silver Pail of Chocolate	$ 23.40	$ 40.95	983	1	no	Gift Towers and Pails
Sugar Free Chocolate Pretzel	$ 2.85	$ 4.99	1000	12	yes	Sugar Free Chocolate
Sugar Free Truffles	$ 28.54	$ 49.95	982	105	yes	Sugar Free Chocolate
Tower of Chocolate Treats	$ 33.71	$ 59.00	968	1	no	Wedding Favors

*** NOTE: Product images provided in a separate file upon request ***

The Cocoa Shop – Sample Customer Information

Individual Customers

Alenjandro Roller
916 Ridgecrest
Christiana, VA 77788
(999) 844-4021
Location Preference: Christiana
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 6/19/2012

Allean Matchtolff
2022 Washington Way
Christiana, VA 77788
(999) 751-4444
Location Preference: Mandeville
Chocolate Preference: Chocolate and Nuts
First Visit to TCS: 12/6/2008

Alva Madere
2209 Western Avenue
Mandeville, VA 77777
(444) 330-1837
Location Preference: Online
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 6/4/2000

Buyung Jwang
5010 Jackson Drive
Chicago, IL 60603
(312) 337-8021
Location Preference: Mandeville
Chocolate Preference: Corporate Gifts
First Visit to TCS: 6/4/2010

Carry Peters
3721 Winter Hill Way
Mandeville, VA 77777
(444) 348-1086
Location Preference: Online
Chocolate Preference: Chocolate Covered Fruit
First Visit to TCS: 3/15/2000

Catrina Stanton
4651 Asheville Lane
Chicago, IL 60603
(773) 536-8484
Location Preference: Christiana
Chocolate Preference: Chocolate Assortments
First Visit to TCS: 5/1/1997

Donny Walker
1190 Meridian
Chicago, IL 60604
(312) 337-3820
Location Preference: Online
Chocolate Preference: Sugar Free Chocolate
First Visit to TCS: 2/11/2009

Eddie Loudermilk
10815 Keen Oak Way
Chicago, IL 60601
(773) 397-4563
Location Preference: Christiana
Chocolate Preference: Chocolate Assortments
First Visit to TCS: 1/8/2008

Edith Javorsky
1720 Iowa Street
Bentonville, VA 99999
(272) 285-1286
Location Preference: Mandeville
Chocolate Preference: Corporate Gifts
First Visit to TCS: 8/17/1998

Faye Watchel
1708 Central Drive
Chicago, IL 60603
(773) 397-1899
Location Preference: Christiana
Chocolate Preference: Chocolate Specials
First Visit to TCS: 7/6/2000

Felix Khan
7132 Fox Run
Los Angeles, CA 11112
(999) 528-6033
Location Preference: Christiana
Chocolate Preference: Chocolate and Nuts
First Visit to TCS: 7/1/2002

Franklin Pierce
2748 Alleghney
Brooksville, TX 99999
(222) 341-8733
Location Preference: Mandeville
Chocolate Preference: Chocolate Specials
First Visit to TCS: 8/1/2009

Harry Westvang
3817 Stone Ridge Mt.
Dallas, TX 99943
(272) 331-0774
Location Preference: Online
Chocolate Preference: Corporate Gifts
First Visit to TCS: 4/19/2003

Joseph Keck
4116 Pinnacle Square
Lancelot, VA 88888
(555) 715-1988
Location Preference: Christiana
Chocolate Preference: Sugar Free Chocolate
First Visit to TCS: 5/4/2006

Joshua Allbaugh
602 Pine Oak
Chicago, IL 60605
(312) 335-7232
Location Preference: Mandeville
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 9/24/2007

Keith Goertzen
1833 Pepperdine
Brooksville, TX 99999
(999) 517-9988
Location Preference: Christiana
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 10/7/1999

Kevin Darr
28 West Paris
Anchorage, AK 44444
(999) 685-7974
Location Preference: Christiana
Chocolate Preference: Chocolate Covered Fruit
First Visit to TCS: 12/1/2009

