

A METHODOLOGY FOR SELECTING
INTERACTIVE ACCOUNTING SOFTWARE SYSTEMS
FOR SMALL BUSINESS FIRMS

by

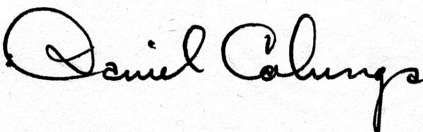
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ABSTRACT

Selecting an integrated accounting system to meet the needs of a small business can be a difficult process if one does not know much about computer systems. Small businesses realize their need for an interactive accounting system which is expandable as the business grows and has the ability to interface with all types of accounting software systems. This methodology informs a manager how to select and install an accounting software system for a small business. It tells a manager how to establish information requirements by evaluating the problem areas and defining needs, timeliness, and growth. It describes the types of accounting software systems which might be needed and gives a description of what should be looked for in each. It tells how to formulate a minimum criteria list which distinguishes between the required and desired functions and features. It also includes an example application of the system selection process on a small, local business. It tells how a manager can seek out information on the various accounting software systems and obtain literature from different vendors about what they can offer at what price. It also gives a complete and detailed description of the selection process followed once all the information is obtained. It also contains information on testing and installation. With this methodology, managers have a tool to use when determining what type of accounting system would best fit their needs.

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I would like to thank the Department of Computer Science at Texas A&M University for giving me a good, solid background in computer science which will guide me in my professional career.

I would like to thank the Department of Accounting at Texas A&M University for teaching me the principles and practices of the profession of accounting and the applications of this to computer science.

DEDICATION

I wish to dedicate this thesis to my parents, Mr. and Mrs. Harold F. Ray Jr. Without their love and encouragement, I could have never been the person I am today. They have truly been the most significant people in my life with their constant application of love to all people.

LOVE is very patient and kind;
never jealous or envious;
never boastful or proud;
never haughty, selfish, or rude.

LOVE does not demand its own way;
it is not irritable or touchy
and hardly even notices when
others do it wrong.

If you love someone,
you will be loyal to him
no matter what the cost;
always believe in him;
always expect the best of him;
and always stand your ground
in defending him.

-----1 Corinthians 13:4-7
The Living Bible

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1. INTRODUCTION.

Management must set the objectives of accounting system use. A manager of a small business is essentially the management. He should be able to describe to a vendor or system analyst what his needs are and what he wants the system to do. This is sometimes difficult, especially if the manager is not very proficient in the area of data processing. With little knowledge and no experience, first time buyers are often taken advantage of by equipment salespeople whose primary objective is to make a sale. An extremely helpful step in this process would be to appoint or hire a qualified consultant or selection committee to select and purchase the best package. Although very costly, the experience and objectivity of the EDP consultant helps to ensure that decisions are based upon facts and needs rather than emotions.

Using the methodology described in this thesis, a small business manager can successfully select and install an accounting software system for the business. The selection process involves evaluation of business and software needs which is included in sections 2 and 3. Section 4 gives

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information on designing the system. Section 5 gives a detailed view of the selection process. Sections 6 and 7 have information on testing and installation of the selected system. Section 8 is an example application of the methodology on a small, local business. The thesis ends with the conclusion in section 9.

2. STEP 1: ESTABLISHING INFORMATION REQUIREMENTS.

First, the manager must define his application needs and desires. One of the things that can be done is to collect examples of inputs, examples of what is stored in established company files, and examples of outputs. He should also define its timeliness: how fast should the input be converted into output? The information must be available to managers before the information loses its ability to influence decisions. If it has to be done quickly, a more expensive system will be required. After defining timeliness, he should collect the volumes of inputs, outputs, and file sizes. It may take two to three weeks to go through an organization and collect this data. Next, he should project these volumes and file sizes out over the short term as well as the long term business cycle. It can be tough, but top management should project the company growth rate as accurately as possible. A system analyst or consultant can convert these growth rate figures into volume growth rate and file size growth rate.

