

The Power of Point of Sale

*Improving Growth, Profit, and Customer
Service in a Retail Business*

The Honors Program

Senior Capstone Project

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Abstract

For many small businesses, creating a captivating retail experience is the key to success, and finding the right technologies to enable that experience is crucial for sustaining a competitive advantage. This project is a case study designed to evaluate and select a Point of Sale (POS) system and Inventory Management (IM) system for a small business based upon its specific industry needs. The project creates a three step framework leading up to the real world implementation of these systems and uses the Rhode Island based company - Wildwood Inc. - as the subject of the study. Wildwood Inc. is a garden center and nursery that uses manual processes for both its checkout and inventory management practices, but due to its growth is experiencing difficulties in serving its customers effectively. The project looks at specific challenges facing Wildwood and creates a roadmap for POS and IM implementation that can be generalized for businesses looking to upgrade their systems.

The framework for the implementation includes (1) initial research and current process analysis, (2) new system evaluation and process comparison, and (3) a final recommendation for management. The project explores the necessary capabilities of POS and IM systems within the retail agriculture industry; creates a comparison matrix of potential product offerings based upon hardware components, software features, technical support, and price points; and develops a final recommendation for Wildwood considering its specific needs.

Upon completion, Wildwood will have the information necessary to purchase a computerized system that can: (1) Maintain a database of all inventory, including plant characteristics, units in stock, price, supplier, and SKU number, (2) facilitate a more efficient checkout method that eliminates handwritten receipts of purchases and digitally records all sales within the system, expedites the checkout process for both customers and employees, and

communicates with the IM system to allow for real-time inventory updates upon completion of POS transactions, and (3) runs a variety of reports on the collected data so that management has greater accuracy and success when making business decisions.

Introduction

This project seeks to answer how a retail business can benefit from implementing an electronic point of sale and inventory management system. Furthermore, it seeks to discover how that system can inform the decision making procedures of management regarding business functions such as ordering, product positioning, inventory control, customer service, sales projections, demand forecasts, marketing efforts, and seasonality of products. Finally, the project explores how a new point of sale and inventory management system can benefit customers and improve the overall retail experience.

There are three main systems that can increase the profitability of a business when updating from manual checkout processes. The first is a Point of Sale (POS) system, the second is an Inventory Management (IM) system, and the third is a Customer Relationship Management (CRM) system. Updating POS and IM systems are explored within the scope of this project. The initial POS system includes the technology used to complete and record sales transactions on the sales floor. Typically it involves barcoded items, scanning devices, a checkout interface or terminal, and additional features. This recorded information enters a database which is either stored on a company server (normally bought as a software package) or stored on a cloud-based server (Software as a Service [SaaS]). A POS system is the foundation for the other two systems to function.

Inventory information collected by point of sale equipment is summarized into useful data by the Inventory Management system. The Inventory Management system tracks inventory levels for every item on the sales floor according to its stock keeping unit. It is able to produce accurate and current inventory counts based on sold and damaged items which is accessible from either a company computer (software package) or through a POS terminal (Software as a Service). An IM system is highly recommended because consistent item tracking helps improve inventory decisions and reduce inventory costs. These two system work well together: demand planning from the POS system can coincide with inventory levels and ordering policies from the IM system to greatly reduce costs.

The third system is the Customer Relationship Management system. This system manages interactions with current and future customers at both retail and wholesale levels by creating individual customer accounts. Each account links customer information with past purchases collected at the POS system. This information is accessible at any time and is used for marketing campaigns, post-purchase email reminders, newsletters, etc. The CRM system is meant to better serve customers, increase customer willingness to pay, and retain customer loyalty. It helps to keep the customer satisfied after a purchase and provides detailed records of individual customer histories. Automated email reminders can be sent to customers after a purchase with specific care instructions and product recommendations tailored to their purchase. However, this system does not affect the core operations of a business, and should be viewed as an extra benefit as opposed to a fundamental need.

Literature Review

When updating from manual processes, the first system necessary is the POS system because it is the core for business analytics by providing management with access to

comprehensive historic sales information. POS software helps to identify “not only daily and weekly POS performance, but also inventory levels by SKU and location, order status, in-stock percentage (in-stock in a store as a percentage of shelf capacity), and warehouse and store out-of-stocks” (Shapiro, 2008). Further research shows that a POS system streamlines the process of entering inventory into a computer upon completion of sales, thereby allowing for expedited inventory management for companies still doing this counting manually (Casion, 2013). POS data can be used to create expected sales forecasts based upon previous demand. This will impact purchase orders, which “should be determined by how much end-users are likely to demand, so POS data can be used to forecast what end-users will buy” (Simon, 2008). Forecasts are a very useful tool when considering how to price items and when to reorder additional units because they identify the frequency at which items are sold.

The flexibility and automation that a new point of sale system provides over manual processes is a key motivator for upgrading systems. A POS system is a means to collect and aggregate sales data automatically, which can then be used to produce a variety of sales reports including: daily reports with historical data, six week history reports, top selling categories, top margin categories, top margin customers, top margin items, customer rank by sales, top selling items, and sales by time of day (Polanz, 2011). Specifically for the retail agriculture industry, a good system can show a manager which plants are making the most money, which ones are stagnant, and which ones maintain the highest holding costs. This knowledge is crucial when dealing with perishable goods. (Youngblood, 2013).

POS systems can also tackle issues relating to seasonality that all garden centers must consider. It is difficult to sell particular plants, such as fall blooming flowering shrubs, during the start of the season comparative to others, like annuals for window boxes or flower pots, which

would sell quickly during that time. Conversely, that same flowering shrub might outsell an annual greatly at the end of the season because its value is not subject to seasonal obsolescence. Often times, “many retailers do not (fully) consider seasonality in practice because of a lack of technical capabilities” (Ehrental, Honhon, & Van Woensel, 2014). However, “by accounting for non-stationary demand in inventory management, retailers can reduce inventory holding, handling, and stock-out cost substantially” (Ehrental, Honhon, & Van Woensel, 2014). Without the proper technology, there is a gap between a manager’s insight into trends and their actual patterns. A POS system tracks the sale of individual categories of plants immediately when they occur and manages every transaction completely. This provides management with a greatly enhanced ability to plan orders, plant placements, and adjust strategies for the seasonal nature of the industry (Lombardi, 2011).

Wallitsch Garden center (in [city, state] if available) implemented the CounterPoint point-of-sale system to replace its manual system and as a result experienced much greater flexibility in pricing. The company had access to new data which allowed them to “price products individually based on margin, rather than grouping products into one price point” (Anonymous, 2008a). This is a crucial ability for retail agriculture businesses; oftentimes a company purchase will include a group of different products offered at a homogenized price. These products are then sold individually in the store with varying degrees of demand. Individual pricing allows management to capitalize on those demand trends. Wallitsch Garden center experienced further flexibility by using POS data to compare the price points offered by various vendors, and in turn was able to make smarter purchasing decisions for those products. Overall, the updated system helped manage and control inventory and increased the profits of the garden center by approximately 8 percent over the course of a season (Anonymous, 2008a).

