A Study on Development of Financial Accounting Software for Chinese Agricultural Enterprise

Jiawei Wen*1, Hajime Kobayashi2 and Ichizen Matsumura2

1) United Graduate School of Agricultural Sciences, Tottori University, 4-101 Koyama-Minami, Tottori 680-8552, Japan
2) Faculty of Agriculture, Tottori University, 4-101 Koyama-Minami, Tottori 680-8552, Japan

Abstract
The purpose of this study is to develop a financial accounting software according to the characteristics of agricultural enterprise accounting, which can strengthen the management of the agricultural enterprise and relieve the accountant from tedious accounting information processing. The system was developed by using Microsoft Visual Basic 6.0 as user interface and Microsoft Access 2003 to save the accounting data, with the operating system of Microsoft Windows XP. Company X tested the system with the survey data. It was observed that the system had excellent user friendly interface, as well as had the following characteristics. Firstly, in the system the user could operate the accounting subjects, manage accounting evidence and accounting entry freely and easily. Secondly, the system could auto generate financial reports and some subsidiary schedules. Thirdly, the system had powerful capabilities of storing the accounting data, as a result the system managed the historical information promptly and efficiently. Finally, the system was capable of relieving the accountant from tedious accounting calculation, saved time in accounting data input and reduced the mistake caused by input and calculation.

Keywords
accounting software, agricultural enterprise, accounting evidence, financial reports

Introduction
The bookkeeping contains a large of management information in respect of data, and it plays an important role in making objective judgment on business management (Sakuramoto 1998). In Japan there have been previous studies in developing the accounting system for small-scale farmers to maximize management tasks and double entry bookkeeping (Sakuramoto 2005), and developing the budget management system for farmers is applied to cash flow statement and Matrix Formulation of Accounting Sheets to save farmers time and simplify their tasks (Sakuramoto 2001). And moreover, there are many accounting software available in Chinese market at present, such as Ufida, Kingdee etc. Most accounting software are suitable for many kinds of industry, and process attention have been given to the common characteristics among those kinds of industry while ignoring the unique characteristics of each industry to some extent. For example, in respect of generating financial reports, they only can generate balance sheet, income statement and cash flow statement that all enterprises need, while specific financial reports for some industries are not possible to generate.

A comparison of the system with some current accounting software was drawn that documents the various features and differences (Table 1). From the Table 1, we can see the difference of the system with current Chinese software centers on application object, system components, financial reports, training and economic burden. The current software are suitable for many kinds of industry, so the cost of development is very high that results in high price of the accounting software, which influences the widespread use of software. Thus, developing the software aiming at one kind of industry will reduce the price of software and facilitate the widespread use of software. Moreover, the current software generate the financial reports shared with each industry, which caused that the enterprise must make the necessary financial reports by manual. Thereby, for the purpose of reducing the accounting calculation tasks and perfecting function of accounting software, the financial reports suitable for each industry are expected to generate automatically by the accounting software.

On the other side, the difference of the Chinese and Japanese
software in application object and tax return is very obvious. The agricultural software of Sorimachi has considered the characteristics of agricultural enterprise and the field of agriculture, for instance, in generating blue-form tax return, the software provided three methods for agricultural filed, general field and real estate filed, however the most Chinese software do not contain the tax management. Hence, the performance of software was improved and the application range was expanded in one industry, which is very valuable for software development.

Therefore, the objective of this study is to develop an accounting system according to characteristics of agricultural enterprises accounting, which can reduce the user self-defining term before account starts, as far as possible supply automatic input or selection as input accounting evidence and accounting entry, inquire the corresponding accounting evidence while browse the ledger so as to retain the audit trials and generate ledger, subsidiary ledger, financial reports and some specific subsidiary schedules automatically. Thus, relieve from tedious accounting information processing and improve work efficiency so that the accountant will join in enterprise management.

