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**A Suggested Model to Evaluate Accounting
Software for Small Businesses - A Field Study
on the Canadian Business Environment**

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A SUGGESTED MODEL TO EVALUATE ACCOUNTING SOFTWARE FOR SMALL BUSINESSES - A FIELD STUDY ON THE CANADIAN BUSINESS ENVIRONMENT

Abstract:

There are an increasing number of small businesses that are transferring their accounting systems into computerized systems. There are several Accounting Software systems available on the market addressing a broad range of needs, company size, and industries. Small businesses could not simply select the appropriate software that fits their needs due to the lack of experienced calibers. Previous research dealt with the process of selecting a software or providing a model for selecting software for large enterprises. In this study, we develop a model that can help small businesses select a new accounting software that is most suitable to fulfill their needs. The model proposes that the selection of accounting software is affected by the needs and constraints of a small business and the essential and esoteric features of the software in the market. The importance and contribution of the esoteric features have been weighed in the model by the expert opinions of Canadian professional accountants.

Keywords: Accounting software; Accounting information System; Small business; Decision making model.

1. Introduction:

According to Statistics Canada (Industry Canada, August 2013), 98% of businesses in Canada are small businesses that employ from 1 to 99 employees. Due to the direct impact that AIS has on company performance (Grande, Estébanez, & Colomina, 2011; Kharuddin, Ashhari, & Nassir, 2010) an increasing number of small and medium enterprises (SMEs) are transferring their accounting system into Accounting Information Systems (AIS) The extant literature shows the importance of AIS for SMEs in a competitive world. Various accounting software is available in the market. While this software addresses the needs of many companies, small businesses find it difficult to select one that fits their need due the lack of appropriate expertise. McClure (McClure, 2007) suggests that the majority of small businesses do not have the resources to amass the huge amount of data, nor do they have the skills required to make it work for them. He adds that no one needs a small business accounting package that works like one of the big companies use. Rather they need a small business accounting package that works just like the best accountant they ever knew. The software vendors are desperately fleeing the enterprise market, are hoping to push their feature-laden, bloated software applications into the SMEs market. O'Bannon (O'Bannon, 2008) assures the same idea by stating that these systems have grown in functionality; they have often become increasingly difficult to use for small business owners.

The importance of choosing the most suitable package is emphasized by Raghunathan & Wobser (Raghunathan & Wobser, 1995) when they stated that: a computer-based information system for accounting can help an organization to manage its finances and operations efficiently, and provide management with timely and accurate information about the company, its customers, creditors, and competitors.- They added that the selection of appropriate hardware and accounting software represents a major challenge for many small businesses. Herter (Gerry, 2011) supports this, by stating that generic accounting programs may be simple to setup, but can be too limiting; whereas advanced accounting software and industry-specific software can be much more beneficial, but at the same time more challenging to implement and use effectively.

Hodgson & Ponte (Hodgson & Ponte, 1991) stated that, the selection of an appropriate accounting software package can be complicated by the need to take into account various accounting, technical, management information, and control

requirement Mattingly (Mattingly, 2001) supported this by stating that choosing the right accounting software is becoming more difficult as the software market becomes increasingly fragmented. In many cases, more product information makes decision-making more difficult rather than less. This supports the idea behind this research as providing such a model to the small business will assist them in choosing the most appropriate software and reduces the risk of choosing unsuitable software. Small businesses lack the ability to determine which features are more important than others. Doug and Randy (Sleeter & Johnston, 2005) stated that to give an advise to a client related to choosing a software, there must be an understanding of the core product offerings from each company; to learn about the. key features of each approach; to. know how third-party offerings impact the products; and to understand the limitations of each recommendation. Tate (Tate, 1999) summarizes the problem by stating that the majority of organizations that select new systems get it wrong. Research studies showed that businesses generally were disappointed with their new purchases, as they did not get the expected benefits.

This research aims to develop a model to rank accounting software to small business. To develop such a model, requirements of small businesses are determined together with the constraint put by the business. Features of the most common accounting software are surveyed. Then a model is developed to capture the needs of the small business, considering professional accountants expertise, screen the accounting software packages and rejects those that fail to meet the requirements and constraints as a first phase. Then, it would start ranking the software to the small business by calculating an index factor for each software, as a second phase. A list of ranked accounting software packages is generated as a third phase. An optional fourth phase is introduced to set apart the most suitable package in case of close index ranking of two or more packages. This will help small business to reduce their risk of buying the unsatisfactory software and optimize their investments in such an asset.

2. Literature Review:

Results revealed that small business do not have the capabilities to assess the accounting software that would be more appropriate to them (Raghunathan & Wobser, 1995). They conducted a research by interviewing a sample of 20 small business to stand on the practice of acquiring an accounting software. The results revealed that 35% of the sample did some research and saw some demos before acquiring the package, while the other 65% did not take any serious research before

acquiring the software, rather, they relied on the advice of their accountant or similar firms ..etc. It has also been concluded that those firms that took the advice of others in adopting a certain package were more satisfied than those who did their research before buying. This result would be a good indication of the importance of this research as it shows that the small businesses are not capable of determining their needs in an efficient manner. Another study (Ivancevich, Ivancevich, & Elikai, 2010) provided insight into which factors and features are most important to users in selecting, retaining, or changing accounting software packages. The results revealed that there are differences in priorities of software features between large and small sized businesses. Such a study shows the importance of targeting the model to small sized business to be more precise.