3. STEP 2: DEFINING SOFTWARE NEED.

The next area that the manager must look at is the software need. At this point he should prepare a minimum criteria list. A minimum criteria list would consist of the aspects of a package that are crucial to the system problems. He needs to define all required reports and describe the desired formats for these reports. He needs to select the application areas such as general ledger, inventory control, payroll, accounts receivable/payable, and order processing. It must have technical specifications on the required functions and features and operation information. He must define record layout, file layout, and the number of files in which case a system analyst might be helpful. The manager should consider the effects of the accounting software on the current and future hardware resources and also the desired maintenance information. Software varies significantly therefore it should be evaluated with great care.

3.1 GENERAL LEDGER.

The general ledger is a compilation of all the accounts of a firm and their balances. The purposes of an automated general ledger system are to keep a record of transactions and account balances as well as to generate accurate and timely balance sheets and income statements. The automated general ledger system must use a standard double-entry

accounting procedure to automatically assure that all accounts are in balance by requiring that each debit entry has a corresponding credit.

Setting up a proper chart of accounts is an important part of the general ledger system. Many small businesses fail to establish a proper chart because of their lack of understanding of the system as well as the company's real business needs. Multiple ledgers are important if there are many divisions of the company and it is necessary to keep each division's transactions separate from each other.

The system must be flexible in numbering the charts of accounts. Most systems allow the user to set up the major and minor account numbers. The company's charts of accounts must be compatible with the general ledger system to be adopted.

There should be a report-generator program which allows report formatting to be user definable. If the user wishes to change the format of a required report, he should be able to do it without changing the figures. This will allow a user to create and customize his own financial reports. Some systems even have a single account balance report which allows the user to stay current on an important account balance even though it is not the end of an accounting period.

Most systems generate month-to-date and year-to-date account totals as well as provide comparative data and ratios from month-to-date and year-to-date one year ago. Some systems provide the ability to designate beginning and ending dates which gives the user the option of having twelve or thirteen monthly periods a year. Transaction entry at any time is a good feature too since it allows a user to make an entry for the next period even if the closing procedures for the preceding period have not been completed.

Some general ledger systems may be integrated with other accounting systems such as accounts receivable, accounts payable, payroll, and inventory control systems. It is helpful since transactions in one system can be interfaced with another allowing the general ledger to summarize all the information. An individual account system approach is appropriate for a small-volume business with only a few transactions each period, but it does not provide the benefit of automatic data transfer to other systems. The user will have to reenter all the transactions into the general ledger which may cause errors and loss of control.

The general ledger system operates with a master (chart of accounts) file and the transaction (or journal) file. The master file allows for the creation and maintenance of the chart of accounts while the transaction file allows for the recording and posting of journal entries. The master file

contains the chart of accounts which includes the current balances of each account, monthly budget amounts, year-to-date amounts, and monthly and yearly comparative data. The transaction file contains account numbers, source codes, reference, dates, and amounts. These two files are interfaced at the end of the period by a trial balance which matches accounts in the master file with the entries in the transactions file. The system then lists each account transaction and totals and updates the master file to produce a current-month master file. Financial reports are generated from the current-month master files.

3.2 ACCOUNTS RECEIVABLE.

An accounts receivable system serves the purpose of posting receipts, billing customers, and keeping an aging schedule of receivables. In the posting function, the formats of the statements and invoices should be similar and receipts should be input before issuing statements to provide up-to-date information. It improves billing services by sending account statements to customers. Some systems use a standard monthly billing date, but others can allow cyclical billing making possible different billing dates for different customers. This can be helpful for a business that sends a large amount of bills since it avoids swamping the system at key times each month.

An accounts receivable system can be interfaced with the general ledger system to provide automatic posting to the appropriate general ledger accounts. It also can be interfaced with an inventory control system which allows invoice information to be passed automatically to the accounts receivable system.

The types of reports present in an accounts receivable system include customer lists; cash receipts journals; sales journals; statement forms; aging schedule reports; sales analysis reports by customer, salesperson, and item; periodic sales summaries; delinquent reports; commission reports; finance charge reports; and invoices. The types of reports vary from system to system. A manager must determine the types of output reports desired before selecting a system.