### Methodology

#### Description of the agricultural enterprises’ rules

Along with China economic reform and opening-up, Chinese economy has made remarkable progress, but the agricultural enterprises have been impacted hugely. Therefore, the Chinese government has to face some important challenges such as how to strengthen the management of agricultural enterprises, and how to enhance the competitiveness and market participation of agricultural enterprises. In order to solve these issues, it is important to give due recognition to management of farm accounting information. In recent years, the Chinese government has undertaken many reforms in accounting rules. Especially, in the year 2000, the Chinese government published a New Enterprise Accounting Rule, which is applicable to every enterprise, except for finance and insurance industries, as well as the small business who can not issue shares and bonds. Then, on April 2004, the Ministry of Finance issued a New Accounting Calculation Mean for Agricultural Enterprise consisting two sections, one covers the calculation of biological assets and agricultural produce, which is applicable to all agricultural enterprises, while the other section covers...
coven the calculation of social balance, which is applicable to conditional government agricultural enterprises. These accounting rules changed mainly in accounting subjects and financial reports, for example, increase some new accounting subjects and subsidiary schedules, such as farm products account, reserve against decline in price for farm products account, assets diminution schedule, value added tax payable schedule etc.

Components of software development tools

The popularization rate for computer and accounting software are low in Chinese enterprises, computer equipment restoration and renewal program is slow, and 80 percent of accountants need training in how to use the accounting software (Li 1998), which will increase the economic burden of enterprises. Nevertheless, these situations of agricultural enterprises are worse than any other industries. Thus, based on the actual situation of agricultural enterprises and the accountants’ level of using the accounting software, we develop the system utilizing the software development languages Microsoft Visual Basic 6.0 and the database Microsoft Access 2003, with the operating system of Microsoft Windows XP. The two development tools demand for cheap computer configuration, which will facilitate the widespread use of software.

Test data

Through the unremitting efforts, got data from three agricultural enterprises, but they did not permit to announce their names, hence with the professional accountant’s support, organized the experimental data as data for one fiscal year to test running the system. And the Company X used the test data to operationalize the system.

Components of the System

In this system, there are four main modules, such as, set basic information, keep accounts, manage financial reports and manage accounting information as shown in Fig. 1.

Set basic information

At first, the user must set the basic information in the first module. The first module is composed of user login, system parameters management and accounting subject management. The user login is to manage the login name and password. The original login name and password are supplied by the system, after login into the system, the user can reset them. The system parameters management is to set the accounting period, fiscal year, beginning date and name of the user, which are used by the system performing the accounting calculation and establishing the financial reports and subsidiary schedules. There are 12 accounting periods for each fiscal year in default, that is to say, the system creates one accounting period per month for a total of 12 accounting periods in default. The system requires that 12 months constitutes one fiscal year, but does not require that the fiscal year should begin in January and end in December, thus not using the actual calendar year gives many enterprises an advantage, allowing them to close their books at a time which is most convenient for them. And the accounting subject management is to set the accounting subjects and balance for every accounting subject in accounting beginning period, which are necessary to accounting calculation, accounting subjects’ setting contains setting the accounting subject code, capital of accounting subject, mnemonic code of accounting subject, accounting subject category and balance direction for accounting subject. And according to the accounting rule the system supplied the most essential accounting subjects that the user can neither delete nor revise. However the user can add some accounting subjects to meet its calculation need. For setting the balance for every accounting subject in accounting beginning period, there are two situations: if it is not zero, the user just need to set it up under the first accounting period, it is completed by the system automatically, if it is equal to zero, the user does not need to set it as it will by default set to zero automatically. And then the system calls the Trial Balance automatically to test that the debit and credit balances of each account.

