Fixed Asset Accounting Software Evaluation: A Structured Methodology For The Mid-Market Firm

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ABSTRACT

Packaged software evaluation represents a major decision for business. It involves a number of quantitative as well as qualitative attributes in choosing among system alternatives. This paper illustrates an evaluation methodology for accounting software selection, specifically a fixed asset system. The methodology incorporates three stages: 1) software screening; 2) detail package evaluation; and, 3) confirmation and design (also known as a test drive).

Initially, developing a short list through screening of accounting software determines whether an appropriate package exists and narrows the field of available fixed asset products for detailed consideration. The second stage determines which of the remaining fixed asset systems (the finalists) best meets the needs of the organization, from both functional and technical perspectives. The final stage, or phase, compares user requirements with the features of the selected fixed asset software by determining how these requirements will be satisfied by specific applications built using the fixed asset software.

The methodology also controls for the possibility that no fixed asset software product is suitable and that such a system must be constructed on a custom basis. No other reported evaluation and selection approach offers this device. A case example demonstrating the applicability of the suggested methodology is given for a mid-sized hospital organization representing the largest market segment for accounting software.

1.0   INTRODUCTION

1.1   The Software Selection Problem

*P*ast publications (Allen 1999; Lynch 1984; Lynch 1985; Montazemi et al. 1996) have suggested that inadequate examination of prospective software packages leads to serious difficulties, if not failures, when implementing information systems. Although a number of approaches to selecting application software have been proposed (Anderson et al. 1997; Berst 1983; Bhyn and Suh 1996; Breslin 1986; Curry and Bonner 1983; Gray 1997; Martin and McClure 1983; Mattingly 2001; Sanders et al. 1982) some critical factors were omitted. These factors include assuring that the selected software package is superior to a custom alternative, or that a screening process is provided to reduce the number of packages subjected to detailed evaluation (Galletta and Heckman 1990; Galleta et al. 1993).

1.2   Research on Choice Models in Software Selection

Several publications have made claims that one or another choice model is superior for software evaluation and selection (Anderson, 1990; Bagranoff 1999; Klein and Beck 1987; Naumann and Palvia, 1982; Shoval and Lugasi, 1987; Subramanian and Gershon, 1991; Szajna 1994). Criticism by Klein and Beck (1987) against weighting schemes (e.g., the linear weighted attribute choice model) for software selection can be minimized through a screening process and development of a short list. Naumann and Palvia (1982) successfully applied weighting and score measures to select a systems development methodology from a short list of four candidate techniques. Weighting and scoring criteria for only a few software packages allows for a very detailed and focused inspection of only the very best alternative software products. Shoval and Lugasi (1987) compared three choice models for evaluating and selecting a computer system from four alternatives in a manufacturing case study. The three choice models were: 1) the linear weighted attribute (LWA) model; 2) the multi-attribute utility theory (MAUT) choice model; and, 3) the eigen-vector (EV) model. This study reported that these three choice models provided identical rankings of combinations of computer hardware and software. The MAUT choice model was the most difficulty to apply.

Anderson (1990) compared five choice models including the LWA for evaluating and selecting personal computer (PC) software from many alternatives in three application categories. This study reported that four of the five choice models each selected the same software as the best package in every application category.

1.3   Target Firms for the Software Selection Methodology

Literally, millions of firms exist that could potentially benefit from the three-phased method presented herein to evaluate and select accounting software, including fixed asset (FA) systems. According to Table 1a, there are five million firms in the United State with needs for entry-level software designed for small business (i.e., revenues of the less \$5 million annually and with up to 20 employees). These represent potential beneficiaries of selecting the most appropriate accounting software that fit their system requirements from both functional and technical perspectives. The two middle categories, small-to-medium business (SMB) and small-to-medium enterprise (SME), comprise the middle market. These business organizations have employee numbers that range from less than 100 to as many as 500, with annual sales from \$5 million to \$500 million. The mid market is comprised of approximately 600,000 firms in the United States alone (Johnston 2003).

Table 1a: The Accounting Software Market

Accounting Software Market Structure				
	Entry	**SMB**	**SME**	**ERP**
Organizations	5 million	516,000	84,000	17,000
Employees	≤ 20	≤ 100	≤ 500	> 500
Sales (\$ millions)	< \$5,000,000	$\leq$ \$100,000,000	$\leq$ \$500,000,000	> \$500,000,000

The three aforementioned categories represent all but the very largest of multinational enterprises. Hundreds of software vendors offer a variety of accounting software packages aimed specifically at these three markets. The smallest market in terms of company numbers, known as enterprise resource planning (ERP) systems constitute a relatively specialized software market where typically multinational firms select a set of software modules for all functional areas (i.e., marketing and sales, operations or supply chain, finance and human resources) from one vendor. And there are only a few vendors that serve the ERP market. These vendors include SAP, Oracle, PeopleSoft and BAAN. The proposed accounting software selection methodology is not aimed at this very specialized software market.