3.3 ACCOUNTS PAYABLE.

An accounts payable system keeps track of cash disbursements and pays vendors at the appropriate times. It also provides internal information to management by keeping track of financial activities of vendors, cash flow, and discounts. The system should keep a record for each vendor and determine which vendors to pay by the due date or discount date. It should print checks and register them as needed. It should be able to interface with the general ledger system to keep up-to-date journal entries.

An accounts payable system should generate voucher reports, cash requirements reports, vendor lists, vendor analysis reports, checks, check registers, and aged payable reports. Vendors and vouchers can be selected after analyzing these reports and considering the cash available. Some systems pay vouchers automatically at the due dates but have an override feature to allow a user to defer payment or select other bills to be paid individually.

3.4 INVENTORY CONTROL.

An inventory control system is very useful to management by helping to reduce overstocks and understocks and providing up-to-date quantity information. An automated system should allow items to be added, changed, and deleted from the inventory as needed. The system should be able to check outstanding orders and backorders before deleting an item to safeguard valid information. The system should allow a user to override the price of an item when entering orders and to change invoices and orders before invoicing or billing. When interfaced with an accounts receivable system, automatic transfer of inventory and billing information can take place quickly and accurately.

Inventory control system outputs may include customer invoices, shipping reports, sales reports, inventory status reports, reorder point reports, inventory valuation reports,

price listings, receipts registers and warehouse transfer audit trails, open-order reports by customer, inventory activity reports, and open invoices. Most microcomputers cannot maintain a backorder file and provide open order capability since the invoicing (or postbilling) approach is used. In this approach, an invoice is generated only when an order is complete.

3.5 PAYROLL.

A payroll system should prepare payroll checks, distribute labor costs to the appropriate accounts, and accumulate necessary tax information for government reporting. Many federal, state, and local laws require that employers collect certain data in their payroll checks and reports. In judging one system against another, a manager must apply certain principles to determine which one satisfies the needs of the business. One principle is the importance of accuracy and timeliness in generating paychecks. Another is the fact that the system must be simple to work with since it is supposed to simplify instead of complicate. If automatic calculations are necessary, the system should be equipped to do them quickly. If output reports are important, the system should produce, on request, any report that is necessary. Many reports present in a payroll system include employee lists, attendance registers,

earnings reports, precheck registers, paychecks, check registers, labor distribution reports, deduction reports, period summaries, overtime and sick pay reports, W-2 forms and reports, employer's quarterly and annual federal, state, and local tax return forms and reports. For internal management, the system should have sufficient audit trails and controls to make certain that money is going to the proper accounts in the proper amounts.

3.5 PACKAGE SOFTWARE VS. CUSTOM SOFTWARE.

Purchasing a package program already developed by a vendor or creating custom programs to suit the specific needs of the user are two ways to obtain application software. Package programs generate the basic information needed by managers to do the job and cannot usually be modified by the user. Custom programs may be developed and modified within the company or by individuals contracted to write the specific system to meet their needs.

Large business firms have traditionally been the prime users of custom software in the past since they could afford to employ a data processing staff to develop the specific programs to handle the data, operations, and reports for the company. Front office business such as order processing, accounts receivable, or invoicing usually prefers custom software since it involves a direct relationship of customers

to the business and information to management must be presented in a specific format. Package software is designed to handle general information and may not be suitable to front end applications. However, it is better for back office business such as payroll, general ledger, and accounts payable since the customer is not involved and special forms of reports are not needed.

3.51 PACKAGE SOFTWARE.

There are many advantages to package software programs. One is that the user gets to immediately use the program rather than having to wait for the development of custom software requiring much programming time. This results in lower costs since a programmer is not needed to design and code which usually carries the bulk of 60% of the total cost of program development. Better documentation is usually available since it is developed as a selling aid, and it is usually much easier to use because it is designed to complete the tasks in a general way.