Hodgson & Ponte (Hodgson & Ponte, 1991) conducted a study where they set a group of determinants that should be considered during the process of acquiring a new software packages. Although there are different new determinants that appeared since their study due to technological advancements, and also some of the determinants that they mentioned became obsolete. However, the determinants that they mentioned are good starting point for this research.

Another research (Mattingly, 2001) focused on the features of accounting software. It was mentioned that there are common features, which are present in the different accounting software; however, there are other features, which are targeted to a particular business. The paper discussed several aspects in the process of software selection. However, it did not show a model that a small business can rely on. This research is to benefit from such discussed aspects while building the suggested model.

Some studies tried to compare between the software, which is present at the time of conducting the study (Hedtke, 2007) where six accounting packages are compared based on the following criteria; ease of use; product features; documentation; trial version and money back guarantee; and reporting and exporting option. Although the comparison is useful and included remarks on detailed functionalities, however, it is not useful for the continuous rigorous development in such a field. In other words, it could be useful for the businesses that were deciding to buy such packages at that time and were willing to adopt one of those packages. This paper is proposing a dynamic model, which will accept changing of variables and hence adaptable to the recent advancement in technology in such a field.

A more advanced type of studies worked on developing a model (Abu-Musa, Summer 2005), where a mathematical model is prepared. The study determined the main features affecting the selection of accounting software. Although,, the model is very flexible,, it depends to a great extent on the experience of a selecting committee in determining the relative importance of each feature. Such luxury is not available to small businesses. This paper will be providing an option to use the experience of experts in determining the relative importance of each feature. This is going to be set through a survey among the professional accountants. In addition, actual features of the most popular software packages (which are designed for small and medium-sized business) are collected (by a field survey) and summarized to be included in the model..

Finally, there are studies that explored; the difficulties that are facing the companies when assessing and implementing accounting software. Other research addressed the difficulty facing the process of acquiring an accounting software such as an article (Meal!, 2009) which mentioned that for selecting software for large enterprise several issues has to be addressed before any decision is taken, such as cost, fitting with corporate strategy, vendor reputation and flexibility. While other papers showed the common mistakes in the process of selecting accounting software such as a paper by Dance (Dance, Sep. 95) where twelve mistakes of software selections are listed.

This paper is proposing a dynamic model that is adaptable to small business needs, including expert opinions, constraints, features that are appropriate for small business, and considering the common mistakes in selecting an accounting software package.

3. Research Propositions:

Based, on the extant literature and an examination of the existing accounting packages in the market, this study presents the following two propositions:

Proposition 1: Accounting software packages on the market have varying features.

An examination of the existing accounting software packages reveals that there are two types of features embedded in these packages - the essential features and the esoteric features. While the essential features are the characteristics of the accounting system that are needed for all types of businesses, the esoteric features are the attributes of the accounting package that are not present in all small businesses. All

accounting software packages that are available in the market have more or less the same essential features. However, these accounting packages significantly differ from one another in terms of esoteric features. Thus, while an accounting package may have the features for a manufacturing company; it may lack the features of a service-related company.

Proposition 2: Accounting professionals are consistent in their evaluation of the software features.

Accountants' evaluation to the relative importance of each feature plays an integral part in building a model of selecting accounting software for small businesses. Testing the validity of such proposition and calculating the relative weight of each software feature, would be very helpful in building the model.

4. Variables Affecting the Selection of an Accounting Software:

There are many factors affecting the decisions of acquiring an accounting software for a small business. There are also certain constraints that govern such decision. For example, the total budget allocated to such software, the needs of the small business, and available resources to run and manage the software.

The selection of an accounting software package by a small business is driven by the needs of the business. The business needs vary depending on the type of business. For instance, a retail business will need a strong inventory module whereas an online seller may require an e-commerce module. Likewise, the needs of a service-related business, law office or small non-profit will be different as well. Thus, not all small businesses will place the same importance on the same features of the accounting software package. That is, depending on the type of business; small businesses will have varying perception of the importance of the features that are included in the existing: packages on the market. For small business, sometimes two companies working in the same field of business could require different features, for example, some owners would use the mobility features while for others, such features would not be that important to them, while other features are and vice versa.

Based on reviewing the following references (Hodgson & Ponte, 1991; Ivancevich et al., 2010), (J Carlton Collins, 1999), (Sleeter & Johnston, 2005; Viglas, Fitsilis, & Kameas, 2011), (Abu-Musa, Summer 2005), (Giovinazzo & Nash, 1982) the

variables affecting the decision of acquiring an accounting software from a small business owner's perspective could be summarized into four categories as follows:

4.1 Costs:

Cost is one of the main variables that affect the decision of acquiring a new accounting software. There are different costs associated with such a decision, which could be summarized as follows.