Keep accounts

The second module managed the accounting evidence, account-
ing entry, ledger and subsidiary ledger. Because the accounting evidence is a source of keeping accounts and main accounting information, this module is the system’s core. Accounting evidence management is to operate accounting evidence and accounting entry such as, input, modify, delete, as well as be responsible for generating the data of cash flow statement. In one accounting period, there are two ways to input the accounting evidence, input accounting evidences at one time, and input them when the transaction happens. Because each item of accounting evidence must correspond with one or more accounting entries, while inputting the accounting evidence the user has to input accounting entry related to it. Simultaneously, in order to generate the cash flow statement, the system requires that the user points out that each accounting entry whether it is related to the cash flow statement or not. Post accounting evidence is to carry forward the accounting evidences, backup them and transfer them into the ledger and subsidiary ledger. Ledger and subsidiary ledger management supplied the inquiry function. Because every item of ledger must correspond to accounting evidence, at the same time, accounting evidence must coincide with one or more items of ledger, the system supplied that when clicking an item in the window for ledger, the window for accounting evidence inquired would appear. Hence, this function retained the audit trials.

Manage financial reports

This module is composed of the Trial Balance, account settlement and financial reports management. Trial Balance is to test the balance of debit and credit. Account settlement is this module’s core, which is responsible for that at the end of each accounting period, under the balance of debit and credit, close the current accounting period, and transfer related information into the next accounting period, at the same time to generate financial reports and some subsidiary schedules automatically, and save the data as historical information. Financial reports management is to browse through the financial reports and subsidiary schedules. In this system the financial reports are composed of the balance sheet, income statement and cash flow statement, and the subsidiary schedules are the supplement of the financial reports, which contains assets diminution, depreciation of biological assets and farm produce, owner equity, value added tax payable, book value of biological assets, allocation of profit and social charge and discharge and so on. However, it should be noted that due to the complexity of some subsidiary schedules, in this system, these schedules were generated semi-automatically and semi-manually, such as asset diminution, depreciation of biological assets and farm produce.

Manage accounting information

The last module was made to manage data backup and restore and historical information. To guarantee the data safety, the system supplied database backup and restore. When the accounting data is changed, the user can use this function to save it. In case of system failure trouble, the system can use the database restore to rebuild the new data source, therefore, it can keep the accounting data from becoming corrupt or lost. In addition, this system ensures compliance with accounting rules to ensure that data should be stored for at least 15 years and in 15 years the user only have access authority.

Characteristic of the System

Based on current situation of the agricultural enterprise, during software development process special attention was given to the existing accounting software and characteristics of the agricultural enterprises accounting. Simple operation is the most obvious characteristic of the system, for example, setting accounting subject, inputting the accounting evidence and automatic generation of financial reports. Moreover, the system adopted the newest accounting subjects and generated some subsidiary schedules that are the specific financial reports for agricultural enterprise, which is specific characteristic of this system. Because the system did the most work instead of the accountant, such as accounting calculation, the accountant had time to join in enterprise management. The characteristics of the software are specifically listed as following:

Simplicity and freedom of setting accounting subject

The accounting subjects supplied by the system are divided into five types: the cost, the liabilities, the profit and loss, the profit and loss of the owner. The accounting subject code of each type is fixed, such as the accounting subject code of the cost is from 1001 to 1999, and the first figure for accounting subject code reflects its type. So it reduced the tasks of inputting accounting subjects, furthermore saved a lot of trouble with remembering the accounting subject code. For each accounting subject, it can have its own subsidiary account, at this time the accounting subject is called as the first-level account, and the subsidiary account is called as the second-level account. By the same token, the second-level account can have its subsidiary account called as the third-level account. In this system, using the four digits stands for the first-level of accounting subject. Based on the first-level accounting subject, adding a period and three digits represents the second-level accounting subject, and based on the second-level accounting subject, adding a period and three digits represents the third-level accounting subject.

For example, to explain the source of the production cost of the agriculture exactly (its accounting subject code is 4102), four subsidiary accounts were introduced, such as the crop production cost (4102.001), the forestry production cost (4102.002), the
stockbreeding production cost (4102.003) and fishery production cost (4102.004). Likewise, in order to reflect the composition of the crop production cost, it is random to set its subsidiary account, such as corn production cost (4102.001.001). Now this system only deals with the three levels of the accounting subjects, in the next stage of development attempts will be made to handle the multi-level account.