However, there are disadvantages which lie in the fact that there may be specific needs that cannot be met by a certain package and modification may be necessary. Since the program is inflexible, it is probably difficult to modify and may require extra hardware. It may be inefficient in operation and require more hardware than you need or have.

It may have little or no vendor maintenance, which is particularly true when the vendor did not write the software. Also, the ability of the package to perform the required job may be misrepresented by the salesperson.

3.52 CUSTOM SOFTWARE.

Some advantages of custom programs are that they are designed the specific way the user wants and may be adjusted to suit existing hardware resources. With custom software, the specific planned growth needs of the company can be incorporated into the design of the program which can increase its useful life and save money that would have to be spent updating versions of package programs later. Users can be trained as the programs are being developed to use, maintain, modify, or update the software which can save effort later in trying to do the same on a package program with little knowledge of how it was written.

The main disadvantages of custom programs are that costs are greater than package program costs since programmer time to develop the system is very expensive. Also, because of the time it takes to develop the software, the company will have to suffer longer without the system which will cost the company more money resulting from operational costs and profit loss. The managers involved in selecting the type of system must effectively communicate their desires in an

efficient manner or else the program will not do what the user wants it to do. Another disadvantage is that the custom program tends to be developed around existing hardware which may be out of date, very time consuming, and wasteful of resources. Also, if developed within the company, good documentation may not be prepared causing the program to be almost useless later when trying to be understood or updated after the previous personnel have left.

3.6 DEFINE HARDWARE NEEDS.

The manager must next define the system's hardware need. Careful identification of long and short term objectives will eliminate most problems in defining this. The manager should establish requirements for the amount of memory needed for storage and the system. Most small businesses will require a standard PC system complete with at least 256K and two disk drives. Another option would be a PC equipped with a hard disk and one disk drive. When evaluating the software systems, it will be important to know the memory requirements. A misjudgment in the hardware requirements for a system is dangerous since underconfiguration can mean automatic failure of a particular application. The problems and costs involved in upgrading a system later is great compared to the relatively minor expense of providing sufficient and extra capacity in the first place. Each

vendor should specify the maximum and minimum configuration that the system can support in the future. If there is no provision for growth, one should not buy from that vendor. Establishing hardware requirements can be done by studying user requirements and converting them into the appropriate size of hardware unit.

4. STEP 3: PREPARING A SYSTEM DESCRIPTION.

After the functional requirements of software and hardware have been defined, the manager or consultant needs to develop a description of the system and attach it to the minimum criteria list. Vendors must be located and given the information. A good practice would be to put this information in the form of an RFP (Request for Proposal) which can be sent out to several potential vendors. With an RFP vendors can respond specifically to the needs with hardware and software costs. One particular question that should be answered is if a certain vendor's application system will work with the computer's present operating system. Request written responses plus brochures of packages that meet your list. The manager can examine these packages at a software vendor house or consultant service business and look up information on them in the various software catalogs.

4.1 THE REQUEST FOR PROPOSAL.

The Request for Proposal (RFP) is mainly a description of the company needs and wants. Vendors may look at these and submit proposals of what they can give for what price. The company can look at these proposals and determine the best one between them. The quality of the RFP should be measured in terms of its ability to adequately inform all vendors of the background and requirements of the company application to enable the vendor to prepare a meaningful response. It should define requirements in such a way that will bring a multitude of vendors, but also assure the company of a high quality product. Therefore it must be completely detailed but at the same time not too complicated as to discourage vendors. It should also specify the required means of measuring performance which is specific so that both the company and the vendor can understand and accept proper responsibility for the products and services required. The RFP should also develop bidding requirements in such a way that the cost to respond does not place an undue financial burden on the vendor while providing the company with sufficient data for proper evaluation. For most small business cases, the vendor will not respond to an RFP since the cost to respond usually outweighs the profit in selling relatively inexpensive PC software to a small

business. Yet, vendors may provide literature on their software which a manager can evaluate on his own.