- Annual operating costs: Such costs include the cost of additional payroll of employees who will be hired to operate the new software.
- License: Some software needs a one-time paid license or an annual renewal license, while others are open source and does not require a license.
- Implementation: This includes the costs of implementation and installation.
- Database: Some databases require a subscription per user.
- Hardware costs. The costs of the computers, printers, and other peripheral devices that are needed to operate the system.
- Maintenance: Some software vendors provide services such as support and backing up the system..etc. for monthly or annual fees.
- Training Costs: Although is not common for small business software packages, some small business might find it appropriate to get training whether from the vendor or a third party to know how to use the software.

As the amount of an investment in accounting software is a determinant factor for accepting or rejecting a certain package,, so putting it as a threshold to continue with the process of testing the fit of the software to the small business needs is rational.

4.2 Software Essential Features:

Those are the features that the accounting software is rejected if they are not present Such features could be summarized as follows:

- Preparation of the basic financial statements: The financial statements are the final products of an accounting system. If the accounting software does not generate the financial statements, it should be rejected.

- Preparation of tax filing: In Canada as in other parts of the world, filing accurate tax reports at the end of the year is crucial. In addition to that, the accounting system must account for the Sales taxes (GST) and Harmonized Sales Taxes (HST) and Provincial Sales Taxes (PST).
- Managing Accounts Receivables: It is important for any business to know the balances of its credit customers, and to keep track of the due dates of their payments.. If this module is not present, the accounting software packages should not be accepted.
- Managing Accounts Payables: Keeping track of suppliers and knowing the balance that the business owe to each one of them, and considering the terms of purchase is necessary..

As such features are crucial in accepting or rejecting an accounting software, they are also considered as threshold features. If any accounting software does not provide such features, it will be dismissed in the first phase.

4.3 Esoteric Features:

Those features could be classified into the following categories:

4.3.1 Accounting & Business Features:

The features in this category are related to the usefulness of the accounting process. However, it is noticed that some accounting software packages do not provide some of them. Those features includes:

- Tracks time
- Creates estimates (quotes)
- Manages and pays bills
- Manages vendors
- Manage Items
- Manages Projects
- Mail invoices

4.3.2 Time Saving Features:

The features of this category are not: vital for the accounting process; however, they save time and help the user in recording the business transactions. Those features includes:

- Import Bank Transaction
- Supports multiple tax rates
- Automatic billing
- Converts estimates to invoices
- Multi-currency billing
- Employee time sheets
- Print checks

4.3.3 Remote Access and Mobility

The features in this category are mainly related to small business style of doing business. It is common that the owner of the small business to use his/her mobile device to capture expenses and sends invoices on the go. Such features make the accounting software friendlier to the user and facilitate the accounting process for the owner of the small business.

- Send invoices by mobile
- Mobile expense tracking
- Mobile receipts image capture
- Mobile Time Tracking
- Edit Customer data by mobile
- IOS app
- Android App

4.3.4 Additional Business Services:

The features that fall in this group are those features that add more value to the accounting software package, by allowing more accessibility and additional advanced features that business might need or use.

- Credit Card Processing
- Payroll processing
- E-Commerce & Point-Of-Sale (POS).
- Accountant or a CPA access
- Accepts electronic signatures
- Advanced inventory management

4.3.5 Miscellaneous Features:

Those features are mainly helping users to use the system and to be able to use the system's output in different formats.

- Ability to Upgrade
- User Manual
- 24/7 online help
- Technical help support
- IM/Chat support
- Community-based Forums
- Export to Excel
- Export to Pdf

4.4 Software Developers Reputation:

There are different variables related to software developers' reputation that might have an effect on the decision of acquiring a software. Although, those variables are

important, but they are not a determinant factor of rejecting the software. Accordingly, it is decided to consider them in the model but as an additional phase. Those variables could be summarized as follows:

- Software developer’s market share: This also is a way of reflecting on the vendor’s reputation and reliability, as in most cases whenever the vendor holds a higher market share the more reliable they are.
- Software developer’s financial health: The relationship between the small business and the vendor does not end by buying the software; rather it continues for a long time. As small business depends on the vendor for software maintenance, bug fixing, additional customization, and other services, knowing the financial health of the vendor is important to predict any problems that faces the vendor in the future and could have some implications on the small business accordingly.
- The warranty provided by the software developer: The warranty protects the small business from having to pay extra charges to fix problems, which are related to software bugs, or any unexpected circumstances that are not controlled by the business.
- Software developers’ general reputation: As usually software developers who enjoy good reputation are supportive to their products and customers.

5. Research Methodology:

A survey of the most commonly used small business accounting software is conducted. The purpose of the survey is to capture the features that are included in each software package and to test if there are any differences in the software features from one software package to another. Software features are analyzed, and the essential features that must be included in any accounting software are excluded, as the software that does not include such features is rejected and will not be included in the comparison. Such features such as preparing the financial statement or tax filing...etc. The remaining features are those esoteric features that could be either industry related or to make the software friendlier to the user. Eased on surveying of twelve of the most popular software packages⁽¹⁾ and reviewing the previous

⁽¹⁾ list of the software package surveyed is presented in appendix “A”.

literature, the different variables affecting the decision of acquiring an accounting software is determined.