The essential accounting subjects supplied by the system are not permitted to be modified or deleted, but in order to refine and explain of the functions of accounts the user can add the new account as their subsidiary account. Besides these accounting subjects, the user can add any account according to calculation needs.

Therefore, in this system it is easy and free to set accounting subject.

**Simplify management of accounting evidence and accounting entry**

Like other software, in management accounting evidence and accounting entry, the system provided function of automatic input and automatic calculation. The number, accounting period, data, date form and the accounting subject name were input automatically, sum for credit and debt was calculated automatically after accounting entry input.

In the system, there are two methods to input date of accounting evidence, one is automatic input when the day of accounting evidence input and the transaction happening are same, while the other is manual input when the day of transaction happening is different from the day of accounting evidence input. Either automatic input or manual input, the date form is yyyy/mm/dd, which is helpful to prevent the inaccurate date form input. The sum for credit and debt was calculated automatically after accounting entry input.

In the system, there are two methods to input date of accounting evidence, one is automatic input when the day of accounting evidence input and the transaction happening are same, while the other is manual input when the day of transaction happening is different from the day of accounting evidence input. Either automatic input or manual input, the date form is yyyy/mm/dd, which is helpful to prevent the inaccurate date form input. The sum for credit and debt was calculated automatically after accounting entry input.

Management of ledger and subsidiary ledger

In this system, at the end of accounting period the accounting evidences and accounting entries were brought into the ledger and subsidiary ledger automatically, it is free to browse them and inquire them according to each account as other software supply. It is noticeable that the system was capable of inquiring the corresponding accounting evidence while browse the ledger, which retains the audit trials.

**Automatic generation of financial reports and some subsidiary schedules**

It is very time-consuming and complex to generate the financial reports for the accountant, among of the financial reports the cash flow statement is the most difficult to generate. Like other accounting software the system supplied the three basic financial reports containing balance sheet, income statement and cash flow statement according to the accounting rule, but wealthy to note that the system also generated some subsidiary schedules meeting the need of agricultural enterprise.

Thereby at the end of accounting period the system generated the financial reports and some subsidiary schedules automatically, which greatly simplifies the accountant’s work. In addition, the automatic posting and calculation also avoided mistakes resulted in posting and calculation, and saved labor.

**Management of historical data**

In accordance with financial regulations, in general financial data must be preserved for 15 years, so this system is capable of historical information management. The system used the Access 2003 as background to process data, which enhanced the data storage and processing power significantly. When the current accounting period ends, and the new accounting period starts, the system will automatically save accounting information as historical data. In addition, the accountant can not amend the data of past year in the books according to the accounting rules, so the system only allowed users to query historical data, which ensured the authenticity of accounting data effectively. Only when the length of historical information in the database is more than 15 years, the system allows users to process the historical information. Hence, for the accountant it is very convenient to manage the historical information.

Therefore, it was concluded that the system is capable of significant time saving for user, simplifying the user’s work and enhanced accountant’s efficiency and accuracy of the accounting calculations.

**The Effect of Application and Discussion**

**Description of the application object**

Company X is a soybean processing agricultural enterprise that was converted into private enterprise in the middle of 1990s, and then used the computer to manage the accounting information. Now Company X is using the Ufida to keep accounts. As the Ufida can not generate its specific financial reports, the manual bookkeeping is still reserved.

First of all, set the system parameters. That is, Company X used 12 accounting periods per year, the account started from January 1st, 2007. The Fig. 2–11 showed the results of the first accounting period.
Fig. 2  Setting accounting subject

Fig. 3  Setting balance for every accounting subject in accounting beginning period
Set the accounting subjects

For Company X, the accounting subjects provided by the system are sufficient, and the accounting subjects of current fiscal year are same as the previous fiscal year’s, so these accounting subjects were used directly without any changes as shown in Fig. 2. It saved the user time in accounting subjects input. Using the treeview to display five types of accounting subjects in left side is very distinct, and it is convenient to operate them in right side.