The methodology presented focuses upon the small to medium sized business and enterprise for which the software might cost \$5,000-\$250,000, with implementation extending from six to eighteen months (Johnston 2003). According to Table 1b, the total cost to implement for this size of firm (small to medium business or enterprise) may

range from one to two times the cost of the software itself, conservatively from $100,000 to $500,000. Similarly, implementation may take from a few months to several years, even with the use of a package that does not require so much expensive coding like custom developed software. Despite the use of software off the shelf, accounting system implementation with a package is nevertheless an expensive and time consuming project. This methodology can expedite the systems development process and control for costly overruns and installation mistakes.

Table 1b: Costs of Accounting Software Implementation

Attributes of Accounting Systems Implementation				
	Entry	**SMB**	**SME**	**ERP**
Software Pricing	$100 - $2,500	$100 - $2,500	$100 - $2,500	$100 - $2,500
Project Timing	≤ 2 months	≤ 2 months	≤ 2 months	≤ 2 months
$ to Implement	≤ 10 × code price	≤ 10 × code price	≤ 10 × code price	≤ 10 × code price

*Source: United States Census Bureau, 2002
*Explanatory Notes for Table 1a and Table 1b:
*"Entry" refers to entry-level software for smaller businesses.
*"SMB" refers to small-to-medium business software for the smaller firms in the middle market segment.
*"SME" refers to small-to-medium enterprise software for the larger sized firms in the middle market segment.
*"ERP" software is defined for ultra-large organizations that are relatively few in number and served by just a few vendors.

1.4   An Outline of the Methodology

This software and evaluation selection study begins with the selection of a short list of fixed asset (FA) accounting software packages. This shortlist is generated by the elimination-by-aspects (EBA) choice model (Tversky 1972). The EBA model guarantees that each package meets the minimally acceptable level of performance for each screening attribute. In addition, the EBA is quick and easy to apply, involves no numerical computations and has very low information requirements, making it an ideal tool to rapidly develop a short list of software products. This non-compensatory choice model is utilized in the first stage of the software evaluation and selection project. Non-compensatory implies that lack of a certain attribute for a particular software package cannot be compensated for higher ratings on other attributes. If no package satisfies all of the screening requirements, the system developers will immediately commence a custom-built project according to the methodology's logic as shown in Figure 1.

In the second stage of the software evaluation and selection methodology, a compensatory choice model (Pras and Summers 1975) allows tradeoffs between performance ratings of different attributes. Lower performance on one attribute by a particular alternative can be offset by higher performance on another attribute. Using the LWA choice model, project participants compare the ratings of no more than three commercial FA software packages and select the best package assuming it meets or exceeds a performance threshold. If no package meets the threshold, the system developers can again select the option to build a system from scratch according to the logic of Figure 1.

Assuming that a package has been selected in the second phase of the methodology, a project team prepares to confirm the choice by developing some actual applications based on the chosen software. The primary reasons for this stage are to ensure that the FA package can be used effectively and to provide one last chance to reconsider the software decision. If on final consideration a custom-develop system appears to be a better option, it is not too late in the method's logic to pursue this avenue of development.

2.0   THE CASE STUDY ENVIRONMENT

The following case is based on actual practice. General Hospital (GH) is a local hospital that is affiliated with General Rehabilitation Facility, Magnetic Resonance Imaging (MRI) Center and GH Hotel. These enterprises constitute GH Company, which is a wholly owned subsidiary of Hospital Intergroup (HI), a publicly traded company.

The four facilities, as well as their parent company, all exchange medical equipment among themselves, and subsequently have difficulty tracking their assets.

2.1   General Hospital's Business Segments

Following is an example of how quickly and easily assets physically move from one business segment to another. GH sends their stroke patients, who have been stabilized, to the General Rehabilitation Facility for physical therapy. The patients may spend an additional week or more at the rehabilitation facility, depending on the amount of therapy needed. When discharged from the hospital and admitted to the rehabilitation facility, the patient is still wearing the gown from GH. The rehabilitation facility may also need equipment from the hospital for therapy treatment. Thus, when the patient is discharged from General Rehabilitation Facility, the gowns and equipment often remain at that facility. A FA tracking system is needed to monitor these movements of assets.

Another example of equipment transfer from one facility to another is the movement of patient restraints. When the MRI facility needs some patient restraints, they simply send a runner to GH to obtain one from the supply room. Often times extra restraints remain at the MRI facility.