Coupling historical data trends with better buying helps to increase inventory accuracy, reduce the need for end of year clearance sales, and ultimately reduce inventory obsolescence. Lakeview Nurseries in Massachusetts utilizes a just-in-time buying policy as a result of having an electronic point of sale system, and keeps a consistent flow of healthy products all deliverable within five days (Harvey, 2013). This system has also helped reduce end of year inventory significantly by carefully managing inventory levels throughout the season. The just-in-time buying system pushes those incremental costs back up the supply chain where, at the manufacturer level, economies of scale reduce expenses.

Research has proven that switching from a manual system to a computerized inventory system improved the efficiency of purchasing. Point of sale and inventory management gathers the information pertinent to ordering, and “historical data enables you to more accurately forecast seasonal sales and make better buying decisions for the future” (Anonymous, 2008b). Orders can be created more precisely and cost effectively. Garden centers without forecast insight typically utilize push inventory systems, which requires stocking large quantities of items and marketing them to sell as fast as possible. As a result, inventory costs rise as research suggests that “every time an inventory item has a birthday, it costs the retailer 30%” (Youngblood, 2013). This is explained by the perishable nature of goods because incremental costs rise as inventory levels do; plants need water, fertilizer, adequate light conditions, and proper care. Carrying costs are naturally high in the industry, and inventory left over at the end of each year damages retailers’ margins.

Both employees and customers are benefactors of implementation as manual processes typically requires heavy time inputs during checkouts and an electronic system expedites these transactions (Girsch-Bock, 2013). Electronic point of sale systems create a major competitive

advantage for garden centers of any size. Customer inquiries can be handled much more quickly because “sales staff can locate stock on hand at any store location right from the POS terminal, and check the status of backorders, enabling [employees] to efficiently fulfill customer needs and move them through checkout quickly” (Anonymous, 2008b). Without inventory counts provided by an electronic POS system, employees cannot easily provide information to customers about product availability. Physical inventory counting is expedited by using sales data to keep track of current inventory levels; employees and managers no longer need to spend the day wandering the sales floor counting every item (Sandstrum, 2014).

Information obtained from POS improves marketing by helping salespersons make better judgments and ultimately practice smarter selling. Data reports highlight specific needs and eliminate guessing and biases that employees develop throughout the course of their work (Sandstrum, 2014). If need be, repositioning strategies can be applied to every item within the POS database. In particular high turnover items, like annuals, are very difficult to price individually because each specific item is relatively similar. However, there are clear trends in customer demand based upon color, variety, and growth characteristics (upright, spreading, trailing, etc) which appear in demand planning derived from POS data. Items such as roses, which normally are highly sought after plants, could be placed in the back of the center so that customers will be exposed to other plants prior to checkout (Polanz, 2005). A POS system with this ability will help able to track the sales data necessary to make better judgments on plant placement so that management can choose high margin items to place along the route to high turnover plants.

There are challenges and capital investment a garden center needs to recognize when implementing a POS system. While the advantages of a new system include inventory control, speed at checkout, and customer tracking, these systems can be complex and difficult to grasp if

an employee is new to the system. In addition, while small systems can cost in the range of \$1,000 to \$2,000, larger more complete systems can cost in excess of \$75,000. (Bame, 2008). Estimates suggest that if a garden center is making about \$500,000 in revenue per year, then it is most likely losing money without a POS system.

Once a business takes the appropriate steps to implement a system and then begins forecasting, issues can arise with demand planning based upon actual sales data. Specifically, “in the event of a stockout, a backorder is not allowed, so all unfilled demand is lost... Real-world systems rarely include backordering at the retail store level and cannot record demand during stockout. Therefore, historical demand does not actually represent the amount of demand in the system, but just the amount of demand filled. Most analytical models assume complete backordering" (Nachtmann, Waller, & Rieske, 2010). It is important for a company to reduce stockouts to avoid untrackable, unfilled demand. This relates back to buying practices and smart ordering which helps to eliminate these issues. Creating accurate sales forecasts and eliminating stockouts through better buying provide synergistic effects, which increase the value of both functions individually. A forecast that best represents actual demand creates informed ordering, and informed ordering reduces inventory stockouts, leading back to forecasts more representative of actual demand.

Methodology

This project highlights a systematic method for researching, identifying, and recommending a new point of sale system for a retail business. The project engages in a case study of a retail agriculture business, Wildwood Nursery Inc., interested in updating from a manual point of sale system to an electronic system. The case study approach is the most appropriate method because it is “preferred in examining contemporary events, but when the relevant behaviors cannot

be manipulated,” and when answering “how” questions which are explanatory in nature such as with the present study (Yin, 2003). This project follows that guideline as it includes an observational study that does not change existing variables. In addition, the case study uses “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2003). From incorporating this research into the project, a case study provides the most valuable method for solving the research question regarding selecting the most effective point of sale system for a business. The methodology is broken down into three main sections: 1) initial research and current process analysis 2) new system and process evaluation, and comparison 3) final recommendation.

Section 1 examines the business needs, capabilities, and current process. It identifies a variety of factors including product requirements, checkout procedure, employee utilization, inventory tracking and methodology, and information capabilities. It creates a process map of the current checkout procedure and identifies bottlenecks, time consuming processes, and areas for improvement. This information provides the basis for researching new systems and identifies what the requirements of those systems need to include.

Section 2 involves hardware and software research and comparison. This process requires researching commercial systems offered by merchant services companies and examining what comparable industry competitors use. After identifying potential systems, further research is done by contacting the provider companies and receiving elaborate information on their offerings. This information is then aggregated and compared to better understand features, procedures, reporting capabilities, price points, and other business needs identified in section 1.

Section 3 involves creating final recommendation for system selection for use by company management. This recommendation highlights the benefits and pitfalls of one particular system which would best fit the company needs. It identifies the features, price, and return on investment if selecting that system. Additional barriers to implementation are identified such as employee training, setup time, and a learning curve.

Results

The following sections elaborate on each of the steps outlined in the methodology. They provide a guide using the case method approach for researching and selecting systems.

Initial Research and Current Process Analysis

Business Overview (Wildwood)

Wildwood Nursery currently operates with a manual point of sale system. This system uses a manual customer invoice, a cash register, and an external credit and debit payment system. The manual invoice is composed of three sheeted carbonless copy paper which includes company information and input spaces for details concerning the customer, sale, purchase items, and payment amount. Of the three sheets, the front, white copy is used by accounting to record sales, the middle, yellow copy is used by the office to track sale details, and the back, pink copy is given to the customer as a receipt. Employees are required to fill out an invoice for each customer before entering the sale into a cash register.