A questionnaire is then prepared to take the opinion of professional accountants of the importance and the need for the different variables⁽²⁾. The questionnaire serves two goals. The first is to test if there is any significant difference in the opinion of the professional accountants in regards to the need and the importance of each of the features. The second goal is to measure the relative importance of each feature from a professional accountant perspective. Based on the descriptive statistics, which is conducted based on the analysis of both the survey and the questionnaire, a model is developed. The model will be tested by processing the data of two hypothetical companies' needs and using the features of the software packages that are used in the study. An index is developed for each package for each company, and the software is ranked based on such an index.

6. Field Survey and Validation of Propositions:

To design the model based on practical real life cases, a field survey is conducted on a sample of accounting packages and a questionnaire is distributed to professional accountants. The research propositions are then validated as follows:

Proposition 1: A search is done on the internet to find out the most common accounting packages used by small business. The search resulted in determining twelve accounting software packages. The features of such packages (whether essential or esoteric) are analyzed and the esoteric features are then presented in Table-1 that shows the percentages of software encompassing each of the feature. It also shows the features contained in each of the software. The findings presented in Table-1 suggest that the common features exist in all the software and that the esoteric features are not the same for the existing software as the percentages of these features are not the same for all software. This supports our Proposition "1" that the accounting software packages on the market have varying features.

⁽²⁾ A copy of the distributed questionnaire is attached in appendix "C".

	Fresh books	Quick books	Sage One	Zoha	Xero	Accounteje	Less accounting	working point	FREEAGENT	YENDO	HARVEST	Kashoo	% Software with the feature
Web Access	1	1	1	1	1	1	1	1	1	1	1	1	100%
Creates customized invoices	1	1	1	1	1	1	1	1	1	1	1	1	100%
Data Backup	1	1	1	1	1	1	1	1	1	1	1	1	100%
Generates Reports by responsibility level	1	1	1	1	1	1	1	1	1	1	1	1	100%
Multi-platform browser access	1	1	1	1	1	1	1	1	1	1	1	1	100%
mobile expense	1	1	1	1	1	1	1	1	1	1	1	1	100%

tracking													
% of features in the software	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Esoteric Features													
Tracks lime.	1	1	1	1	1	1	1	1	1	1		1	92%
creates estimates (quotes)	1	1	1	1	1	1	1	1		1		1	83%
Manages and pays bills	1	1	1	1	1	1	1	1			1	1	83%
Manage Invoices	1			1	1			1					33%
Import Bank Transaction & prepare bank reconciliation	1	1	1	1	1	1	1	1	1		1	1	92%

Automatic billing	1	1	1	1	1	1	1	1	1	1			83%
Converts estimates te invoices	1	1	1	1	1	1	1	1	1	1		1	83%
multicurrency billing	1	1	1	1	1	1		1	1	1	1		83%
employee time sheets	1	1	1		1			1		1			50%
sends invoices by mobile	1	1	1	1	1	1	1	1	1		1	1	92%
Mobile receipts image capture	1	1		1		1	1		1	1	1	1	75%
Mobile Time Tracking	1	1	1	1		1	1	1	1	1			75%
Edit Customer data by		1	1			1	1	1	1		1	1	67%

mobile													
IOS app	1	1		1	1	1		1			1	1	67%
Android App		1		1	1								25%
Credit Card processing	1	1	1	1	1	1	1		1			1	75%
Payroll processing	1	1	1		1	1		1				1	58%
ecommerce & POS	1	1	1		1	1	1	1					58%
Accepte electronic signatures	1	1	1		1				1	1	1		58%
Inventory Tracking		1	1		1	1				1	1		50%
Ability to upgrade		1	1										17%

User Manual	1	1	1				1		1		1		50%
24/7 online help		1	1										17%
Technical help support		1	1			1	1						33%
IM/Chat support		1	1										17%
Community-based Forums		1	1			1	1	1	1	1	1	1	75%
Export to Excel		1	1							1			25%
Export to Pdf		1	1							1			25%
% of features in the software	62%	93%	83%	48%	59%	62%	52%	55%	41%	45%	38%	41%	

Table 1: Percentages of features in a software and the percentage of the availability of each feature.

In Table-1, a feature value of “1” for a software indicates that the feature exists in the software. The percentages of software for any esoteric feature are less than 100%, which indicated that not all software possess all the esoteric features. Similarly, the percentages of features for any specific software are all less than 100%, pointing out that not all software possess all the esoteric features.

Proposition 2: A number of 35 questionnaire were distributed randomly among professional accountants. A number of 25 valid questionnaires are returned back. The questionnaires are analyzed and an independent t-Tests were conducted to validate the proposition that accounting professional are consistent in their evaluation of the software features. To conduct the t- Tests, the respondents were randomly placed in two categories - Group 1 and Group 2. The results of the t-Tests are presented in Table-2. The findings suggest that accounting professionals were consistent in their views on the importance of the software features except for the feature “multi-currency billing”. The p-value for this feature is 0.05, indicating that the professionals disagreed on the importance of this feature.

