

Computerized Inventory System – Program Development and Execution

SHAZIA ARSHAD, MUHAMAMD SHOAIB AND MUHAMMAD SAJJAD KHAN†

Departments of Computer Science and †Animal Breeding and Genetics, University of Agriculture, Faisalabad–38040, Pakistan

ABSTRACT

Stock keeping and stock checking is one of the major components of any business organizations. Manual reports are time consuming and difficult to construct. A user friendly computerized store inventory system has been developed in FoxPro after studying the current store system of the University of Agriculture, Faisalabad. The proposed software can help improve the efficiency of the store department. It is timeliness, accurate, reliable, consistent, faster, efficient and easy to use. Removal of redundancy/duplication and irrelevance are some of the other benefits. It can be easily tailored for multi-user environment with minor modifications.

Key Words: Software; Inventory system; FoxPro

INTRODUCTION

Information is what is needed to make current and future decisions and are data that have been evaluated in the context of a specific problem situation. Most business experts would contend that it is the proper management of data and information that is one of the keys to a successfully managed operation. However, most decision makers are more often than not overwhelmed with the large amounts of data, but only limited supply of information. The value of information is directly related to the decisions the managers have to make.

A major decision making component in any organization is stock keeping and checking. It can be a real challenge for most businesses and may become a major problem especially if the inventories are long and in- and outflow is huge. Manual reports are time consuming and difficult to construct. Inadequacy, duplication, irrelevance and inefficiency are just few of the many problems with the current manually operated systems. List of files, and papers in these files are difficult to document and maintain, thus prone to risk of loss or damage, making the system inefficient.

Increasing use of computers to solve day to day and long term problems is obvious. It is no longer a question of if we need a computer to assist in managing our farm business but rather when. Computer software available to perform specific chores is costly and rarely meet specific needs of any setup especially when computer literacy is inadequate. Tailor made programs often help. Present study pertains to the development of a computer inventory system for a store in a general organizational set up such as the University. Yet, it can be applied to specific situations in any agricultural operation with minor modifications.

The main objective of the proposed inventory system was to facilitate the overall operation of the organization. Specific objectives were to develop an information system that is flexible, accurate, efficient and user friendly. It should not only be cost beneficial but also satisfy the economic objectives of the organization, provide data security from accidental loss of data and should be acceptable to the organization for a smooth flow of information from one step to the next and should also remove redundancy.

MATERIALS AND METHODS

The current system in the Store Departments in the University of Agriculture, Faisalabad is manual. The reason for switching over to computer system is to get the job done in lesser time and store different information, reports in paper form and at a bigger scale which is difficult to achieve under a manual system. Briefly, the computer system is expected to be more comprehensive and error free, covering every aspect of the operations. The proposed system has been designed after in-depth study of the existing manual system. The new suggestions have been made, keeping in view the demand of the organization and their ultimate effectiveness.

Development phases. The proposed system was designed in the following phases:

1. Preliminary investigation and analysis phase

This phase consisted of:

- i) Understanding the existing system
- ii) Determining true nature of the problem
- iii) Objectives/advantages of the proposed system
- iv) Determining system requirements

2. Design phase

The design phase was conducted in the following steps

- i) Selection of software and hardware requirements
- ii) Design input and output forms
- iii) Reports

3. Development phase

The development of the designed system was conducted as under

- i) Development of computer program
- ii) Testing of computer program with sample data
- iii) Testing of computer program with real data

System design. The new proposed system has been designed in FoxPro language. This language has been suggested for this project due to its powers for databases as compared with other languages and packages.

1. Input designing

Input forms have been designed to collect data in suitable forms and can be entered on computer easily and processed successfully

2. Code designing

- a) Technique
- b) Structured programming
- c) Edit and validation checks
- d) Testing, debugging and enhancing

3. Output designing

Software selection. As mentioned earlier, Foxpro 2.5 (Antoinovich, 1993) was used for the development of the software to computerize the store department. The choice was based on fact that it provides interpreter and the compiler and is faster than Clipper and dBASE III plus, the other choices. It has capability to handle large amount of data (one billion records per database) and is source compatible with dBASE III plus.

RESULTS AND DISCUSSION

Software development. The package developed for the proposed system named as "Material and Management Information System: consists of about 35 programs. There are five modules in the MAIN MENU (MAMIS.PRG) with different options.

- I) MASTER FILE
- i) DEPARTMENT FILES
 - a) GEN-MENU.PRG (DEPARTMENT MENU PROGRAM)
 - b) DEPTADD.PRG (DEPARTMENT ADDITION PROGRAM)
 - c) DEPTDEL.PRG (DEPARTMENT DELETION PROGRAM)
 - d) DEPTMODI.PRG (DEPARTMENT MODIFICATION PROGRAM)
 - e) DEPTLIST.PRG (DEPARTMENT LIST PROGRAM)
- ii) SUPPLIER FILES