Currently, GH Company is using an out-dated PC-based FA system. The software is old and does not utilize the expanded random access memory (RAM) and features of current PC technology. The program's database of assets is quickly reaching the limits of its ability to track, and management is concerned that the system may "crash" which would result in certain data loss on the system. The current system is inadequate to manage transfers of assets and does not calculate several necessary tax depreciation projections and schedules.

The vice president of operations, Tim Beauchamp, wants some type of tracking system so that a physical inventory of all assets can be done periodically to detect and eliminate pilferage, and to relocate items that have been transferred to another GH location without proper authorization. This insures that GH has the equipment on the premises to meet crisis situations. Rick Gates, director of the tax department for Hospital Intergroup, wants a FA system that formulates complex tax depreciation methods on an individual asset basis. The tax department currently does many time consuming calculations for year-end reporting of earnings for tax returns. The comptroller of GH, Brian Winstead, needs a system that oversees an unlimited number of fixed assets and controls various lease-buy options. Currently, Winstead leads a project team, including Beauchamp and Gates, to find a new FA system to meet GH and Hospital Intergroup needs.
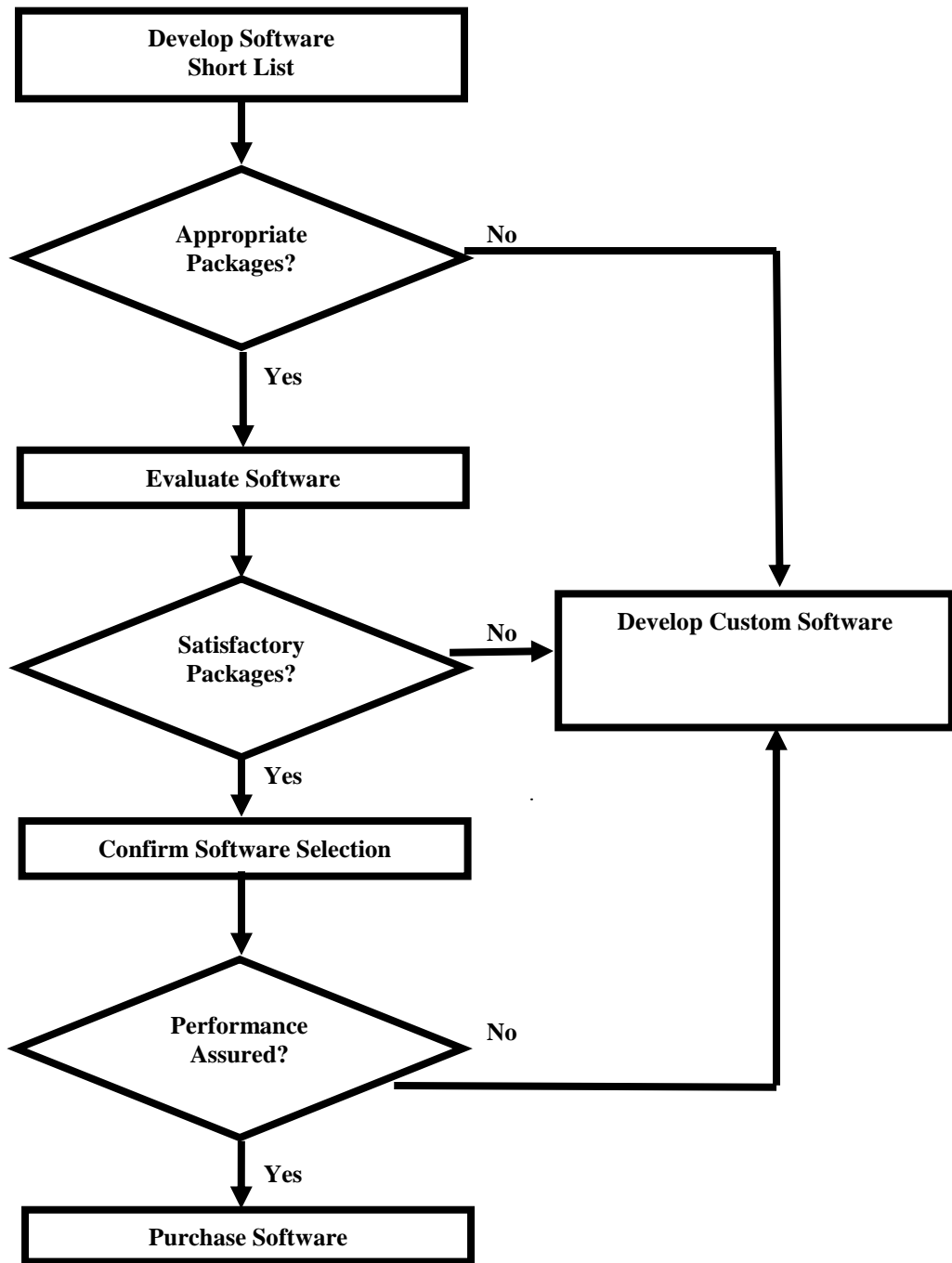
2.2   Fixed Asset System Flow