5. STEP 4: SELECTION PROCESS.

Once all the proposals, evaluations, and literature are in the selection process begins. The first step in the selection process would be to do a preliminary screening of all vendor responses to see if their packages meet the minimum criteria list. If they do not meet the list then do not consider them since they will not provide the business with what it has defined as its need. From the list of minimum and desirable criteria, screen the remaining packages and again eliminate any packages that do not fulfill the requirements of the business.

5.1 VENDOR EVALUATION.

With the remaining packages, evaluate the vendors on their accounting software development experience. Questions that might be asked of vendors include:

- a. Does the vendor have any experience in accounting software development or does he merely handle the software for others?
- b. What type of business is the vendor in? Ask for the sales figures and income statements of the vendor.
- c. What type of technical personnel are available for service and questions? Is it in your geographical area?
- d. What type of training and education programs does the vendor have? What do the programs teach? Will the vendor help install the package?

- e. Does the vendor have an emergency support program? What type of guarantees and warranties are in the contract?
- f. Will the vendor supply reference information as to the number and type of present users?
- g. How long has the vendor been in business? How big is the company?
- h. Is the vendor the original designer and coder of the package? What type of background do the principal members of the vendor firm have (sales, business, technical, etc.)?
- i. What type of documentation is available on the package? Will the vendor continue to support or maintain the package and its documentation?
- j. Will the vendor provide a good maintenance contract that will assure the firm of being notified of any updates and revisions?

A decision may be made at this point to eliminate more packages because of poor vendor evaluations, which sometimes indicates poor vendor packages. At this point the remaining vendors could be invited to give lectures, seminars, or demonstrations of their packages.

5.2 OBTAINING USER REFERENCES.

The next step would be to obtain user references from top vendors. If a vendor refuses to give references, that package should be eliminated. The company should contact users and ask questions about the package. If it is possible, the manager should visit the site to watch the package in operation. Questions to ask the user should pertain to overall satisfaction, details regarding any

problems, throughput and efficiency, ease of installation, ease of use, documentation, vendor technical support, training, full price of package, package changes, and any changes the user thinks should be made to the package. Again this may result in some packages being eliminated.

5.3 FINAL SYSTEM EVALUATION.

The next stage in the selection process would be a rating technique to rate each package against the requirement list. There are many techniques of selection ranging from no-cost-and-less-time methods to small-cost-and-time methods, fair-amount-of-cost-and-time methods, and large-amount-of-cost-and-time methods. The no-cost-and-less-time methods mainly consist of subjective judgments which apply the decision maker's values (sometimes prejudice) to the presence or absence of specific features in a particular system. This method is usually used when the evaluator is pressed for time. Subjective judgment must be applied when other criteria for selection are lacking such as when two companies offer basically the same features, functions, and cost.

Subjective judgment, when used alone, can result in a poor selection. For example, a selection may be made for one package because that vendor included an extra option in it that was not specified in the RFP even though the other manufacturers offered the same option (at half the selected

vendor's price) but did not include it since it was not in the system specifications. If the evaluator had bothered to ask the other vendors about the option, he would have found out he could get it for a lower price.

5.31 SMALL-COST-AND-TIME METHODS.

Cost-Value Technique

The small-cost-and-time methods consist of a cost-value technique which provides the means to evaluate proposals on the basis of both cost and technical performance. This method requires an accurate technical specification for the package and a clear understanding of the values. It requires the prospective customer to attach a dollar value to each of the desired attributes of a package. These estimated values should represent costs that would have to be made either to purchase the item from an outside source or custom make the item internally. If a vendor item is offered at lower cost than the established value, the difference between the vendor cost and the established estimated value is deducted from the vendor's total cost proposal. For vendor items not offered or those for which the cost was greater than the established value, no value is deducted from the vendor's cost. After each proposal is evaluated against the list of desired items and values, the vendor proposing the lowest cost should be selected.

This method is simple and easy for small businesses to apply, except that the user has to define the right dollar amount for the desired items, and he or she may not know enough to do it correctly. A consultant would be helpful at this point to establish the system requirements and costs.