Feature	Group 1 Mean	Group 2 Mean	Mean Difference	t-Stat	p-Valui
Accounting & businessFeaturesWeb Access	4.33	4.25	0.08	0.200	0.843
Creates customized invoices	3.75	3.42	0.33	0.686	0.500
Tracks time	3.67	3.33	0.34	0.733	0.472
creates estimates (quotes)	4.58	4.50	0.08	0.277	0.784
Manages and pays bills	4.50	4.83	-0.33	-1.076	0.294
Manage Invoices	4.50	4.83	-0.33	-1.076	0.294

Feature	Group 1 Mean	Group 2 Mean	Mean Difference	t-Stat	p-Valui
Time Saving features Data Backup	4.58	4.75	-0.17	-0.715	0.482
Generates Reports by responsibility level	3.92	3.92	0.00	0.000	1.000
Import Bank Transaction & prepare bank reconciliation	4.50	4.58	-0.08	-0.277	0.784
Automatic billing	3.67	3.67	0.00	0.000	1.000
Converts estimates to invoices	4.50	4.83	-0.33	-1.076	0.294
multi-currency billing	3.25	2.50	0.75	2.075	0.050
employee time sheets	3.67	3.33	0.34	0.733	0.472
Remote Access and Mobility Multi-platform browser access	4.50	4.83	-0.33	-1.076	0.294
sends invoices by mobile	4.50	4.83	-0.33	-1.076	0.294
mobile expense tracking	4.50	4.83	-0.33	-1.076	0.294
Mobile reciepts image capture	4.50	4.83	-0.33	-1.076	0.294
Mobile Time Tracking	4.50	4.83	-0.33	-1.076	0.294
Edit Customer data by mobile	4.50	4.83	-0.33	-1.076	0.294

Feature	Group 1 Mean	Group 2 Mean	Mean Difference	t-Stat	P-Valui
IOS app	4.50	4.83	-0.33	-1.076	0.294
Android App	4.50	4.83	-0.33	-1.076	0.294
Additional Business Service Credit Card processing	3.83	3.25	0.58	1.502	0.147
Payroll processing	3.67	2.67	1.00	1.933	0.066
Ecommerce & POS	3.83	3.25	0.58	1.502	0.147
Accepts electronic signatures	4.50	4.83	-0.33	-1.173	0.253
Inventory Tracking	4.42	4.17	0.25	0.633	0.533
Miscellaneous Features Ability to upgrade	4.33	3.92	0.41	0.946	0.354
User Manual	4.33	4.25	0.08	0.172	0.865
24/7 online help	4.42	4.42	0.00	0.000	1.000
Technical help support	4.75	5.00	-0.25	-1.915	0.069
IM/Chat support	4.42	4.42	0.00	0.000	1.000
Community-based Forums	4.42	4.42	0.00	0.000	1.000
Export to Excel	4.50	4.75	-0.25	-0.692	0.496

Feature	Group 1 Mean	Group 2 Mean	Mean Difference	t-Stat	p-Valui
Export to Pdf	4.17	4.42	-0.25	-0.752	0.460

Table 2: Independent t-Tests

7. A Model to Select an Accounting Software Package:

Based on the above analysis and literature review, the following steps are taken to develop the model:

7.1 Small Business owner's requirement:

The small business owner is expected to list his/her requirements (needs) and then rank them according to its relative importance to his/her business. A special form is prepared to focus on the features that differ from one accounting software package to another and that which are business related to minimize the distraction of the small business owner. The small business owner would put a relative weight of importance for each of the features ranging from "1" to the least important to "5" the most important⁽³⁾.

7.2 The Suggested Model:

At the first phase of the model, three variables are included. Those three variables are the accounting software cost, the small business budget, and the software essential accounting features. If the accounting software package is in within the range of the small business budget and includes all of the essential accounting features illustrated earlier, it will be considered, otherwise, it would be rejected and will not be analyzed further.

At a second phase, the model applies the small business needs to the accounting information system. The esoteric features are weighted by the relative importance from both a business owners and professional accountants' perspective. The professional accountants' opinion regarding each feature is calculated by the summated score, which is the weighted average of the responses provided by the professional accountants. An index for each accounting software package is calculated as follows:

The relative importance of each feature is determined by multiplying the average weight of importance (based on the professional accountants' opinion) by either "1" or "0" where "1" means that the feature is available and "0" means the feature is

⁽³⁾ A sample is provided on Appendix "C"

unavailable by the relative importance of the feature from a small business perspective. The summation of all of the relative importance all features will form an index number for each software.

In the third phase of the model, the accounting software packages are ranked in an ascending order, where the highest index factor would be the most suitable package for a particular small business.

The model's fourth phase is regarded as an additional phase to set apart the accounting software packages, which have a close index factor. At this stage, the software developer's reputation is considered. The software developer's reputation index is calculated by multiplying the relative importance of the feature from a small business owner's perspective times the relative weight assigned to it by professional accountants by the number provided to each feature.

Adding up the software developer's reputation index to the previous calculated index for each software respectively will result in an additional preferential indicator that prefer one accounting software over another in rank..