Lamont George
2005 Copper Rock
Dallas, TX 99943
(888) 212-7358
Location Preference: Mandeville
Chocolate Preference: Gift Towers and Pails
First Visit to TCS: 11/11/2006

Leigh Ann Macnai
1206 Lincoln Blvd
Tulsa, VA 88877
(999) 307-5629
Location Preference: Online
Chocolate Preference: Corporate Gifts
First Visit to TCS: 4/25/2011

Marcus Dastolfo
229 Redwood Drive
Brooksville, VA 99999
(999) 890-2784
Location Preference: Mandeville
Chocolate Preference: Chocolate Assortments
First Visit to TCS: 12/4/2003

Marvel Grogan
24013 Bellaire Drive
Chicago, IL 60602
(312) 281-3518
Location Preference: Mandeville
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 8/18/1999

Michael Demopolos
424 Northwest Quapah Avenue
Chicago, IL 60604
(312) 247-1500
Location Preference: Mandeville
Chocolate Preference: Chocolate Covered Fruit
First Visit to TCS: 6/19/2003

Reginald Roselius
1240 NW Boulevard
Chicago, IL 60602
(773) 536-3728
Location Preference: Online
Chocolate Preference: Chocolate Covered Fruit
First Visit to TCS: 6/19/2005

Robert Brunhoeber
123 Downing Street
Dallas, VA 99943
(999) 478-4852
Location Preference: Christiana
Chocolate Preference: Chocolate Specials
First Visit to TCS: 5/30/2001

Robin Bibb
777 Washington Boulevard
Chicago, IL 60603
(312) 281-9103
Location Preference: Mandeville
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 8/17/2002

Samuel Thompson
2540 Hunter Cliff
Phoenix, VA 22222
(999) 804-2881
Location Preference: Online
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 2/13/2007

Stareta Spruill
2411 Horshoe
Colleyville, VA 77763
(444) 289-7892
Location Preference: Mandeville
Chocolate Preference: Chocolate and Nuts
First Visit to TCS: 1/20/2005

Yosheto Tang
612 Irvine Way
Duncan, VA 99977
(999) 721-3330
Location Preference: Mandeville
Chocolate Preference: Sugar Free Chocolate
First Visit to TCS: 9/27/2004

Yuri Milenkovic
17613 Spring Creek
Grapevine, VA 99924
(999) 715-9888
Location Preference: Online
Chocolate Preference: Chocolate and Nuts
First Visit to TCS: 9/13/2010

Wholesale Customers

Betty Grogan
Company: Betty's Interior Designs
423 Paddington Way
Mandeville, VA 77777
(444)330-3291
Location Preference: Christiana
Chocolate Preference: Corporate Gifts
First Visit to TCS: 12/5/2009

Mark Lancaster
Company: Lancaster Paints, Incorporated
701 Balcones Drive
Christiana, VA 77788
(999)350-2405
Location Preference: Christiana
Chocolate Preference: Chocolate and Nuts
First Visit to TCS: 12/4/2003

Cesar Blaylock
Company: Blaylock Bike and Burlap
8002 Wandering Deer Court
Christiana, VA 77788
(999)751-6691
Location Preference: Mandeville
Chocolate Preference: Chocolate and Nuts
First Visit to TCS: 5/25/2012

Lewis Leedom
Company: Leedom Pharmacy
12 Meadowglade Crescent
Christiana, VA 77788
(999)445-8671
Location Preference: Christiana
Chocolate Preference: Chocolate Truffles
First Visit to TCS: 3/5/2010

Michelle Masterson
Company: Cresent Manufacturing, Incorporated
26011 Palm Avenue
Mandeville, VA 77777
(444)281-5502
Location Preference: Christiana
Chocolate Preference: Chocolate and Nuts
First Visit to TCS: 11/30/2004