Requirements-Costing Technique

A better technique for selection is the requirements-costing technique. It is similar to the cost-value technique in that it uses an estimated value as a basis for evaluation. Implementation of this technique requires the manager to establish a mandatory or minimum system. Any vendor who does not meet the minimum requirement is not even considered. For each desired item that is not offered or offered at a cost that is greater than the estimated value, the estimated value is added to the proposed cost. If the vendor offers an item at a cost below the established cost, the actual cost is used. In this way all requirements and their costs are considered in the evaluation. The system having the lowest total requirements cost is selected.

These methods are very effective if enough effort is put forth to specify needs and estimate costs properly. It is very important to consider all costs in the process of evaluation and to take into account present value factors and inflation. The total costs consist of the sum of mandatory

costs, other costs, and desirable feature costs. Mandatory costs are the costs of the mandatory equipment, software, and support. Other costs would consist of operating expenses over the life of the system including staff, electricity, and space. Desirable features costs consist of the costs for desired items as opposed to mandatory items. It is important to specify in detail the features that are desired and the dollar value the manager places on these features. Much time and effort is needed to come to an accurate cost value for each of the desirable features.

5.32 FAIR-AMOUNT-OF-COST-AND-TIME METHODS.

Weighted-Score Technique

The fair-amount-of-cost-and-time method consists of mainly the weighted score or point scoring technique. This technique is probably the easiest for a manager to use since he or she assigns a value to the necessary and desirable attributes in descending order of importance. The attribute that the manager considers most important would be assigned the highest value with the sum of all values equal to 100. This value is a type of weighted score that is used when rating the features of a system. The scores are totaled and the system with the highest score is selected.

An advantage of this technique is its flexibility in that the list of attributes can be expanded or reduced

depending on the manager's needs. However, it is possible to oversimplify the list and assign too high a value to an attribute. It may cause the manager to overlook the long term operational availability of the system including maintenance and service contracts. The assigned values are usually very subjective which may cause a vendor to question the values assigned even though the manager has indicated those features that most closely meet his needs.

The weighted score method consists of performing four basic steps. The first and most important step is coming up with an exhaustive list of selection parameters prepared by both a manager and consultant and approved by users, operators, and management. The next step is to rank these parameters according to importance and calculate a weighting factor for each one. After this, each candidate system is scored based on literature review data, bench-mark tests, and user visitations. The individual scores for each parameter are then multiplied by the corresponding weight factor and summed up for each candidate. The candidate with the highest sum is usually selected. This method will usually be effective if sufficient care is given to the listing, ranking, and weighting of selection parameters.

5.33 LARGE-AMOUNT-OF-COST-AND-TIME METHODS.

The large amount of cost and time method involves simulation. The information concerning the user's application is fed into the simulation program which calculates how different computer systems will perform. Simulation is very powerful and relatively accurate, but the cost of developing such detailed operations algorithms cannot usually be justified for small business firms.

6. STEP 5: TESTING.

The next step after selection is testing the application software before accepting it. This is important because a business needs to be certain that the package selected will work with the company data. The testing phase will involve doing an actual application with real data. The manager should work with the system to make sure it outputs the desired reports in the specified form. The manager should also make sure that the package provides protection of confidential data which should not be altered by unauthorized persons. To test this, the manager should attempt to change important information as an unauthorized employee and investigate how the system handles this.

The testing phase will also include job stream tests to assure that the system can handle the bulk of transactions done at a certain point in time. It is important here to

test how the system handles unusual transactions in the job stream. If the unusual transactions cause the entire process to slow down, the manager should inquire about this and test it further. The manager should also note the time required for input, memory access, and output. If the system tends to be very slow, more memory space might be required. Output devices, such as printers, are much slower in comparison with operations performed by the central processing unit inside the computer. If faster output is required, a high speed printer may be needed.