- a) GEN-MEN1.PRG (SUPPLIER MENU PROGRAM)
- b) SUPPADD.PRG (SUPPLIER ADDITION PROGRAM)
- c) SUPPDEL.PRG (SUPPLIER DELETION PROGRAM)
- d) SUPPMODI.PRG (SUPPLIER MODIFICATION PROGRAM)
- e) SUPPLIST.PRG (SUPPLIER LIST PROGRAM)
- iii) ARTICLE FILES
 - a) GEN-MEN3.PRG (ARTICLE MENU PROGRAM)
 - b) ARTADD.PRG (ARTICLE ADDITION PROGRAM)
 - c) ARTDEL.PRG (ARTICLE DELETION PROGRAM)
 - d) ARTMODI.PRG (ARTICLE MODIFICATION PROGRAM)
 - e) ARTLIST.PRG (ARTICLE LIST PROGRAM)
- II) TRASACTION FILES
 - i) STORE FILES
 - a) GEN-MEN2.PRG (STORE MENU PROGRAM)
 - b) STOREINP.PRG (STORE ADDITION PROGRAM)
 - c) STOREDEL.PRG (STORE DELETION PROGRAM)
 - d) STOREMOD.PRG (STORE MODIFICATION PROGRAM)
 - ii) ISSUE FILES
 - a) GEN-MEN4.PRG (ISSUE MENU PROGRAM)
 - b) ISSUEINP.PRG (ISSUE ADDITION PROGRAM)
 - c) ISSUEDEL.PRG (ISSUE DELETION PROGRAM)
 - d) ISSUEMOD.PRG (ISSUE MODIFICATION PROGRAM)
- III) REPORTS
 - Current stock
 - Stock of specific item
 - Monthly stock issued
 - Annual stock issued
 - Department wise items
 - Article status
- IV) UTILITIES
 - Indexing file
 - Backup file
 - Restore file
- V) EXIT FILES
 - Exit to prompt
 - Exit to DOS

Addition, Modification, Deletion, Listing and Exiting are the common choices in any of the options for viewing and publishing reports.

System implementation. The implementation project involves the activities like planning and scheduling of

implementation process, organizational planning and personnel administration, final system design and testing, establishment of standards of performance and control procedures and conversion from old to new system.

Hardware requirements. To minimize the risk of computers getting obsolete owing to fast growing technical advancement and innovations, a computer system with a minimum 640K RAM, one 5.25 or 3.5 inch size floppy disk drive, a fixed disk having a capacity of 40 MB, at least, a low radiation monitor and printer 80/132 column would be required to run the software.

System testing. All data were entered in an interactive manner. User friendly screens for data entry and these screens were facsimiles of the documents being entered manually. As data entry is basically a transcription exercise, it is prone to errors. Thus to ensure correct data entry, each document had cleared certain built-in validation checks, before it was accepted by the computer. Self explanatory messages were displayed on the screen to guide the user for correct data. Any error encountered during the validation process was shown on the screen so that person entering the data could take corrective actions. It is possible that some errors might have been initiated by the department that initiates the documents in respect of computer processing and, as far as possible, corrections in respect of different codes. These coding errors have been minimized as the computer displays the description of various codes entered on the screen, so that user can match description written on the document with description displayed on the screen.

In brief, testing of the system guarantees that all modules function correctly and the new developed system is at hand for the system conversion.

System conversion. The system conversion is primarily referred to the relationship between the new system and the old system. There are three basic conversion methods; direct conversion, parallel conversion, and pilot conversion with advantages and disadvantages. Choice usually depends upon the urgency, resources and requirements. All the conversion methods have been considered. After thorough analysis, parallel Conversion is recommended for Material and Management Information System of University of Agriculture Faisalabad. The significant objections against the parallel conversion may be the cost and additional work load. But the real advantages of this system are that in case of its failure, data is not lost because the old system still runs without any interruptions. So the organization's work will not be affected. It involves continuing the former system for a certain period of time after the new

system is put into operation and will provide an opportunity to compare its results with those obtained by the previous method.

Both the direct and pilot conversion are not suitable for the proposed system, because for pilot conversion, the proposed system is not so vast as to fulfil the requirements of conversion approach. In case of parallel conversion the old system will be available as back up and the results produced can be compared to those of the old one.

While introducing a new system, its benefits and drawbacks as compared to the old system should be carefully evaluated. It has to be ensured that the objectives, for which the new system has been planned, have been achieved.

The evaluation is not only necessary but also unavoidable to keep the system updated in terms of business & economic environment as well as technological change in the electronic data processing. Admittedly the system which produces information possessing accuracy, timeliness, completeness, and conciseness will be declared as successful.

Notwithstanding manufactures, one, which is often of major consideration, is the cost factor. The user of the new system is the best judge to decide the effectiveness of the system. Apart from various screen queries and reports, following reports can be printed on paper with the help of a printer.

1. Current stock report
2. Stock of specific item
3. Monthly stock issued
4. Annual stock issued
5. Department wise items
6. Article status

Evaluation. The new computerized material and management Information System has many advantages over the manual system. Some of the prominent (projecting) features of the new system are as follows:

- (a) **Efficiency.** The new system is more efficient as compared to the old system. Data entry task is easier and fast because instead of entering data names, respective codes are used. There is no chance of entering wrong data, because there are all possible checks, which have been built in the system, and they do not allow wrong data entry.
- (b) **Accuracy.** Accuracy is the ratio of correct information to the total amount of information produced over a period. The accuracy level depends on the type of information produced. In the new development system, level of accuracy is nearly hundred percent i.e; unless there are errors in data entry, the new system is accurate.

- Validation checks are made to ensure the accuracy of the system.
- (c) **User friendly.** The new computerized system is user friendly. A user having little knowledge about computer can run this system effectively. Moreover, the new system is designed in such a way as it can provide the user with facility of updating the data whenever required.
- (d) **Conciseness.** The new computerized system gives brief information that summarizes the relevant data.
- (e) **Timeliness.** It is another characteristic of the new system. This was the major problem faced by the management of Store Department. This system saves both time and labor,

REFERENCES

Antoinovich, M., 1993. Foxpro Programming Guide. Gagotia Publication Pvt. Ltd., New Delhi.

(Received 15 December 1999; Accepted 20 January 2000)