A fixed asset may be thought of as any item of lasting value to a company that can be capitalized and depreciated over a specified length of time instead of being immediately expensed at purchase. To be capitalized, the asset's cost must exceed a predetermined minimum monetary level. The item could be a delivery truck, building, desk, copy machine, a parking lot resurfacing or an office-remodeling project. The FA system is a computerized program that a company uses to value and track all these items. A good FA system will keep track of all these different assets and offer consistent reporting on their current value to the organization. Depreciating the assets is an integral part of this system.

Among the attributes of a FA system, three are most important to GH. It should maintain current actual asset costs and the associated accumulated depreciation. It should track retirements and transfers of assets, including tracking the proceeds of the sales of these assets. Lastly, it should periodically record these entries to the parent company's general ledger (GL). This is mainly an entry to record monthly depreciation charges but would also include additions, retirements and transfers of assets as needed. A good FA system limits the recording of entries to these types of accounts on a GL exclusively to the FA system. In other words, only the FA system should be used to record depreciation so as to protect the integrity of the data in the GL. The appropriate GL accounts should be "locked-out" for use by everyone but the FA system and FA accountant. This would insure that the 10K schedules would link to the company's financial statements.

GH uses an authorization for expenditure (AFE) system to account for capital expenditures. When a project is undertaken, local management sets an initial dollar limit on the project after taking bids from the interested vendors. The project is recorded on an AFE form that includes all relevant information for deciding whether to pursue the project. This AFE candidate is then submitted to the appropriate management and finance departments for further evaluation and review. Once the finance department has approved the project, it is assigned an AFE number, and the initiating division is informed that work can begin.

Figure 1: Logical Flow of Software Evaluation

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        ┌─────────────────────┐
        │  Develop Software   │
        │     Short List      │
        └─────────────────────┘
                  │
                  ▼
              ◇ Appropriate        No
                Packages?  ──────────────┐
                  │                       │
                 Yes                      │
                  ▼                       │
        ┌─────────────────────┐          │
        │  Evaluate Software  │          │
        └─────────────────────┘          │
                  │                       │
                  ▼                       ▼
              ◇ Satisfactory    No  ┌──────────────────────────┐
                Packages?  ───────▶ │ Develop Custom Software   │
                  │                 └──────────────────────────┘
                 Yes                       ▲
                  ▼                        │
        ┌─────────────────────┐           │
        │ Confirm Software    │           │
        │   Selection         │           │
        └─────────────────────┘           │
                  │                        │
                  ▼                        │
              ◇ Performance     No         │
                Assured?  ─────────────────┘
                  │
                 Yes
                  ▼
        ┌─────────────────────┐
        │  Purchase Software  │
        └─────────────────────┘
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After finance and upper management have approved a potential AFE, a copy of the approved AFE is sent to the FA accountant and the submitting business unit. The FA accountant checks all future bills submitted by the units to their original AFE to ensure that spending is kept within the dollar limits authorized.   Once the project is completed, the initiating division notifies the finance department and the FA accountant that no more bills are to be paid on the particular AFE.   If the division's spending exceeds its budgeted limit for a project, it is the FA accountant's responsibility to notify the local management and the finance department that the project is at its limit and is about to be "cut off."   If the FA accountant cuts off a project, local management must explain to the GH corporate officers why the spending was over budget. The continuation of the project at this point is subject to further approval of corporate management.

The FA system is utilized after the bills have been approved for payment. The FA accountant manually stamps the invoices as being approved and submits them to the corporate accounts payable department for payment. The FA accountant then keys the information supplied by the initiating division on the addition request form (ARF) along with the invoice information into the FA system. The FA accountant ensures that overspending is not occurring and tracks the cumulative spending on each AFE.

3.0   APPLICATION OF THE METHODOLOGY TO GENERAL HOSPITAL'S CASE SCENARIO

3.1   Screening Criteria

In order to select an optimal new FA system, GH's search team led by Winstead prepared a list of initial criteria that must be met by a software candidate in order to be chosen. These criteria are divided into four categories: technical, functional, documentation and vendor information.   Each is considered in the sections below.

3.1.1   Technical

GH has a fairly sophisticated PC environment. Its standard PC is the latest Pentium processor which is used throughout the company. They are used to access the company's mainframe through client-server architecture using a LINUX network operating system to share data and improve intra-office communication. The new FA software must be LINUX compatible. The particular machine that will support the new FA system has significant secondary storage and available RAM. While the technical requirements are not too stringent, the one critical technical attribute that Hospital Intergroup must have is that the software be LINUX network compatible.