The company uses three identical cash registers to complete sales. The registers allow for rudimentary inventory tracking based upon product category; each item entered into the register can be catalogued as stone, bulk material, hard goods, plant care, trees, shrubs, perennials, annuals, or other. A discount can be added to either an individual item or to the entire sale. Information

about the sale is inputted after all items have been entered including the type of sale (either retail, wholesale, or house account), the payment method (either cash, check, charge, or on account), and whether the sale includes a delivery or is tax exempt. The price of each item needs to be predetermined and entered into the register because there is no way to calculate a subtotal based upon whether or not it is retail or wholesale. When a subtotal is completed, the register adds sales tax automatically before displaying a final price. After completing a sale, the register opens regardless of payment type and allows the employee to either enter cash or close and move on to accepting payment via a different method.

Each register has an attached device to accept credit and debit cards. After closing the register, an employee can swipe a customer credit or debit card into the World Pay device which accepts payment. After identifying the card information, the employee needs to input the subtotal of the sale and the tax amount into the device. At this point, a debit customer is prompted to input his or her pin number and upon completion a receipt will print. For a credit customer, a receipt will print first and the employee will hand it to the customer to sign.

The employees of Wildwood are expected to operate in cross-functional roles. There are typically eight Wildwood employees on staff during peak hours with five of those employees allowed to complete sales transactions. In addition to checking out customers, employees are expected to water, fertilize, and care for plants, help customers with plant identification, characteristics, and requirements, restock and maintain sufficient inventory levels, design and change seasonal displays, and other office related tasks like marketing, pricing, etc.

Process Map Summary

The current checkout process that Wildwood employees must engage in can best be divided into three main phases: 1) invoice and sale entry 2) accepting payment 3) closing process. The initial phase involves completing the manual invoice by identifying all of the items a customer wishes to purchase and recording them on the invoice. This phase requires approximately 10 unique steps to complete and is all done using the invoice and register (see Figure 1). It is the most time consuming process because of the manual input of information onto the receipt and then reentry into the register. The most errors occur in this initial phase during the checkout process. In addition, while retail prices are attached to each item, there are no wholesale prices attached. If the sale is for a wholesale customer, then the wholesale price needs to be looked up in a binder that catalogues every item's price. The wholesale look up can be difficult and time consuming for employees. On average, the wholesale checkout takes 6 minutes and 43 seconds, which is more than 4 minutes longer than a typical retail sale.

The second phase involves accepting payments for customer transactions (see Figure 2). The company offers several different payment methods: cash, check, house account and charge. Cash, check, and house account sales are all completed using the register, however charge sales require using the World Pay device. Cash is tendered directly through the register, checks are accepted and filed below the register, and house accounts are recorded and paid for at a later date. Charge payments add additional time to the checkout process and require the employee to record the sales total a third time (first on the invoice, second on the register, and third on the World Pay device). This process requires the employee to go back and forth between all three of the point of sale system components.

The final phase is the closing process which involves filing customer receipts and information based upon the sale (see Figure 3). The yellow and white invoice copies have different end-of-sale locations based upon whether the transaction was standard, on account, included delivery, is to be picked up, or only included a down payment. Standard transactions are filed underneath the register with both white and yellow copies stapled together. House account transactions need to be filed in a separate cabinet under the appropriate wholesale account company or title. Transactions that include deliveries require the white copy to be filed with standard transactions and the yellow copy to be filed with delivery information in a separate location specifically for those transactions. Pick up transactions follow the same procedure as deliveries, however there is no additional information needed and the yellow copy has its own distinct file location. Down payments are also filed in the same way, again with the yellow copy having its own distinct file location. At the end of each business day, all of the invoices and the cash register balances are reconciled to ensure accuracy and fix any mistakes that occurred when inputting information.

Improvements

One of the most crucial improvements for Wildwood is to expedite the checkout process for both customers and employees. Realistically, a new system will reduce checkout speed from approximately seven minutes for wholesale transactions and approximately two and a half minutes for retail transactions to approximately two minutes for both transactions. The reduction in checkout speed will considerably improve the customer experience for retail and commercial customers because the transaction will be conducted more precisely and the overall time spent waiting for other customers to finish will be diminished greatly. The potential savings measured in employee time during both retail and wholesale transactions would be over \$16,000 (see Figure

4) based upon historical checkout times (see Figure 4A for detailed data). In addition, inventory control is crucial for Wildwood because the company is unable to monitor inventory levels beyond doing physical counts. Inventory control would also help aid customer service because a searchable database of all items in stock would eliminate the need for employees to search the sales floor to answer customer questions about product availability. Inventory control will help identify obsolescent items and high turnover items and the company will be able to eliminate or increase the ordering of those items respectively.

Reporting capabilities for inventory, sales, ordering, and customers are also a necessary upgrade for Wildwood. The company is only able to track sales on generalized level such as total yearly sales for wholesale or retail, or total yearly sales for a specific category of products. Reporting functions would aid management's decision making including pricing, marketing, and vendor management. Pricing alterations will help improve the profitability of specific items such as annual plants that are purchased in bulk but sold at different rates. Inventory data can illuminate trends in seasonal sales that marketing programs can take advantage of to move slow products. Finally, specific data on vendors can help to consolidate suppliers and lower costs during ordering.

New System and Process Evaluation and Comparison

The research process involved using the results from the business assessment as a frame for selecting merchant services companies that could fulfill the needs of Wildwood. After examining industry sources such as trade magazines, comparable businesses, trade show material, and internet sources, three specific systems were selected: Counterpoint, Clover Station, and Square. From a broad scope, these systems included point of sale and inventory management technology that satisfy the needs of the company, so further investigation was valuable.

The first system analyzed is Counterpoint, offered by a company called Retail Control Systems Inc (RCS). Initially, contact was established through the company website requesting additional information on the system. Afterwards, the company reached out via telephone to discuss the size of Wildwood, its needs, and what it was looking for in a system. Next, a meeting was set up with representatives from RCS to discuss the exact specifications of the Counterpoint system. Overall, Counterpoint is the most expensive system with an initial implementation cost of about \$28,000 and recurring annual costs of about \$8,000 (see Figure 5).

The Counterpoint system uses software that is customized based upon its customers' needs by employees at RCS. This includes reporting functions and marketing. In addition, it offers extensive inventory control that targets the desires of Wildwood. There are features for vendor management and customer management if requested. In terms of marketing, the system is designed to adapt to any existing marketing programs through the software design offered by RCS. This is important because Wildwood uses its own promotional programs beyond seasonal discounts. Counterpoint also has mobile capabilities which can speed up the checkout process by offering more locations to help customers across the property. RCS offers both onsite training and implementation assistance to its clients with full technical support and warranty. In addition, the system takes approximately 60 days to be fully operational between inventory input, employee training, and software development. However, 70 percent of the RCS customer base is in the retail agriculture industry and the Counterpoint system is considered an industry standard for garden centers.

The second system analyzed is the Clover Station, offered by a company called First Data Merchant Services Corporation (FD). Initial contact was established through a company website and information was received from the company via email. A sale associate offered further

assistance and information about the Clover Station through a phone call to answer specific questions. The Clover Station is can either be leased from the company or purchased outright by companies. The leasing option requires a 3 year contract and costs approximately \$12,000 over 3 years while the purchase option cost about \$8,000 in year one implementation costs (see Figure 6).