The following flowchart illustrates the stages of using the model:

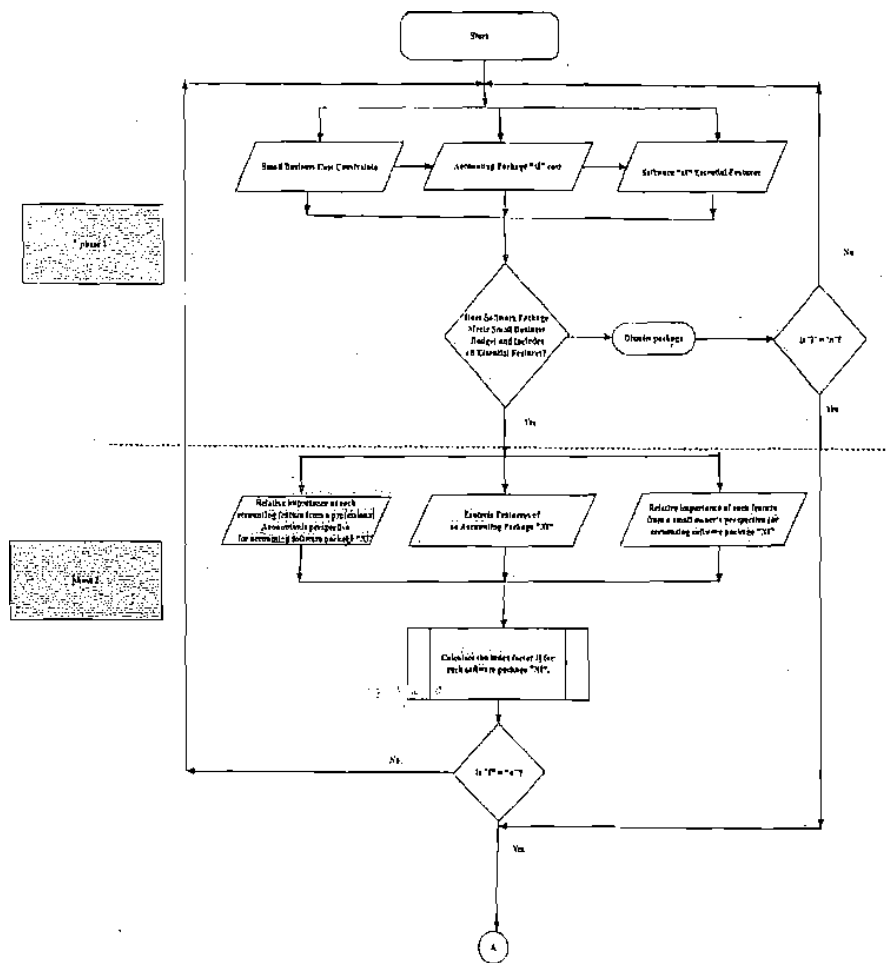


Fig. 1 - Flowchart Showing Phase 1 & 2 of the model

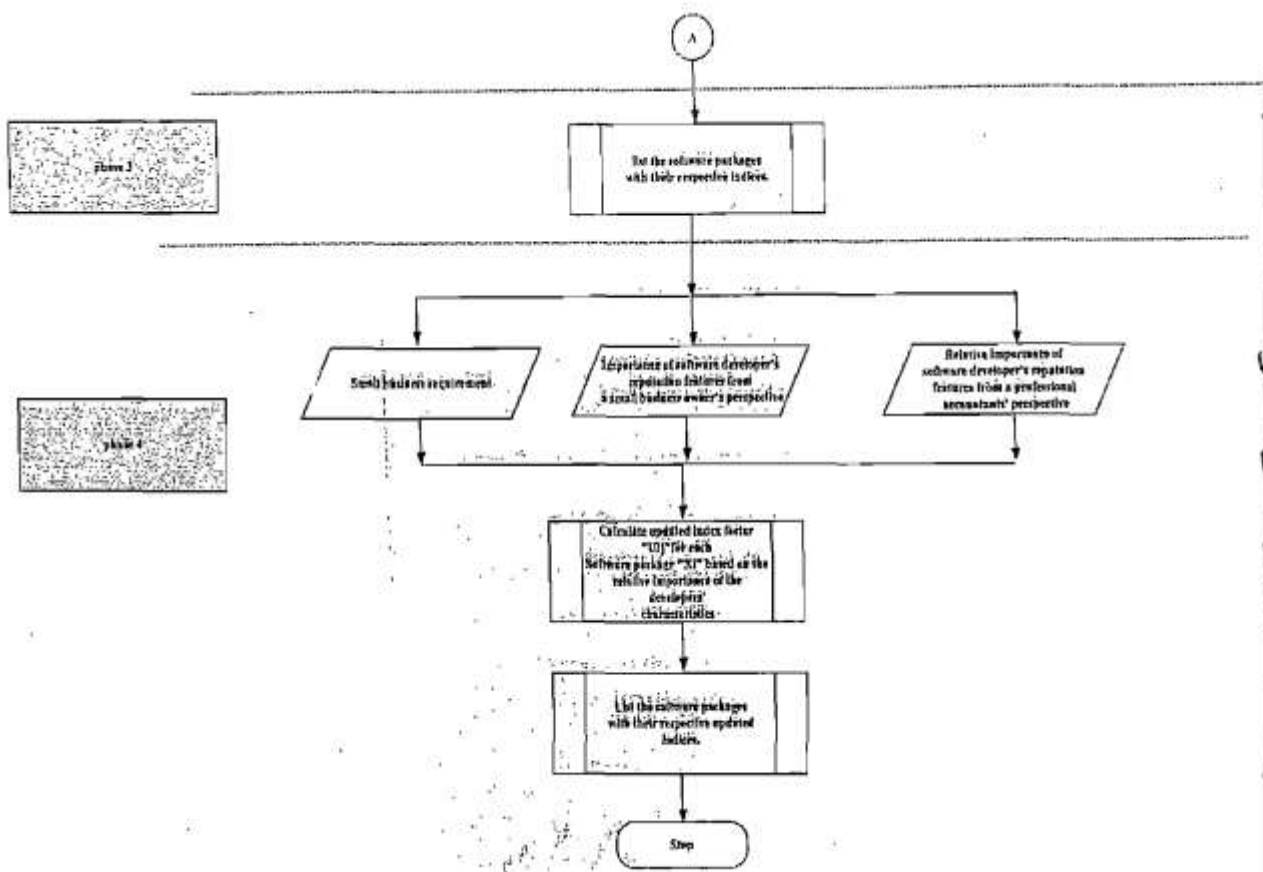


Fig. 2 Flowchart Showing Phase 3 & 4 of the model

7.3 Calculation of the Index Eactor and the updated Index Factor:

The Index Factor and updated index Factor resultant model of the flowchart in Figure 1 are calculated as follows:

Calculation of the Index Factor:

$$I_j = \sum_{i=1}^n B_{ij} F_{ij} W_{ij} \quad \text{Where:}$$

I_j = Index value for the j -th software

B_{ij} =

$\begin{cases} 1 & \text{if the } i\text{-th feature in the } j\text{-th software is needed} \\ 0 & \text{if the } i\text{-th feature in the } j\text{-th software is not needed} \end{cases}$

F_{ij} =

$\begin{cases} 1 & \text{if the } i\text{-th esoteric feature exists in the } j\text{-th software} \\ 0 & \text{if the } i\text{-th esoteric feature does not exist in the } j\text{-th software} \end{cases}$

W_{ij} = Weight of expert opinion for the i -th feature

Calculation of the Updated Index Factor:

$$UI_j = I_j + \sum_{i=1}^k B_{ij} D_{ij} W_{ij} \quad \text{Where:}$$

UI_j = Updated index value for the j -th software

I_j = Index value for the j -th software

$$B_{ij} =$$

$$\begin{cases} 1 & \text{if the } i\text{-th feature in the } j\text{-th software is needed} \\ 0 & \text{if the } i\text{-th feature in the } j\text{-th software is not needed} \end{cases}$$

D_{ij} = the i -th developer future figure in the j -th software as a percent

W_{ij} = Weight of expert opinion for the i -th feature

8. Testing the Model on Virtual Data:

Two hypothetical companies working in the same industry are used to test the model. The difference between the two companies is that the owner of the first company does not want to use the online features, and the mobility features, while the owner of the second company wishes to use such features and to have e-commerce features. Having everything else in common, the index for each software employed in this study is calculated, and the ranking of the software for each company according to the calculated index are presented in table-3:

Company 1			Company 2		
Rank	Software	index	Rank	Software	Index
1	QuickBooks	61.50	1	Sage One	130.54
2	Sage One	61.50	2	Fresh books	116.54
3	Fresh books	45.25	3	Less accounting	95.79
4	Account edge	45.00	4	QuickBooks	91.04