3.1.2   Functional

The new FA system provides data decision-support information for three departments: accounting and finance, tax, and operations. For these departments, only two functional requirements are absolutely necessary. The first is record capacity. The current FA system employed by GH has nearly ten thousand asset records and is in danger of collapse. The new system should serve three times this quantity of data or a minimum of thirty thousand asset records as a minimum. . The second functional requirement is the ability to support GH's AFE procedures, since this is such a large part of their internal control. This can be accomplished through a dedicated function of the package or through a supplemental feature that could include a good report writer and user-defined fields within the software.

3.1.3   Documentation

GH's initial documentation requirements have one essential expectation - the new package must include an on-line tutorial. GH users are sophisticated and generally resourceful, and it is felt that a sophisticated on-line help system is sufficient. GH feels that by supplying an on-line help and tutorial facility to its users, overall initial training is reduced.

3.1.4   Vendor Information

GH's initial vendor screening criteria is based upon the vendor's length of time in the market with a FA program. The search team wants an established company which has experience in supplying the public with dedicated FA programming solutions. The minimum requirement by GH is five years of offering a FA system.

An overview of the entire software selection process is depicted in Figure 1. The individual steps are explored in the following sections.

3.2   Initial Screening and Development of a Short List

The initial screening process is one of the most important steps in the software evaluation and selection process. Extreme care was therefore taken in reviewing the list of FA programs against the initial screening criteria to arrive at a short list of selected programs for an intensive review. The search team initially found 84 vendors who offered FA software to the public. The software packages in the paper are intended to be illustrative only and thus are fictitious, though based upon real packages. This list was immediately narrowed to 30 vendors using three factors:

a)   eliminated packages that were modules of general ledger systems which would not work
      independently;
b)   eliminated packages that were mainframe or Macintosh applications that would not work in GH's
      PC environment; and,
c)   eliminated packages with a lack of substantial evidence about their products.

Thus, working with the remaining software, 27 of those were eliminated as shown in the following summary (see Table 2).

The largest percentage of the programs was eliminated due to functional and technical constraints. Functional constraints included FA programs that could not handle thirty thousand or more asset records, project accounting data, tax methods, and depreciation schedules. The technical constraint was lack of compatibility with a LINUX based network.

As a result of the initial screening process, three FA software packages were identified for review in the next phase of the software evaluation and selection process. These programs are *CORP A.D.S.* by Comprehensive Microsystems, *FAS2000* by Best Software and *Fixed Assets* by Open Systems, Inc. These packages each satisfied 100 percent of the screening criteria.

3.3   Detailed Evaluation with Expanded Criteria

The FA search team, having chosen its short list of three software packages for further evaluation, then devised an expanded criteria list to more closely evaluate their individual strengths and weaknesses. The criteria were again divided into the four categories mentioned earlier: technical, functional, documentation (including training), and vendor information. Further, the team separated the functional requirements into three sections to match the concerns of three interested departments: accounting and finance, tax and operations. Each of the criteria was assigned a value or weight that corresponded to the perceived level of importance the team placed upon each element. The weighting scale was: three (3) for an essential or critical feature; two (2) for a very important or desirable feature; and, one (1) for a useful but not essential feature.

Using the following expanded criteria list, the GH search team then evaluated the three finalists. The finalists were ranked as to their provision of the needed feature using a scale that ranged from one to ten. Using the above noted weights and rating system, the team then calculated the scores of the software packages. The package with the highest point total was then selected for purchase, subject to the confirmation stage.