The Clover Station has a sleek, modern design which makes it attractive to customers. It manages inventory and standardizes the checkout process. In addition, sales data is exportable to Microsoft Excel which allows the customer to create their own reports. While this allows for customization, it requires extra time on the part of the user because they are required to manipulate the data on their own. The Clover Station is powered by an application marketplace and includes 10 applications with the initial purchase. Wildwood can purchase additional applications for a monthly fee to expand the abilities of Clover Station based upon specific desires. The system is quick to set up and does not require more than 2 weeks to begin full operation. FD offers online assistance and phone technical support, and readily integrated hardware and software that is ready to use. The company also offers cloud-based storage to back up data and help with reporting.

The third system analyzed is the Square system, offered by Square Inc. and is the most commonly used system among retail businesses. Initial contact was made through their website and an additional phone call was made to answer questions and further explain the system. The Square system is the least expensive system to implement. Square offers its software for free which makes the system the most affordable because only hardware needs to be purchased. The system costs approximately \$3,500 to implement (see Figure 7).

Square is unique because the software runs through iOS devices such as an iPad or iPhone. The information that it collects is exportable to Microsoft Excel for management to work with and

create reports. However, Square also offers cloud based storage which allows companies to manage their inventory online. The only purchases necessary are for the hardware components and the software is downloaded afterwards as an iOS application. Setup for the Square system software takes approximately two weeks for inputting current inventory and setting pricing. The hardware components are ready to use and do not require intensive setup. The system requires minimum employee training and is meant to be easy to use. It also has mobile checkout capabilities which will expedite checkout and better serve customers throughout the property.

Each system uses a separate payment aggregator to accept credit and debit card transactions. These aggregators each take a certain percentage out of every transaction as a service fee (see Figure 8). The service fee takes out a percentage of the sale and a flat cost per transaction. Of the three systems, Counterpoint takes the smallest fee per transaction and Square takes the largest fee per transaction. In the long run, these fees make the value of these systems reach a point of homeostasis.

Compared side by side, each system has benefits and pitfalls if selected for implementation (see Figure 9). In terms of the first year implementation cost and recurring annual costs, Counterpoint is the most expensive, Clover Station is intermediately priced, and the Square system is the least expensive. However, those rankings are reversed in terms of estimated transaction costs taken out for debit and credit sales. The Counterpoint system takes the longest amount of time to implement, requiring approximately two months, while the other two systems are essentially plug and play. All three systems integrate with the QuickBooks accounting software used by Wildwood. Counterpoint uses software customization to target business needs while the other two systems use application marketplaces, and of those two systems the Clover Station has the most robust applications. Counterpoint is mostly designed for the industry unlike the other

two systems. It also offers onsite training and implementation assistance during setup, which partially accounts for the lengthy setup time. All three systems offer warranties and technical support, but again only Counterpoint offers in person support.

Recommendation

Based upon Wildwood's specific needs, it is recommended that the company chooses the Counterpoint system. The provider RCS offers not just a product but also a service as well which will facilitate the use of the system. It is also crucial that the system is designed for the retail agriculture industry because many issues facing Wildwood are already addressed by Counterpoint features such as adaptable marketing campaigns and seasonality or obsolescence of products. The Counterpoint software will eliminate the redundancies in the original checkout process. There will be no need for a manual invoice as all transaction information is recorded directly into the Counterpoint terminal. Wildwood currently uses the same payment aggregator as the Counterpoint system and therefore integration will be seamless and include fewer costs. The robust reporting features of Counterpoint will be a major asset for Wildwood and the customer service aspect will help tailor those reports as needed.

The return on investment for the Counterpoint system will occur after approximately four years (see Figure 10). The year one investment for the system is approximately \$36,500, with additional recurring fees each year after of approximately \$8,500. Considering the employee time savings that are experienced from an expedited checkout process are approximately \$16,000, the return on investment would occur within a reasonable time frame. There is also the potential for substantially larger monetary gains from the inventory management aspect of the Counterpoint system. Better inventory management capabilities and practices would reduce inventory carrying

costs as a result of decreased product obsolescence. These capabilities would also increase revenue by reducing stockouts which result in lost sales.

Discussion

The methodology provided in this paper outlines the steps necessary to update a manual point of sale system to an electronic system and provides an example using a currently operational business. The methodology is adaptable, and can be generalized to other retail businesses in virtually any industry. Again, the core steps leading up to implementation involve three essential operations: identify current business capabilities and audit the checkout process, research available systems and services, and identify the most impactful system and the potential return on investment. The first operation asks what the business and employees need, what can be improved, how effective is the retail experience for customers, and where do errors occur in the checkout process. The second operation examines the systems available from merchant services companies and asks how these systems can improve the current business, how their implementation will effect current operations, what sort of product support is available, and what are industry competitors using. The final operation, the recommendation, asks how the business will become more efficient from implementing a specific system, how that system will effect company gains in profit and time, and why it would be the best choice for the business comparative to other systems.

Implementing any new system will require additional work beyond product selection and includes many opportunity costs. A business is not done with the process after purchasing a new system as there are many variables that still need to be considered. Implementing a new system will require employees to be retrained, which will take time and energy. The business will need to sacrifice short term efficiency and employee productivity in order to utilize a new system. In addition, the entire catalogue of products available for sale need to be inputted into the new system

database with information including the description, quantity on hand, price, and any other relevant data. This process takes a great deal of time and requires a companywide inventory count to record every product in stock. Customer and vendor information also needs to be inputted in order for the new system to be fully operational. Mistakes in this process could affect ordering and time management which will negatively impact a business and can result in a financial loss.

Businesses also need to consider whether implementing a new system will actually add enough value to warrant the price tag; if the processes are already efficient and a new system only impacts the business marginally, it may not be worth paying for. Certain systems may also offer only a few select features over another yet will carry a much greater monetary cost. For some companies, it may be worth forgoing extra features or additional options that do not add any value. Even further is the notion that if the return on investment for a system is over ten years, or if adding debt in order to acquire the system does not yield any profits, then keeping the initial capital required and not purchasing a new system may be the better option.

The time savings experienced by employees from reducing checkout times will not come immediately because any new system will need to be fully understood before reaping the benefits. Essentially, employees need to work out the kinks of the new system, which will take time, before the company can really experience beneficial results. Once the checkout time is shortened, management will be able to make decisions regarding labor resources. Employees can either be reinvested into other areas of the business, which is exceptionally valuable in cross functional businesses, or, if additional cost cutting measures are necessary, laid off in order to improve the profitability of the business.

This project offers a systematic approach to researching and selecting a new point of sale and inventory management system for a business, however it does not explore the processes

involved with actual implementation. Future research could examine the steps involved with the implementation of an electronic system as many unseen variables may appear that could potentially lengthen the implementation process, increase expenditures, or diminish the overall value of implementation. Other research could examine the impact that a new system has on employees; it is possible that employees may excel on the new system and prove to be more valuable than previously known or that employees may not benefit from the selected system. In addition, the value of specific reporting functions could be explored; for example, research could identify which reports are the most pertinent to management decision making, which offer the most insight into future marketing programs, and the most impactful method of inventory management.