5	Xero	44.08	5	Working point	85.88
6	Less accounting	39.75	6	Xero	85.21
7	Working point	37.67	7	Yendo	83.79

Company 1			Company 2		
Rank	Software	index	Rank	Software	Index
8	Yendo	37.13	8	Account edge	75.29
9	Zoho	33.79	9	Harvest	72.25
10	Kashoo	30.79	10	Zoho	71.63
11	Free agent	25.88	11	Free agent	69.08
12	Harvest	23.33	12	Kashoo	69.00

Table 3: The results for ranking the software based on two hypothetical companies.

In certain cases, the index would be very close such as in the case of company 1, QuickBooks and Sage One have the same index number. In such a case, the second part of the model would be the differentiator by applying the updated index factor that includes the software developers' features. In the case of a tie, the owner could choose any of them. Table-4 illustrates the application of the developers' features assuming that QuickBooks has higher reputation and provides a warranty of 2 years while Sage One provides a longer warranty of 3 years. Having other variables in common and the small business owner values all features equally, the following updated index factor for both software developers for each of the companies is calculated as follows:

Company 1		
Rank	Software	Index
1	Sage One	88.59
2	QuickBooks	68.39

Table-4 Illustrates the results of the updated index factor of two software, which were equally ranked by using the basic index factor.

9. Conclusions:

Based on the previous study and analysis the following could be concluded:

- Accounting software packages provide a set of features that are common and are widely used in different businesses. However, there are some differences in related to other features, which could be related either to a special industry or special needs by the small business users.
- Accounting software packages designed for small business differ than that which is designed for medium or large business. For small business, they include features that are user-friendly and depending on using mobile devices in processing transactions.
- Professional accountants are consistent in their opinion regarding certain features.
- Small business owners could apply the model to rank the different accounting software packages. The accounting software variables could be updated to reflect the software features present at the ranking time; each business would put its needs and runs the model to help in ranking the software that is most suitable to its needs.