Table 2: Initial Screening Grid

Package/ Developer	Technical	Functional	Documentation Training	Vendor
APS Fixed Assets Village Software	No LINUX Version			
Asset Depreciation Systems Tax & Acct. Software		No Lease/Buy Analysis		
Asset Keeper Pro-Ware			No On-Line Help	
Fixed Asset Manager Alpine Data, Inc.		No Lease/Buy Analysis		
Axtell Fixed Assets Axtell Development		No Report Writer		
CertiFlex Fixed Assets CertiFlex Systems		No Lease/Buy Analysis		
CFAAS Comprehensive Microsystems	No LINUX Version			
Charter House FA Charter House Software				Not 5 Years on Market
Compass Fixed Assets COMPASS		No User-Defined Fields		
CORP A.D.S. Financial Decisions.				
DDI Assets: F/A Data Directions, Inc.		No Report Writer		
Depreciation AICPA				Not 5 Years on Market
Depreciation Prentice-Hall Software	No LINUX Version			
FACT SYS Pioneer Automation Systems	No LINUX Version		No online Help	
FAS 1000 Best Programs, Inc.		No 30,000+ Assets		
FAS 2000 Best Programs, Inc.				
Fixed Asset Mgmt. Act E. F. Haskell & Assoc.		No User-Defined Fields		
Fixed Asset Manager Arthur Andersen & Co.			No On-Line Help	
Fixed Assets CPA Software		No Import/Export		
Fixed Assets Open Systems, Inc.				
Fixed Assets SCS Compute		No Lease/Buy Analysis		
Fixed Asset Mgmt Systems BGA Systems	No LINUX Version			
Fixed Assets Relief Micro Visions Software		No Lease/Buy Analysis		
Forefront Management Sys Dexter & Chaney, Inc.				Not 5 Years on Market
FTI Fixed Assets Financial Technology, Inc.		No User-Defined Fields		
Macola Accounting Software Macola, Inc.		No Lease/Buy Analysis		
Masterpiece Fixed Assets Computer Associates			No On-Line Help	
MBA Fixed Asset Acct MBA Business Accounting		No User-Defined Fields		
MCBA Fixed Assets MCBA, Inc.		No Lease/Buy Analysis		
PRO-FAS Fixed Asset Sys Decision Support Technology				Not 5 Years on Market

3.3.1   Technical

The technical requirements for the new FA system are relatively non-restrictive. GH has a fairly sophisticated PC environment. It was thought that the absolute requirements of the new system would be met easily by most of the candidates.

3.3.2   Functional

The FA system to be chosen needs to meet several important functional requirements. The most important users of the system include accounting, tax and operations areas. The single most important user of the new FA program is the accounting and finance group, because it is responsible for maintaining the accounting system. A high priority requirement for it is a seamless transition from the current system to the new one.

For the tax department, the present system does not adequately meet their needs for an integrated financial and tax reporting system. It is the heaviest user the FA system as a decision-support tool. By projecting the company's assets under the various book and tax methods, they are able to report to corporate management concerning tax implications of large capital outlays.

The operations department is another area with requests that are very specialized. Because of the specificity, the project team believes that these requests will be the first to go unfulfilled should they add significant costs. A specific itemized breakdown of the various expanded functional criteria is listed below with corresponding explanations.

Flexible Reporting: The new package needs to be sufficiently flexible to generate user-defined reports. A flexible reporting ability would also aid in GH's expanded functional criterion of handling asset tracking by project. It could give totals of both pending and completed AFE projects. A flexible report writer would do this by using either a user-defined field or a specific area of the description field that would hold the AFE number. The report writer would then accumulate the asset totals that contained the particular AFE number in question.

Easy Maintenance: GH needs a system that would manipulate asset data in a quick and efficient manner. This is a subjective criterion that might be helped by the use of templates for like-kind additions or "one screen" maintenance. A supplement to easy maintenance is supplying addition/transfer/retirement and depreciation entries to the GL   These can be provided in an ASCII type file printed by the new system that can be interfaced to the GL. The FA system should be able to show these entries to the user at any time during the month while the adds/transfers/retirements are being input to the system; it should be a real-time type journal entry.

Comprehensive Tax Depreciation Methods: The tax department needs a system that thoroughly handles current allowable tax depreciation methods (including ACRS, MACRS, ACE, FASB96 and ADR in half year, etc.). The ability to create custom depreciation methods is also required. GH's tax department also wants a FA system that would project asset depreciation for use during the planning process. Projections should be possible for all records using either straight-line, tax or custom methods.

Compute Governmental 10K and 10Q schedules: The current system does not calculate quarterly and annual property schedules for compliance with Securities and Exchange Commission (SEC) regulations. As a publicly traded C corporation, Hospital Intergroup must comply with these requirements. These schedules, which provide the SEC with records of asset additions and retirements, are time-consuming to prepare by hand. The new system should automatically create them through the use of "hard coding", thus saving valuable time at year-end for the FA accountant.

Import/Export of Data: The ability to import/export data is of substantial benefit since the planning process at GH is manual and piece-meal. Export of data to spreadsheet or database management systems (DBMS) allows faster generation of capital expenditure budgets or depreciation projections based upon planned acquisitions.

Bar Code Compatibility: GH currently has in place a receiving system which uses bar code readers to receive pharmaceuticals and equipment from different vendors. It is important that GH acquire a FA Ssystem which tracks asset movement carefully because it owns many expensive assets which are frequently transferred among the business units. To facilitate this tracking process, operations wants a FA system that generates bar code labels for "tagging" the assets. This bar coding allows assets to be received at other locations by simply reading the assets tags. This saves time in the receiving section of GH, as well as facilitates the ease of periodic FA inventories.