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FIGURE 1: POINT OF SALE PROCESS MAP: INVOICE AND ENTRY

LEGEND

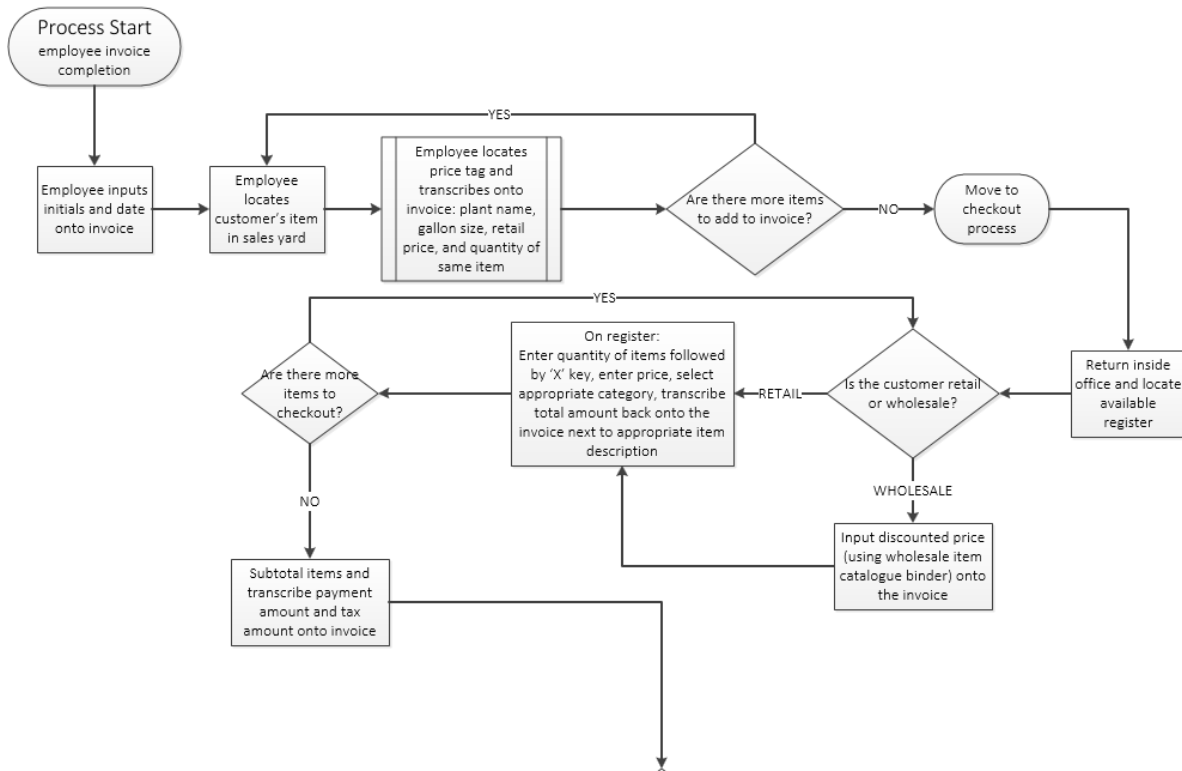


FIGURE 2: POINT OF SALE PROCESS MAP: ACCEPTING PAYMENT

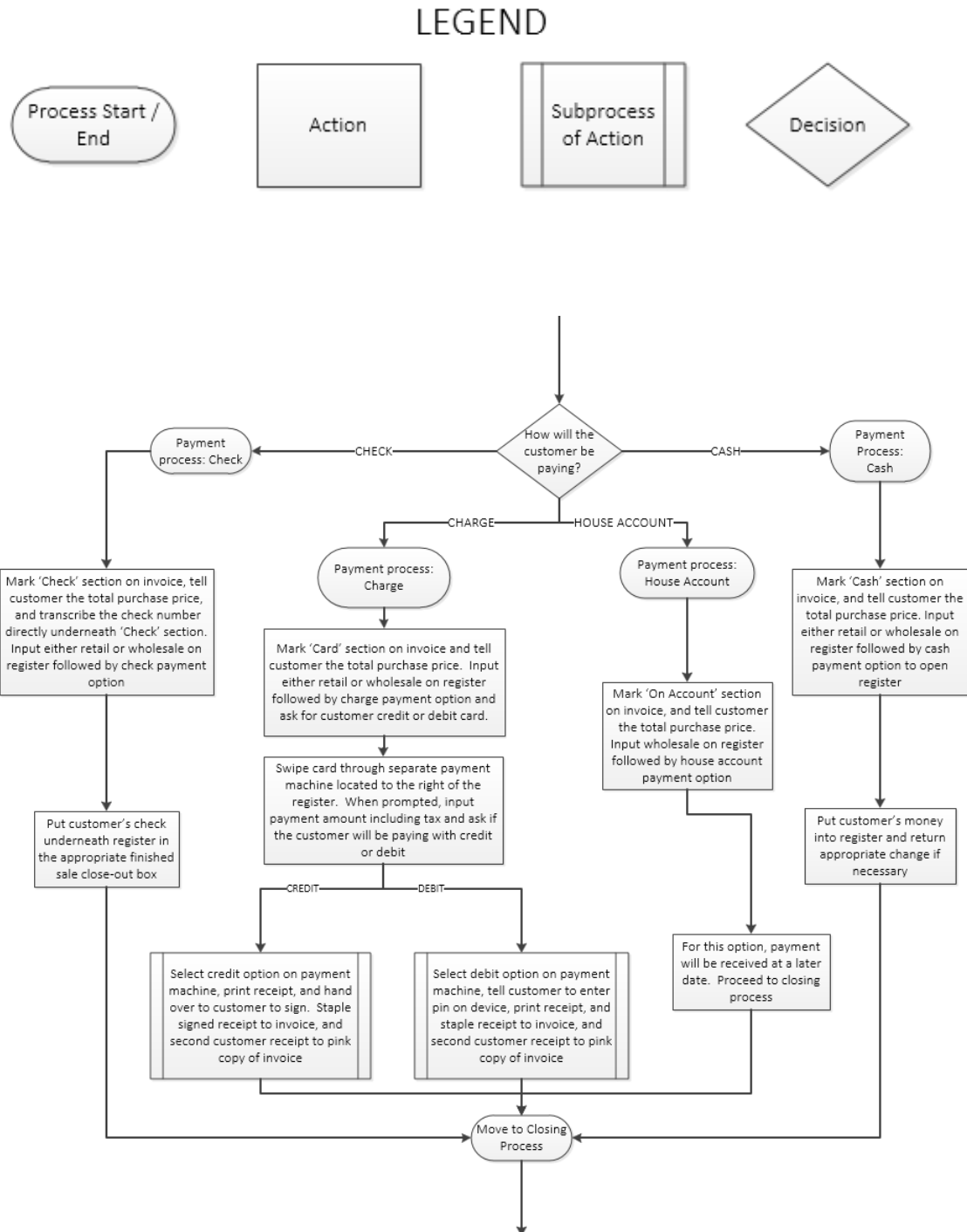


FIGURE 3: POINT OF SALE PROCESS MAP: CLOSING PROCESS

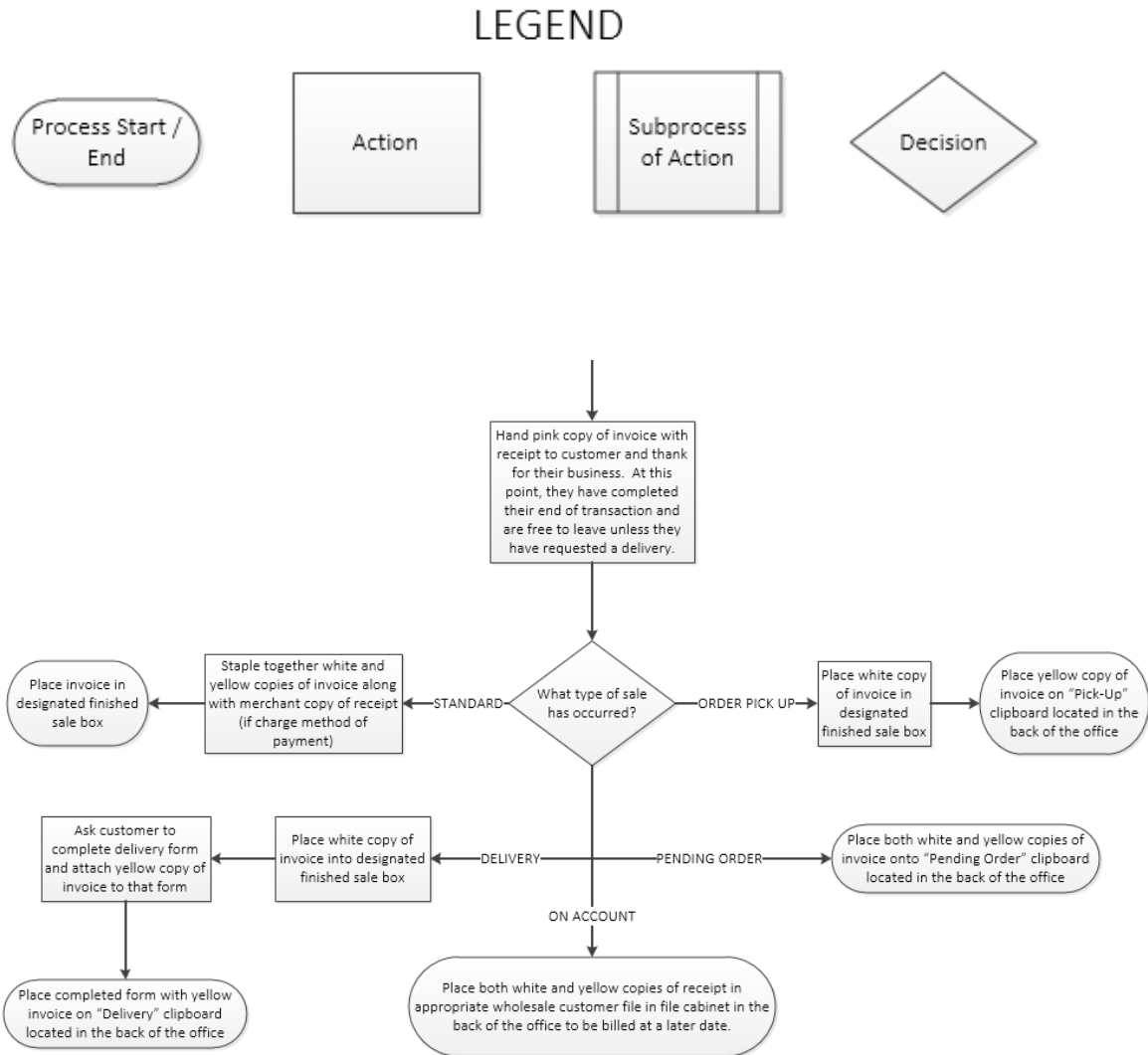


FIGURE 4: HISTORICAL DATA AND PROJECTED COST SAVINGS WITH AUTOMATED POINT OF SALE AND INVENTORY MANAGEMENT SYSTEMS

Historical Data	
Transactions per year	10,000
Average Employee Salary	\$15.00
Customer Type	Checkout Time
Wholesale	6:43
Retail	2:30

Wholesale	Target Time	Savings	Savings (Hrs)
Pessimistic	3:00	\$11,614.58	774.3
Realistic	2:00	\$14,739.58	982.6
Optimistic	1:00	\$17,864.58	1191.0
Retail	Target Time	Savings	Savings (Hrs)
Pessimistic	2:30	\$10.03	0.7
Realistic	2:00	\$1,572.53	104.8
Optimistic	1:00	\$4,697.53	313.2

Total	Savings	Savings (Hrs)
Pessimistic	\$11,624.61	775.0