Set balance for every accounting subject in accounting beginning period

As to Company X, the accounting period started from January 1st, 2007, so the opening balance for all accounting subjects of the first accounting period of 2007 is the value end-of-period value of 2006. In this way, the end-of-period value of 2006 as the opening balance for accounting subjects of the first accounting period of 2007 was input into the system, and the results is shown in Fig. 3. From the second accounting period the opening balance for all accounting subjects was set automatically by the system, so it saved a lot of time in set balance and avoided input error.

Input accounting evidence

For Company X the accounting evidences were input when the transactions happened as shown in Fig. 4. The accounting evidences contains the items, such as, the number of accounting evidence, sum for debit and credit, description, date, kind of accounting evidence, and the name of a person in charge etc. And these items are capable of describing the transaction of Company X exactly. There only three items need to be filled by manual, and the other items are entered by choice or input automatically. For instance, after inputting the accounting entries, the corresponding sum for debit and credit was input by the system. Hence, the system simplified the enter work so that shorten the time of keeping accounts, and owing to automatic input and choice, it avoided mistake resulted from data input to some degree.

As to generating the cash flow statement, Company X usually uses its current software to calculate each item of the cash flow statement at the end of accounting period. In this system, while inputting the accounting evidence whether the each item of accounting entry record is related to the cash flow statement or not has already been recorded, so it is unnecessary that search for the accounting entries corresponding with the cash flow statement, which reduced the calculation task of end-period. All these entries are depicted in Fig. 4.

End of period calculations

As to Company X, the ledger, subsidiary ledger, the three basic financial reports and subsidiary schedules are essential for it that were generated automatically at the end of accounting period as shown in Fig. 5–11. These automatic generations made compli-
Fig. 5 Ledger management