Complete Project Accounting: As noted earlier, GH has a system in place called the AFE. This system should have the capability to track the running total of asset costs by AFE number internally. It should be able to have the base AFE dollar amount input and displayed, at any given time, as well as current spending and total authorized spending (with different variances such as percentage spent for the project-to-date). This could be accomplished through a user-defined field, which would accumulate these expenditures. A report writing system would then be used to disclose these expenditures as requested.

Lease/Buy Considerations: The finance function often evaluates whether to lease or buy equipment. The FA system to be acquired should support basic lease/buy decision-making analysis by showing the present costs of either method on an inquiry basis before the actual decision is made. This would allow the appropriate level of management to assess benefits or drawbacks of either alternative.   An evaluation by the FA software of capital lease and operating lease considerations would also be helpful.

Multiple Users: GH's local area network will permit multiple users on its new FA package. While only the FA accountant would have access to manipulate the database and create journal entries (to protect the AFE system), many users would be able to make inquiries of the database and extract information for planning or other purposes. The LAN version of the package should be flexible and include security to limit the access to specified users.

Upgradeability: It is assumed that GH will not be able to afford the total package that is initially desired. To compensate for this fact, GH desires a system in modular format which could be upgraded to offer more features. The ability to expand its available database, or enhancements such as report writers or bar code readers, would be valuable if the packages that contain these features in the short list were not chosen.

3.3.3   Documentation

The software package to be chosen should be supported by strong documentation and vendor support. GH has already determined that it will not accept a package that does not include on-line help and /tutorials.

An expanded list of documentation-related criteria that GH would like to have met by a new package is:

a)   Thorough Coverage of Items: Documentation should be easy to read with clear instruction for all functions and add-ons that may be available. This would include new manuals for possible future up-grades.

b)   Readability: A supplement to the on-line tutorial would be an easily readable handbook with good cross-referencing.

c)   On-Site Training: The vendor should have a local office that is readily accessible for on-site training or emergency visits. An acceptable alternative to this criterion would be the willingness of the vendor to make trips to the local business units for training. This could be accomplished through local seminars that might be available at a reasonable cost.

3.3.4   Vendor Information

GH established relaxed vendor criteria. It did not set a pre-established price limit on the short-list of packages. Management believes that the new package's worth would be based upon point costs per dollar and not overall package cost, as it did not want to eliminate a good (though expensive) package solely on the basis of overall price. Nor did it want to miss out on functionality due to a pre-set dollar ceiling. Vendor requirements include the

following:

a)   Length of Offering: GH wants a package supplied by a vendor which has at least five years in the market with a FA program. This is a criterion that must be met in order to assure GH management that the program has been thoroughly "de-bugged" through extensive customer suggestions for improvements.

b)   Vendor Reputation: This assessment would be made through referrals from current clients as well as overall perception in the market.

c)   Enhancements: The availability of enhancements would allow GH the opportunity to supplement its system at a later time. That is, the availability of enhancements suggests the package will continue to be supported for some time.

d)   Level of Prior Sales: A software package with a strong market share demonstrates public trust in the product.

3.4   Final Software Selection

GH chose the software package most suitable for its needs by summing the totals of the evaluation matrix (see Table 3) that depicted the point totals for each of the FA packages on the short list. *FAS 2000* achieved a total of 454 points of a possible 490, or 93 percent. *CORP A.D.S.* was second with 406 points, or 83 percent coverage. GH required that, to be considered a viable choice, the FA packages must meet the policy standard of a minimum of 80 percent of total requirements. For any package, failure to meet this hurdle rate would result in disqualification from final selection. The FA package from Open Systems failed to meet the hurdle rate.

The final criterion used to select the optimum FA package is "value." This criterion measures the cost in dollars per each requirement point. In order to obtain the value of each package, GH developed a ratio of the cost per point. For *FAS 2000*, the cost per point was about $22, which is significantly better than the more than $34 per point achieved by *CORP A.D.S.*

3.4.1   Alternatives

If none of the three FA software packages under review met the hurdle requirement of 80 percent of the total performance points possible, then other alternatives would be sought. After careful review of both GH's environment and its initial screening criteria, the selection committee chose the only two criteria that it could possibly relax. The first is the vendor requirement of having a version of the product in the market for over five years. Several FA packages, which did not meet the five-year time constraint, may have been suitable alternatives. A second initial screening criterion that the group could relax was concern about documentation and training. On-line tutorials are not absolutely necessary for users to utilize the package. The same objective could be accomplished if the documentation was complete and user-friendly. Because two of the final three software packages met the 80 percent rule, there was no need for the committee to search for alternatives.