APPENDIX A

LIST OF PACKAGES SURVEYED

1. Fresh books.
2. QuickBooks for small business.
3. Sage One.
4. Zoho
5. Xero
6. Account Edge
7. Less Accounting
8. Working Point
9. Free Agent
10. Yendo
11. Harvest
12. Kashoo

APPENDIX B

SURVEY

Dear Professional Accountant

Thank you for taking the time to complete this survey. The objective of this survey is to develop a model that will help small businesses select an appropriate accounting software package for their overall accounting needs. In this study, a small business refers to the one that has less than 99 employees and capital less than \$2 million. Your expert opinions will provide us with an understanding of accounting software features that are deemed critical for small businesses and thereby help us develop a benchmark model for them to use in selecting the most appropriate accounting software package.

The survey will take about 10 minutes of your valuable time. There is no identifying information on this survey, and your answers are completely anonymous. Your frankness in answering the questions will help us understand important features of accounting software suitable for small businesses. While this information is important to us, you are under no obligation to complete the survey.

Please read the following questions/statements about accounting software features and indicate whether you agree, disagree or are indifferent that they should be available in accounting software package for small businesses. Also please express your opinion about the importance of each feature using the following scale:

1 = Not important at all; 2 = Somewhat important; 3 = Neutral; 4 = Moderately important; 5 = Extremely important.

Feature	Agree	Disagree	In differ	Rank of Import
Accounting and Business Features:				
- Web access				
- Ability to customize Invoices				
- Job time tracking (for services and industrial companies)				

Feature	Agree	Disagree	In differ	Rank of Import
- Job time tracks (for trading companies)				
- Creates Estimates (quotes).				
- Manage and Pay bills				
- Manage Invoices				
Time-Saving Features				
- Disaster Recovery feature - Automatic Backup system.				
- Generate customized reports				
- Import bank transactions & prepare bank reconciliations				
- Automatic Billing				
- Converts estimates to invoices				
- Supporting multi-currency				
- Employee time Sheet (for services and industrial companies)				
- Employee timesheets (for trading companies)				
Remote Access and Mobility				
- Multi-platform browser access				

Feature	Agree	Disagree	In differ	Rank of Import
- sends invoices by mobile				
- mobile expense tracking				
- Mobile receipts image capture				
- Mobile Time Tracking				
- Edit Customer data by mobile				
- IOS app				
- Android App				
Additional business Services				
- Credit Card Processing				
- Payroll processing				
- e-commerce capabilities.				
: Electronic Signature				
- Inventory tracking (for trading and industrial companies)				
- Inventory tracking (for service companies)				
Miscellaneous Features				

Feature	Agree	Disagree	In differ	Rank of Import
- Ability to Upgrade				
- Provides a user manual				
- Offers online help.				
- Provides technical support				
- IM/Chat support				
- Community-based form				
- Exporting to Excel:				
I - Exporting to Pdf				
I Variables related to accounting Software Developer: The developer of accounting software should:				
- Have sound financial health.				
- Have a reasonable market share				
- Provides warranties.				
- Have a good reputation				

APPENDIX C

Small Business Owner Survey

Please fill in the following form to capture your business needs. Please either answer by “Yes” or “No”, and then put the rank of importance for each feature, where “5” is the highest importance level and “1” is the least, while “0” means that you will never use this feature.

	Yes	No	Rank of Importance
Features			
Accounting and Business Features:			
Do you need to access your account via the web?			
Do you need to customize Invoices?			
Do you need Job time tracking?			
Do you create estimates (quotes)?			
Do you need to manage and Pay bills?			
Do you need to manage the Invoices?			
Time-Saving Features:			
Is an automatic Backing up of the system is of importance to you?			
Do you need to generate customized reports?			
Import bank transactions & prepare bank reconciliations			

	Yes	No	Rank of Importance
Would automatic billing save your time?			
Do you need converting estimates to invoices?			
Do you use multi-currencies?			
Do you keep attendance for your employees?			
Remote Access and Mobility			
Do you or the system users use different browsers?			
Are you willing to send invoices by mobile?			
Would you track expenses by your mobiles?			
Would you like to capture receipts image by mobile?			
Would you like to track time by your mobile?			
Would you edit Customers' data by mobile?			
Are you or system users use mobiles that use IOS?			
Are you or system users use mobiles that use Android?			
Additional business Services			
Do you sell using Credit Cards?			

	Yes	No	Rank of Importance
Do you have employees or going to hire employees?			
Do you sell on the web?			
Do you use an electronic signature			
Do you sell Merchandise?			
Miscellaneous Features			
Are you planning to expand business within the next five years?			
Is a user manual for the system important to you?			
Is online help of importance to you?			
Is technical support for the system is of importance to you?			
Do you think IM/Chat support is of importance?			
Is a community-based forum			
Do you need to export data and reports to Excel?			
Do you need to export data and reports to pdf?			
Software Developer's Issues:			

	Yes	No	Rank of Importance
Would the Financial health of the developer be of importance to you?			
Would the developer's market share be of importance to you?			
Is a warranty important to you?			
Is the developer's reputation of importance to you?			

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