Realistic	\$16,312.11	1,087.5
Optimistic	\$22,562.11	1,504.1

Savings Formula: (Historical Time - Target Time)

* Transactions * Employee Salary

Note: Assume 5,000 transactions for Wholesale and Retail

FIGURE 4A: HISTORICAL DATA COLLECTION FOR SALE TIMES

Sale Number	Date	Employee Initials	Time to Complete Sale	Retail or Wholesale	Larger than Average \$105	Payment Method
1	7/31/2014	Matt	2:08	Retail	No	
2	7/31/2014	George	3:47	Retail	Yes	
3	7/31/2014	Matt	2:17	Retail	No	
4	7/31/2014	George	7:47	Wholesale	Yes	
5	7/31/2014	George	1:57	Retail	No	
6	7/31/2014	Linda	0:58	Retail	No	
7	7/31/2014	Linda	1:08	Retail	No	
8	7/31/2014	Jo-Ann	2:49	Retail	No	
9	7/31/2014	Linda	2:08	Retail	No	
10	7/31/2014	Jo-Ann	1:24	Retail	No	
11	7/31/2014	Linda	1:30	Retail	No	
12	7/31/2014	Linda	1:09	Retail	No	
13	7/31/2014	Linda	1:25	Wholesale	No	
14	7/31/2014	Linda	1:26	Retail	No	
15	7/31/2014	Linda	1:48	Retail	No	
16	7/31/2014	George	0:55	Retail	No	