3.5   Final Stage and Confirmation

Assuming that FA software has been selected, the project team is ready to confirm the selection by developing some actual applications based on the chosen FA system. The primary reasons for this stage are to ensure that the FA package can be used effectively and to provide one last chance to reconsider the software decision. For potential clients, reputable vendors will likely provide access to their package(s) available at least on their (vendor's) computing facilities.

It is often difficult to determine the degree of user satisfaction until the design process has begun for specific applications utilizing the selected accounting software. Therefore, this stage, designing demonstration prototypes, can provide significant benefits before finalizing the selection decision.

Table 3: Evaluation Matrix

		CORP A.D.S.		FAS 2000		Fixed Assets	
Technical Criteria	Weight	Score	Points	Score	Points	Score	Points
64 Bit Processor (AMD or Intel)	3	6	18	10	30	9	27
Expandable to 8 GB RAM	3	7	21	9	27	10	30
200 GB Secondary Storage(9ms)	3	10	30	9	27	10	30
32 Bit LINUX Compatible	3	9	27	10	30	9	27
Sub Total			96		114		114
Functional Criteria							
Flexible Reporting	2	10	20	9	18	7	14
Easy Maintenance	1	10	10	10	10	9	9
Comprehensive Tax Depreciation	3	9	27	10	30	3	9
Compute Govt 10K/10Q Schedules	3	7	21	6	18	6	18
Import/Export to Spreadsheets	1	10	10	10	10	7	7
Bar Code Compatibility	1	9	9	10	10	0	0
Complete Project Accounting	3	10	30	7	21	9	27
Lease/Buy Considerations	3	3	9	10	30	6	18
Multiple Users	3	9	27	10	30	8	24
Upgradeability	1	10	10	9	9	10	10
Sub Total			173		186		136
Documentation and Training							
Thorough Coverage of All Items	3	10	30	10	30	10	30
Readability	2	8	16	8	16	8	16
On-Site Training Ability	3	6	18	10	30	0	0
Sub Total			64		76		46
Vendor Information							
Length of Offering	3	10	30	10	30	10	30
Vendor Reputation	2	10	20	9	18	7	14
Add-on Enhancements	2	9	18	10	20	5	10
Number of Copies in Market	1	5	5	10	10	5	5
Sub Total			73		78		59
Grand Total (Maximum = 490)			406		454		355
Percent of Total Possible			83%		93%		72%
Estimated Cost			$14,000		$10,000		$2,500
Cost Per Point			$34.48		$22.03		$7.04

Based on the capabilities of the selected FA software as experienced in a prototyping exercise of specific applications (e.g., calculating depreciation schedules), the definition of user requirements might be altered to include package features not previously considered, or to change or eliminate others. The modified requirements should be reviewed with the system users. The effect of accounting software deficiencies perhaps can be minimized by altering user procedures or postponing the implementation of some requirements until software enhancements could be made.

Typically, the specific applications being developed require certain functions and interfaces not provided by the chosen software. If a FA package does not meet all the functions requirements of a system, the following alternatives should be considered:

a)   persuade the vendor to include additional features;
b)   develop supplemental software; or,
c)   modify the vendor's software

The chosen alternative will depend on the extent of the FA software's deficiencies, the potential costs and benefits of alternating the software, and the size and technical skills of the organization's programming staff. The third option is usually not viable, as vendors will not provide a copy of their source code which is necessary for any modifications to the functionality of the software package.

4.0   SUMMARY AND CONCLUSION

The particular ranking procedure may not be a critical element in a software and evaluation and selection process that begins with a screening of software alternatives. Given a short list of packaged software provided by the EBA, with its guarantee of minimal acceptable performance levels for each screening criteria, the LWA or MAUT choice compensatory choice model would produce essentially the same ordering of the short list of software.

Supported by the LWA choice model as applied in this case study of accounting software, the detailed evaluation of a short list of packaged software reduces the risk of implementation failure by helping to ensure the selection of a software alternative that best meets requirements. By expediting a purchase decision for a FA system, this combination of EBA (non-compensatory choice model) and LWA (compensatory choice model) also accelerate the benefits (less expensive and faster implementation) to be derived from package-based system development. In addition, the last stage of software confirmation, essentially a test drive before purchase, further ensures the selection of the best packaged alternative and provides a final option to consider a custom-built system if that proves to be the best choice.

The most critical phases of the methodology are the first (i.e., the development of a shortlist) and the third (design and trial of specific applications with the selected package). Initially, the screening process determines whether an accounting package is feasible and reduces the number of FA systems to be evaluated in detail. Finally, the development of some specific applications with the selected FA package provides a last chance to consider building a system from scratch. No unified and comprehensive software evaluation and selection methodology as presented herein has been heretofore suggested. It is the authors' belief that this approach is quite easy-to-use and pragmatic in efficiently choosing an accounting package.

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