7. STEP 6: INSTALLATION.

After the manager is satisfied with the results of the testing phase and the selected software system is accepted, the business will have to convert existing manual files to work on the computer system. This will require reorganization and design of the files and record formats. This will require training personnel and learning how to use the system thoroughly. Protection mechanisms will need to be set up such as passwords and authorization codes. Good documentation should be obtained for the application programs and operation standards so that users have reference to a written manual when there are problems. Also, the business should negotiate and obtain a good maintenance contract which is well understood by management and personnel.

8. EXAMPLE APPLICATION.

Pen & Ink Calligraphy and Design is a small business started in 1985 by three Texas A&M University students for the initial purpose of designing, printing, and selling their high quality Texas A&M logo prints and posters. They are currently selling three different Texas A&M prints, but they are expanding to other Southwest Conference Universities in the fall of 1986 with fifteen more prints in the design stage. They have also expanded to doing custom calligraphy and graphic design. Customers place orders either by mail or in person. Select campus organizations purchase the prints wholesale from Pen & Ink and resell them on campus at a suggested retail price. Customers can buy the designs in poster form, matted prints, or framed prints. With the 400% planned growth by next fall, the business has expressed a desire for some type of computer system for an IBM PC-AT to handle order processing, inventory control, and the billing function.

The business keeps files of customers, cash and credit sales, and inventory. Pen & Ink sends order forms to old customers on new prints and designs using the features of WordStar, a word processing package from MicroPro Corporation. The business would like a system that can sort these customer lists by name, zip code, and area code for mailings. In regard to sales, Pen & Ink accepts Mastercard

and Visa and needs some type of order system to account for these types of sales. Inputs to this type of system would include print types, quantity, type of sale, special discounts, dates, names, addresses, and telephone numbers of the customers, and frame orders. The business would also like a UPS option on a sales order which will automatically calculate and add UPS costs for customers that will receive their prints by mail. Pen & Ink sends framed print orders to a local art gallery for framing and gets billed by the gallery for the total orders. Pen & Ink has expressed problems in regard to keeping track of which prints to be included in the frames-in-process inventory and finished goods (framed prints) inventory.

Desired outputs of this system are sales orders, bills, sorted customer lists, and inventory reports. The sales order forms and bills must include the invoice number, date, salesperson, name and address of Pen & Ink, item number, quantity, price, discounts (if any), sales type (credit or cash), UPS charges, tax, and totals. Prices are preset, but an override feature needs to be included for those cases (about 5% of the time) when there is a discounted sale.

Pen & Ink would like up-to-date quantity information on the number of prints of each type in stock, in the design stage, in the framing process, and ready to be sold. Seventy percent of on campus sales of their prints are directly

related to the number of prints on hand at the time of sale especially during the football season when there are many out of town customers. The business can evaluate the inventory trends and determine the appropriate number of prints to produce for each football game or special weekend.

In defining timeliness, the sales order forms should be processed when they are entered so the customer can have a copy of the sales order. Inventory reports should be able to be produced when necessary, usually at the end of each week or weekend. Customer lists should be able to be produced and sorted when needed.

Pen & Ink needs an inventory control system that can be interfaced with a general ledger and accounts receivable system to record sales as they are made, update customer lists, and keep quantity information. The business does not need an accounts payable or payroll system because of the size of their business and small number of employees. Checks are only written by the owners of the business who can keep track of the checks and disbursements more efficiently without a computer system. The minimum requirements for the inventory control system would be that the system must produce sales orders and keep up-to-date quantity information on each print. The system must allow Pen & Ink to design and change the format of the sales order, add, change, and delete items from inventory, and provide the capability to override

the price of an item. Output reports necessary include sorted customer lists, sales orders, sales reports, inventory status reports, inventory valuation reports, price listings, and inventory activity reports.