Fig. 6 Subsidiary ledger management
Fig. 7  Balance sheet

Fig. 8  Income statement
现金流量表

<table>
<thead>
<tr>
<th>项目</th>
<th>行次</th>
<th>金额</th>
</tr>
</thead>
<tbody>
<tr>
<td>一、经营活动产生的现金流量</td>
<td></td>
<td></td>
</tr>
<tr>
<td>销售商品、提供劳务收到的现金</td>
<td>1</td>
<td>¥1,657,294</td>
</tr>
<tr>
<td>收到的其他与经营活动有关的现金</td>
<td>2</td>
<td>¥0.00</td>
</tr>
<tr>
<td>现金流入小计</td>
<td>3</td>
<td>¥1,657,294</td>
</tr>
<tr>
<td>购买商品、接受劳务支付的现金</td>
<td>4</td>
<td>¥545,466</td>
</tr>
<tr>
<td>支付给员工以及为员工支付的现金</td>
<td>5</td>
<td>¥94,734</td>
</tr>
<tr>
<td>支付的各项税费</td>
<td>6</td>
<td>¥0.00</td>
</tr>
<tr>
<td>支付的其他与经营活动有关的现金</td>
<td>7</td>
<td>¥19,116</td>
</tr>
<tr>
<td>现金流出小计</td>
<td>8</td>
<td>¥654,537</td>
</tr>
<tr>
<td>经营活动产生的现金流量净额</td>
<td>9</td>
<td>¥1,002,750</td>
</tr>
<tr>
<td>二、投资活动产生的现金流量</td>
<td></td>
<td></td>
</tr>
<tr>
<td>收回投资所收到的现金</td>
<td>10</td>
<td>¥0.00</td>
</tr>
<tr>
<td>取得投资收益所收到的现金</td>
<td>11</td>
<td>¥0.00</td>
</tr>
<tr>
<td>处置固定资产、无形资产和其他长期资产所收到的现金净额</td>
<td>12</td>
<td>¥19,848</td>
</tr>
<tr>
<td>收到的其他与投资活动有关的现金</td>
<td>13</td>
<td>¥0.00</td>
</tr>
<tr>
<td>现金流入小计</td>
<td>14</td>
<td>¥19,848</td>
</tr>
<tr>
<td>购入固定资产、无形资产和其他长期资产所支付的现金</td>
<td>15</td>
<td>¥44,598</td>
</tr>
<tr>
<td>投资所支付的现金</td>
<td>16</td>
<td>¥100,000</td>
</tr>
<tr>
<td>支付的其他与投资活动有关的现金</td>
<td>17</td>
<td>¥0.00</td>
</tr>
<tr>
<td>现金流出小计</td>
<td>18</td>
<td>¥120,000</td>
</tr>
<tr>
<td>投资活动产生的现金流量净额</td>
<td>19</td>
<td>¥-52,152</td>
</tr>
<tr>
<td>三、筹资活动产生的现金流量</td>
<td></td>
<td></td>
</tr>
<tr>
<td>吸收投资所收到的现金</td>
<td>20</td>
<td>¥3,000,000</td>
</tr>
<tr>
<td>借款所收到的现金</td>
<td>21</td>
<td>¥0.00</td>
</tr>
<tr>
<td>分配股利、利润和偿付利息所支付的现金</td>
<td>22</td>
<td>¥4,598</td>
</tr>
<tr>
<td>支付的其他与筹资活动有关的现金</td>
<td>23</td>
<td>¥0.00</td>
</tr>
<tr>
<td>现金流入小计</td>
<td>24</td>
<td>¥3,004,598</td>
</tr>
<tr>
<td>偿还债务所支付的现金</td>
<td>25</td>
<td>¥2,795,402</td>
</tr>
<tr>
<td>六、现金及现金等价物净增加额</td>
<td>26</td>
<td>¥3,278,687</td>
</tr>
<tr>
<td>补充资料</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.将净利润调节为经营活动现金流量</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>净利润</td>
<td>28</td>
<td>¥0.00</td>
</tr>
<tr>
<td>加:计提的资产减值准备</td>
<td>29</td>
<td>¥0.00</td>
</tr>
<tr>
<td>固定资产折旧</td>
<td>30</td>
<td>¥0.00</td>
</tr>
<tr>
<td>无形资产摊销</td>
<td>31</td>
<td>¥0.00</td>
</tr>
<tr>
<td>长期借款费用摊销</td>
<td>32</td>
<td>¥0.00</td>
</tr>
<tr>
<td>摊销费（减：增加）</td>
<td>33</td>
<td>¥0.00</td>
</tr>
<tr>
<td>提前提税交纳（减：增加）</td>
<td>34</td>
<td>¥0.00</td>
</tr>
<tr>
<td>财务费用</td>
<td>35</td>
<td>¥0.00</td>
</tr>
<tr>
<td>现金及现金等价物净增加额</td>
<td>36</td>
<td>¥3,278,687</td>
</tr>
</tbody>
</table>

图9  Cash flow statement
Fig. 10 Value added tax payable schedule

Fig. 11 Assets diminution schedule
icated work simplify, avoided a posting mistake and a calculation mistake, and had much effect on labor-saving. It is more important that some schedules generated automatically simplified their works.

Conclusion

This software was tested with the survey accounting data cooperating with Company X. It was said that the software was capable of managing accounting subject, the accounting evidence and accounting entry simply and conveniently, data processing was faster and more accurate than manual accounting, the financial reports were complete and reduced the tasks of accounting calculation. It was more reasonably and effectively while complying with the latest accounting rules. This system being simple to operate, free after-service and less expensive is expected to be acceptable by the Chinese agricultural enterprises. In future, in order to strengthen the serviceability of the accounting software, the functions of this financial accounting software will be improved. Meantime to further enhance the software a new module of financial analysis will be incorporated into this software making this system more useful.

References


Received April 27, 2009
Accepted February 25, 2010
Management & Economics