FIGURE 4A: HISTORICAL DATA COLLECTION FOR SALE TIMES CONTINUED

Sale Number	Date	Employee Initials	Time to Complete Sale	Retail or Wholesale	Larger than Average \$105	Payment Method
17	8/1/2014	Matt	2:25	Retail	No	Cash
18	8/1/2014	Linda	1:30	Retail	No	Charge
19	8/1/2014	Linda	2:14	Retail	No	Charge
20	8/1/2014	Matt	18:16	Wholesale	Yes	Charge
21	8/1/2014	Linda	1:43	Retail	No	Check
22	8/1/2014	Jo-Ann	3:35	Retail	No	Charge
23	8/1/2014	Jo-Ann	2:56	Retail	No	Charge
24	8/1/2014	Jo-Ann	3:11	Retail	No	Charge
25	8/1/2014	Jo-Ann	4:12	Retail	No	Charge
26	8/1/2014	Matt	2:01	Retail	No	Charge
27	8/1/2014	Jo-Ann	1:15	Retail	No	Charge
28	8/1/2014	Jo-Ann	4:51	Wholesale	No	Charge
29	8/1/2014	George	1:40	Retail	No	Charge
30	8/1/2014	George	1:10	Retail	No	Charge
31	8/2/2014	Cathi	1:55	Retail	No	Charge
32	8/2/2014	George	1:05	Retail	No	Cash
33	8/2/2014	Cathi	1:16	Retail	No	Charge
34	8/2/2014	George	1:45	Retail	No	Charge
35	8/2/2014	Cathi	1:24	Wholesale	No	Cash
36	8/2/2014	George	1:30	Retail	No	Charge
37	8/2/2014	George	1:02	Retail	No	Charge
38	8/3/2014	Cathi	2:03	Retail	No	Charge
39	8/3/2014	Cathi	1:32	Retail	No	Charge
40	8/3/2014	Cathi	1:45	Retail	No	Charge
41	8/3/2014	Cathi	1:01	Retail	No	Cash
42	8/3/2014	George	9:13	Wholesale	Yes	Check
43	8/3/2014	Cathi	2:40	Retail	Yes	Charge
44	8/3/2014	George	1:40	Retail	No	Charge
45	8/4/2014	Cathi	3:45	Retail	Yes	Cash
46	8/4/2014	Cathi	1:41	Retail	Yes	Charge
47	8/4/2014	Cathi	2:49	Wholesale	No	Charge
48	8/4/2014	Linda	1:29	Retail	Yes	Charge
49	8/4/2014	Jo-Ann	2:01	Retail	No	Charge
50	8/4/2014	Linda	1:39	Retail	No	Charge
51	8/4/2014	George	2:14	Retail	No	Charge
52	8/5/2014	Linda	1:54	Retail	No	Charge
53	8/5/2014	Linda	1:11	Retail	No	Charge
54	8/5/2014	Matt	1:41	Retail	No	Charge
55	8/5/2014	Matt	1:31	Retail	No	Cash
56	8/5/2014	Matt	3:28	Retail	No	Charge
57	8/5/2014	Cathi	1:39	Retail	No	Charge
58	8/5/2014	Cathi	1:07	Retail	No	Check
59	8/5/2014	George	4:54	Wholesale	Yes	Charge
60	8/5/2014	Matt	5:00	Wholesale	Yes	Charge
61	8/5/2014	Matt	2:33	Retail	Yes	Charge
62	8/5/2014	Kyle	3:59	Retail	Yes	Charge
63	8/5/2014	Linda	1:29	Retail	No	Charge
64	8/5/2014	Kyle	2:36	Retail	No	Charge
65	8/5/2014	Linda	1:26	Retail	No	Charge
66	8/5/2014	George	6:50	Retail	Yes	Charge
67	8/5/2014	Kyle	5:11	Retail	Yes	Charge
68	8/5/2014	Matt	1:51	Retail	No	Charge

FIGURE 4A: HISTORICAL DATA COLLECTION FOR SALE TIMES CONTINUED

Sale Number	Date	Employee Initials	Time to Complete Sale	Retail or Wholesale	Larger than Average \$105	Payment Method
69	8/6/2014	Linda	1:22	Retail	No	Cash
70	8/6/2014	Linda	2:22	Retail	No	Charge
71	8/6/2014	Linda	4:56	Wholesale	Yes	Charge
72	8/6/2014	Linda	1:12	Retail	No	Charge
73	8/6/2014	George	1:11	Retail	No	Charge
74	8/6/2014	Cathi	2:36	Retail	No	Charge
75	8/6/2014	Cathi	2:47	Retail	No	Charge
76	8/6/2014	Cathi	1:10	Retail	No	Charge
77	8/6/2014	Cathi	1:42	Retail	No	Charge
78	8/7/2014	George	8:07	Wholesale	Yes	Charge
79	8/7/2014	George	2:02	Retail	No	Charge
80	8/7/2014	George	1:45	Retail	No	Cash
81	8/7/2014	Matt	1:20	Retail	No	Cash
82	8/7/2014	George	2:06	Retail	No	Check
83	8/7/2014	Jo-Ann	1:28	Retail	No	Cash
84	8/7/2014	Jo-Ann	1:01	Retail	No	Charge
85	8/7/2014	Kyle	2:07	Retail	Yes	Charge
86	8/7/2014	George	3:05	Retail	No	Charge
87	8/7/2014	Jo-Ann	1:55	Retail	No	Cash
88	8/7/2014	George	7:37	Retail	No	Charge
89	8/7/2014	Matt	1:29	Retail	No	Cash
90	8/7/2014	Jo-Ann	1:21	Retail	No	Cash
91	8/7/2014	George	2:39	Retail	No	Cash
92	8/7/2014	George	2:27	Retail	Yes	Charge
93	8/7/2014	Jo-Ann	3:52	Retail	No	Charge
94	8/7/2014	George	2:03	Retail	No	Cash
95	8/7/2014	George	2:49	Retail	No	Charge
96	8/8/2014	Matt	3:04	Retail	No	Check
97	8/8/2014	Matt	1:43	Retail	No	Charge
98	8/8/2014	Jo-Ann	1:17	Retail	No	Cash
99	8/8/2014	Jo-Ann	8:36	Retail	Yes	Charge
100	8/8/2014	Matt	12:06	Wholesale	Yes	Charge
101	8/8/2014	Matt	2:45	Retail	No	Charge
102	8/8/2014	Linda	4:44	Retail	Yes	Charge
103	8/9/2014	Jo-Ann	6:25	Retail	No	Charge
104	8/9/2014	Jo-Ann	4:05	Retail	No	Charge
105	8/9/2014	Jo-Ann	5:14	Retail	No	Charge
106	8/9/2014	Cathi	5:47	Retail	Yes	Charge
107	8/10/2014	Matt	1:55	Retail	No	Cash
108	8/10/2014	Matt	1:40	Retail	No	Cash
109	8/10/2014	Kyle	1:39	Retail	No	Charge
110	8/10/2014	Matt	2:48	Retail	No	Charge
111	8/10/2014	Kyle	7:40	Retail	Yes	Cash
112	8/11/2014	Kyle	11:30	Retail	Yes	Charge
113	8/11/2014	Kyle	4:50	Wholesale	Yes	Charge
114	8/11/2014	Cathi	1:30	Retail	No	Cash
115	8/12/2014	Kyle	2:10	Retail	No	Cash
116	8/12/2014	Kyle	2:37	Retail	No	Charge
117	8/12/2014	Cathi	2:06	Retail	No	Charge
118	8/12/2014	Cathi	3:42	Retail	No	Charge
119	8/13/2014	George	1:29	Retail	Yes	Charge
120	8/14/2014	George	2:10	Retail	No	Charge