The Cocoa Shop – Sample Shipping Options

Shipping Type	Delivery Days	Shipping Fee
UPS (5-Day Delivery)	5	$11.00
UPS (3-Day Delivery)	3	$21.00
DHL (3-Day Delivery)	3	$25.00
USPS (7-Day Delivery)	7	$9.99
FEDEX (2-Day Delivery)	2	$27.00
In-Store Pickup	0	$0.00

The Cocoa Shop – Sample Transaction Information

Purchase Date	Customer Name	Product Name	Quantity	Payment Type	Shipping Option	Discount
5/1/1997	Catrina Stanton	15 piece Truffles	3	Master Card	In-Store Pickup	$0.00
9/8/1997	Franklin Pierce	Assorted Chocolates	5	Cash	In-Store Pickup	$0.00
9/8/1997	Franklin Pierce	School Begins Survival Kits	1	Cash	In-Store Pickup	$0.00
2/14/1997	Eddie Loudermilk	Assorted Sugar Free Chocolates	2	Visa	In-Store Pickup	$0.00
8/17/1998	Edith Javorsky	Platinum Pail of Chocolate	1	Check	USPS (7-Day)	$0.00
2/13/1998	Robert Brunhoeber	Heart of Chocolate	2	Check	USPS (7-Day)	$0.00
8/18/1999	Marvel Grogan	Coffee Lover Survival Kits	1	American Express	UPS (3-Day)	$0.00
10/7/1999	Keith Goertzen	Pecans with Milk Chocolate	3	American Express	DHL (3-Day)	$0.00
3/15/2000	Carry Peters	15 piece Truffles	5	Check	UPS (3-Day)	$0.00
6/4/2000	Alva Madere	Peanut Butter Cups	5	Cash	DHL (3-Day)	$0.00
7/6/2000	Faye Watchel	Chocolate Dipped Ginger	5	Cash	UPS (3-Day)	$0.00
5/30/2001	Robert Brunhoeber	Sugar Free Truffles	1	Cash	USPS (7-Day)	$0.00
7/1/2002	Felix Khan	15 piece Truffles	5	Master Card	In-Store Pickup	$0.00
8/17/2002	Robin Bibb	Almond Bark Milk	12	Master Card	In-Store Pickup	$0.00
4/19/2003	Harry Westvang	Silver Pail of Chocolate	1	Visa	UPS (3-Day)	$0.00
6/19/2003	Michael Demopolos	Dark Chocolate Lovers	1	Master Card	In-Store Pickup	$0.00
12/4/2003	Marcus Dastolfo	Sugar Free Truffles	1	Cash	In-Store Pickup	$0.00
12/4/2003	Mark Lancaster	Chocolate Santa Boxes	3	Visa	TCS Toyota Truck	$15.00
9/27/2004	Yosheto Tang	Cashews with Milk Chocolate	2	Check	In-Store Pickup	$0.00
11/30/2004	Cesar Blaylock	Bronze Pail of Chocolate	1	Check	TCS Toyota Truck	$15.00
1/20/2005	Stareta Spruill	Bronze Pail of Chocolate	1	American Express	In-Store Pickup	$0.00
6/19/2005	Reginald Roselius	Chocolate Covered Strawberries	10	American Express	DHL (3-Day)	$0.00
5/4/2006	Joseph Keck	Chocolate Covered Strawberries	12	Check	In-Store Pickup	$0.00
11/11/2006	Lamont George	Dark Chocolated Truffles	12	Cash	In-Store Pickup	$0.00
2/13/2007	Samuel Thompson	Roasted Macadamia with Milk Chocolate	2	Check	FEDEX (2-Day)	$0.00
9/24/2007	Joshua Allbaugh	15 piece Truffles	2	Check	In-Store Pickup	$0.00
1/8/2008	Eddie Loudermilk	Pecans with Milk Chocolate	1	Master Card	In-Store Pickup	$0.00
12/6/2008	Allean Matchtolff	Assorted Sugar Free Chocolates	1	Master Card	In-Store Pickup	$0.00
12/6/2008	Allean Matchtolff	College Exam Chocolate Survival Kits	1	Master Card	In-Store Pickup	$0.00
2/11/2009	Donny Walker	15 piece Truffles	2	Visa	USPS (7-Day)	$0.00
2/11/2009	Donny Walker	Chocolate Covered Apricots	3	Visa	USPS (7-Day)	$0.00
2/12/2009	Robert Brunhoeber	Sugar Free Chocolate Pretzel	5	Master Card	UPS (3-Day)	$0.00
2/14/2009	Felix Khan	15 piece Truffles	1	Cash	DHL (3-Day)	$0.00
2/14/2009	Yosheto Tang	Silver Pail of Chocolate	1	Visa	USPS (7-Day)	$0.00
8/1/2009	Franklin Pierce	Coffee Lover - Espresso & Cappuccino Truffles	1	Check	In-Store Pickup	$0.00
12/1/2009	Kevin Darr	15 piece Truffles	5	Check	USPS (7-Day)	$0.00
12/5/2009	Michelle Masterson	Chocolate Business Cards - 10 pieces	2	American Express	TCS Ford Truck	$15.00