8.1 USER REQUIREMENT SPECIFICATION FORM.

General Information

Name PEN & INK CALLIGRAPHY AND DESIGN
Address P.O. Box 2647
City/State College Station, TX 77841
Phone (409) 776-0091

Type of Business:

Designs and prints a small number of high quality college logo prints, custom calligraphy work and graphic designs

Type of Customers:

Individuals, art galleries, some companies

Business volumes:	today	in 2 years	in 5 years
Annual Sales	\$8000	\$30000	\$70000
Employees	0	2	10
Transactions	6000	22500	52500
Customers	300	1000	2000
Items	20	40	90

Present accounting method:

General ledger	manual
Accounts Receivable	manual
Accounts Payable	manual
Payroll	manual
Inventory Control	manual
Word Processing	WordStar package

Application: General Ledger

Essential: 150 maximum number of charts of accounts
double-entry system
chart of account maintenance
multiple postings within periods
transaction entry and posting
report generator
cumulative general ledger
end-of-period processing
master file list
transaction register
cash receipts journal
cash disbursements journal

Desirable: budgets on financial reports
account inquiry
trial balance
balance sheet
income statement

Application: Accounts Receivable

Essential: 10000 maximum customers
customer billing
sales entry and posting
receipts entry and posting
customer information update
end-of-period processing
inventory control interface
general ledger interface
sort capabilities for customer lists
cash receipts journal
sales journal

Desirable: sales analysis by logo print
cyclic billing
mailing labels

Application: Inventory Control

Essential: order entry (prebilling)
100 inventory items
frames-in-process inventory
finished goods inventory
materials inventory
sales order entry and posting

general ledger interface
inventory item maintenance
credit handling
sales order forms
special options on the order forms
sales reports
inventory status reports
inventory valuation reports
price listings
inventory activity reports

Desirable: accounts receivable interface

8.2 SELECTION.

Researching the software catalogs for different accounting software packages was perhaps the most difficult part of this stage. Most of the information was not highly detailed, and it was necessary to go to some software dealers to actually see some documentation on the particular functions and features of each package. This was very helpful and perhaps highly influenced the decision made since the packages that were not readily available were not considered and checking them out at a software dealer allowed me to actually test them out for performance. I tested for what I thought were the most important aspects of a system from what the managers of Pen & Ink had communicated to me and from what was written on the specification form.

The final selection was between 3 different software packages which I will call A, B, C. The prices of the packages were relatively the same so it was not considered to be a relevant criterion even though one of the main constraints to Pen & Ink is the price of the package. I used the weighted score technique for final selection since this is the technique probably used by most managers. A small portion of this technique is illustrated below:

Criterion:	weight	A	B	C
Software performance	60	45	60	55
Ease of use	50	40	45	50
Reliability	60	60	60	60
Interface capability	50	40	50	50
Special options	40	20	40	30
Documentation	40	25	40	40
Sales order design	60	35	60	55
Output reports	60	50	60	50
	-----	-----	-----	-----
Totals	420	315	415	390

It must be kept in mind that both the weights and the points were assigned subjectively, and therefore a large margin for potential error should be provided in interpreting the results. These systems were actually seen in action and evaluated which was conclusive to support the final decision.

8.3 RECOMMENDATION.

The results of the selection process seem to indicate that the General Accounting package and the Inventory Control

package of BPI Systems should be purchased. This system was readily available for testing and had excellent reviews in the software magazines. BPI Systems has a whole line of many accounting and business software systems which can be integrated later with the General Accounting and Inventory Control packages. BPI Systems was Vendor B in the weighted score selection process illustrated above. It should be emphasized that this system was biased by the fact that it was readily available for testing and reading. Many good systems were probably not considered since I was not able to obtain adequate information on them. A better decision could have been made if there had been more systems to evaluate on an equal basis.

9. CONCLUSION.

This methodology can be applied to almost any small business that has a definite need for an automated accounting system. It is difficult for a manager who does not know very much about computers or software to select a good package. Yet, following the steps outlined in the thesis, the manager should be able to make a good selection without the expensive cost of a hired consultant. The manager must realize that most of the researching will have to be done on his own, and the quality of the selection will depend on how much time and effort has been put into the process. As indicated in the

example application, packages that are not readily available for examination and testing will probably not be given much consideration unless adequate literature can be obtained. The manager should remember this as he makes a decision. If the results of evaluation of the readily available packages are not satisfactory, the manager will need to research more systems.

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