FIGURE 4A: HISTORICAL DATA COLLECTION FOR SALE TIMES CONTINUED

Sale Number	Date	Employee Initials	Time to Complete Sale	Retail or Wholesale	Larger than Average \$105	Payment Method
121	8/15/2014	George	1:30	Retail	No	Charge
122	8/15/2014	Matt	7:34	Wholesale	Yes	Charge
123	8/16/2014	Cathi	3:44	Retail	No	Charge
124	8/16/2014	Cathi	1:20	Retail	No	Charge
125	8/16/2014	Cathi	1:47	Retail	No	Charge
126	8/16/2014	Cathi	2:19	Retail	Yes	Charge
127	8/16/2014	Matt	2:58	Retail	No	Charge
128	8/16/2014	Matt	3:22	Retail	No	Charge
129	8/16/2014	George	1:15	Retail	No	Charge
130	8/16/2014	George	3:07	Retail	No	Charge
131	8/16/2014	Cathi	3:18	Retail	Yes	Charge
132	8/16/2014	Matt	2:40	Retail	No	Charge
133	8/16/2014	Cathi	3:17	Retail	No	Charge
134	8/16/2014	George	7:01	Retail	No	Charge
135	8/16/2014	Matt	2:20	Retail	No	Charge
136	8/16/2014	George	1:56	Retail	Yes	Charge
137	8/16/2014	George	1:44	Retail	No	Charge
138	8/16/2014	George	0:57	Retail	No	Charge
139	8/16/2014	Cathi	3:52	Retail	Yes	Charge
140	8/16/2014	Matt	2:28	Retail	No	Charge
141	8/17/2014	George	1:15	Retail	No	Charge
142	8/17/2014	Cathi	1:15	Retail	No	Charge
143	8/17/2014	Cathi	1:29	Retail	No	Charge
144	8/17/2014	Cathi	1:57	Retail	No	Charge
145	8/17/2014	Cathi	1:54	Retail	No	Cash
146	8/17/2014	Cathi	4:13	Retail	Yes	Charge
147	8/17/2014	Cathi	2:21	Wholesale	No	Charge
148	8/17/2014	Cathi	1:20	Retail	No	Cash
149	8/17/2014	Cathi	3:12	Retail	Yes	Charge
150	8/18/2014	George	11:55	Wholesale	Yes	Charge
151	8/20/2014	Kyle	4:37	Retail	No	Cash

FIGURE 5: COUNTERPOINT SYSTEM TOTAL COST

Features	Cost	Type
Point of Sale Equipment	\$10,185.00	One-Time
Additional Equipment	\$1,367.00	One-Time
System and Credit Card Security	\$933.99	One-Time
Implementation Services	\$11,310.00	One-Time
Training	\$4,150.00	One-Time
System Supplies	\$84.95	As Used
Subtotal	\$28,030.94	
Retail Management Software (License)	\$7,728.00	Per Year
Recurring Services	\$239.40	Per Year
CounterPoint Mobile	\$529.20	Per Year
	\$8,496.60	
First Year Investment	\$36,527.54	

FIGURE 6: CLOVER STATION TOTAL COST

Features	Cost	Type
Leasing Option*		
Point of Sale Equipment	\$7,552.44	3 Years
Security Cost	\$718.20	3 Years
Additional Hardware	\$2,824.87	3 Years
Additional Applications	\$1,138.56	3 Years
* Requires 3 year contract		
	\$12,234.07	
Purchase Option		
Point of Sale Equipment	\$4,886.40	One-Time
Additional Hardware	\$1,701.61	One-Time
Additional Applications	\$1,138.56	Per Year
Security Cost	\$239.40	Per Year
	\$7,965.97	
	1 Year	3 Years
Leasing Investment		\$12,234.07
Purchasing Investment	\$7,965.97	\$10,721.89

FIGURE 7: SQUARE SYSTEM TOTAL COST

Features	Cost	Type
Point of Sale Equipment	\$1,612.00	One-Time
iPads Required	\$1,797.00	One-Time
	\$3,409.00	
Customer Insight Package	\$120.00	Per Year
Square Point of Sale Software	\$0.00	Free
Square Analytics Software	\$0.00	Free
	\$120.00	
First Year Investment		
	\$3,529.00	

FIGURE 8: SYSTEM COMPARISON – DEBIT AND CREDIT FEES

POS System	Payment Aggregator	Debit	Credit	Keyed-in	Invoices
CounterPoint	WorldPay	1%	2%	3.3%	Varies
		\$0.20	\$0.20	\$0.20	Varies
Clover	Bank of America	1.89%	1.89%	2.99%	Varies
		\$0.20	\$0.20	\$0.20	Varies
Square	Paymentech	2.75%	2.75%	3.5%	2.75%
		\$0.15	\$0.15	\$0.15	\$0.00

	Debit		Credit		Keyed-In		Totals
	Sales (Dollars)	Number of Transactions	Sales (Dollars)	Number of Transactions	Sales (Dollars)	Number of Transactions	
	\$ 450,000.00	4,500	\$ 450,000.00	4,500	\$ 100,000.00	1,000	\$ 1,000,000.00
CounterPoint	\$ 4,500.00	\$ 900.00	\$ 9,000.00	\$ 900.00	\$ 3,300.00	\$ 200.00	\$ 18,800.00
Clover	\$ 8,505.00	\$ 900.00	\$ 8,505.00	\$ 900.00	\$ 2,990.00	\$ 200.00	\$ 22,000.00
Square	\$ 12,375.00	\$ 675.00	\$ 12,375.00	\$ 675.00	\$ 3,500.00	\$ 150.00	\$ 29,750.00

FIGURE 9: SYSTEM SIDE BY SIDE COMPARISON

	CounterPoint	Clover Station	Square
First Year Implimentation Cost	\$28,030.94	\$6,588.01	\$3,409.00
Annual Cost	\$8,496.60	\$1,377.96	\$120.00
Estimated Transaction Cost	\$18,800.00	\$22,000.00	\$29,750.00
Estimated Setup Time	60 days	14 days	14 days
Quickbooks Integration	Yes	Yes	Yes
Application Marketplace	No	Yes	Yes
Customizable Software (Reports)	Yes	No	No
Exclusive for Retail Agriculture	Yes	No	No
On-Site Training	Yes	No	No
Implementation Assistance	Yes	No	No
Warranty	Yes	Yes	Yes
Phone Technical Support	Yes	Yes	Yes
In Person Technical Support	Yes	No	No

FIGURE 10: COUNTERPOINT PROJECTED RETURN ON INVESTMENT

ROI	Year 1	Year 2	Year 3	Year 4	Year 5
Costs	\$36,527.54	\$8,496.60	\$8,496.60	\$8,496.60	\$8,496.60
Savings	\$16,312.11	\$16,312.11	\$16,312.11	\$16,312.11	\$16,312.11
Return	-\$20,215.43	-\$12,399.91	-\$4,584.40	\$3,231.12	\$11,046.63