The Cocoa Shop – Sample Transaction Information (CONTD.)

Purchase Date	Customer Name	Product Name	Quantity	Payment Type	Shipping Option	Discount
2/1/2010	Joseph Keck	Peanut Butter Cups	24	American Express	In-Store Pickup	$0.00
2/10/2010	Michael Demopolos	Nonpareils	4	Check	In-Store Pickup	$0.00
3/5/2010	Betty Grogan	Business Gift Box - 15 Handmade Truffles	1	Cash	In-Store Pickup	$0.00
6/4/2010	Buyung Jwang	Caramels	12	American Express	In-Store Pickup	$0.00
9/13/2010	Yuri Milenkovic	Chocolate Covered Strawberries	24	American Express	FEDEX (2-Day)	$0.00
9/13/2010	Yuri Milenkovic	School Begins Survival Kits	1	American Express	FEDEX (2-Day)	$0.00
1/15/2011	Marcus Dastolfo	Sugar Free Chocolate Pretzel	3	Master Card	In-Store Pickup	$0.00
2/10/2011	Mark Lancaster	Chocolate Cigars	10	Master Card	TCS Benz Truck	$10.00
2/11/2011	Yosheto Tang	Sugar Free Truffles	1	Visa	In-Store Pickup	$0.00
2/11/2011	Yosheto Tang	Caramels	4	Visa	In-Store Pickup	$0.00
4/25/2011	Leigh Ann Macnai	Roasted Macadamia with Milk Chocolate	1	American Express	USPS (7-Day)	$0.00
5/25/2012	Alenjandro Roller	Chocolate Cigars	5	American Express	FEDEX (2-Day)	$0.00
5/25/2012	Alenjandro Roller	3 Pack of Chocolate Golf Balls	3	American Express	FEDEX (2-Day)	$0.00
6/19/2012	Lewis Leedom	Dark Chocolate Lovers	1	Check	TCS Ford Truck	$25.00
8/18/2012	Lamont George	Chocolate Dipped Mints	2	Cash	USPS (7-Day)	$0.00
8/18/2012	Lamont George	Chocolate Dipped Oreos	12	Cash	USPS (7-Day)	$0.00
9/25/2012	Samuel Thompson	School Begins Survival Kits	1	Cash	In-Store Pickup	$0.00
12/21/2012	Joshua Allbaugh	Nonpareils	2	Cash	In-Store Pickup	$0.00
12/21/2012	Joshua Allbaugh	Chocolate Santa Boxes	1	Cash	In-Store Pickup	$0.00
12/22/2012	Michael Demopolos	Chocolate Santa Boxes	2	Check	In-Store Pickup	$0.00
12/28/2012	Lamont George	Caramels	10	Check	In-Store Pickup	$0.00