



Automation of accounting process in agriculture

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ABSTRACT

Farmer in modern society is facing with a lot of paperwork that is extending their work and reduced efficiency. In addition to that, they often lack in a comprehensive view over farm which leads to smaller decision-making capability. By developing a comprehensive software solution that offers automatic accounting, animal traceability, FADN and VAT reporting, we are trying to offer a comprehensive overview of the farm where farmer could only focus on farm relevant information and at the same time prepare a relevant information for accountant in the background. This could improve their efficiency and give better results without large investments.

Keywords: Farm accounting, FADN, Automated accounting, Comprehensive farm software, Slovenia.

1. INTRODUCTION

Companies in different business scopes have always had a huge variety of software solutions for not only accounting, but for getting an optimal overview of their company and complete automation of business processes. This way, they could rely on vital information from their past experience and form a future plans for better results.

1.1 Business planning

Planning is a very important aspect in everyday processes. It provides information for the future needs of company. Without a good business plan it's difficult to predict a future material use, resources allocation, employments and investments. A preparation of such plan depends on the amount of available information.

One of tools for analyzing facilitating strategic and operational activities is management information system. It generates information to improve efficiency and effectiveness of decision making (O'Brien, 1999). According to Lucey (2005) such a tool gives business managers the information to make decisions.

More sophisticated, reliable and precise tool is Enterprise resource planning (ERP). ERP is a method using computer technology to link various functions. ERP systems started to evolve in 1990. The goal of developing an ERP was to integrate software across and within the various company functions. One of the most important milestones

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was year 2000 due to fears of software non-compliance. Fears were defeated and nowadays some type of ERP system is a vital part of every successful business. (*Jacobs, 2007*).

1.2 Agriculture and planning

Farmers have always been subjected to future planning for their production, to be able to feed their animals, farmers had to know, how much feed can they produce. Or, to make a good harvest, they had to plan different tasks throughout the year. This is a good example, that farmers are good at predicting and planning their work.

With a development of agriculture work has become more and more intensive. That meant a wider specter of different information. Also important issue is that with specialization of work and development of processes, different decision could have bigger impact. This brought agriculture to the point, where they had to start actively working on future planning of their production.

Computer and technology development offered to all participants' access to different important information and functions. One of more radical changes was provided by Internet. Today it offers availability at all times, electronic data exchange, reporting and for farmers also access to weather information, internet sales and similar features (*Kaloxyls et al., 2012*).

1.3 Bookkeeping on farm

In research on American agriculture (*USDA, 2011*) was found, that users of computer in agriculture has steadily grown to almost 2/3. Internet access is a bit lower, but still at 62% in 2011.

Although future planning is important, reports and registries are not created just to keep information for future. In research on Ohio farmers it has been conducted, that almost 90% farmer use their computer for keeping financial records and see this feature as most important. Other important features are e-mail and keeping production records (*Batte, 2005*).

This study shows that financial records are seen as one of most important and needed aspects. This could be because it is always good to know financial status and also because of legislation demands. Reports have to be created to provide information required by legislations in different countries for taxation as one of many reasons. According EU Directive, companies have to prepare yearly reports based on double-entry bookkeeping (*Council Directive No 78/660/EGS*). In Slovenia, as in some other countries, by the beginning of year 2014, this will be also the case for some larger farms (*ZDoh-2, Ur.l. RS št. 117/2006 and ZDoh-2L, Ur.l. RS št. 94/2012*).

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For efficient financial reporting and company comparison, International Accounting Standards Committee (IASC) developed International Accounting Standards (IAS). IAS has first been set in 1975. Main goal was to develop an internationally acceptable set of high quality financial reporting standards. As of 2005 almost all publicly listed companies in Europe and many other companies are required to prepare financial statements in accordance with international Financial Reporting Standards (*Barth et al., 2008*).

Agriculture is covered by special IAS 41 that has been established in December 2000. It sets out the accounting for agricultural activity. It covers some agriculture specialties as is transformation of biological assets (like living plants and animals) into agricultural produce (*Commission Regulation (EC) No 1126/2008*). As in whole accounting process, IAS is offering a base structure for creating accounting reports. Mainly they are also covering agriculture sector. But compared to other business, agriculture is quite unique and this is what IAS 41 is trying to cover:

- biological assets,
- agricultural produce at the point of harvest,
- government grants.

Agricultural activity covers a diverse range of activities (raising livestock, annual or perennial cropping...) with some common features. They can change or transform. Animals grow and die, as do crops. They can be changed. Crops and animals can be enhanced with nutrients, water, medications... Changes can be measured through fat measurements, weight... Most important fact is that all biological assets have to be evaluated by fair value if there is no other possibility which is still the case in some countries (*Commission Regulation (EC) No 1126/2008*).

Important part of EU is an agriculture specific accounting Farm Accountancy Data Network (FADN). It is an instrument for evaluating the income of agricultural holdings and the impacts of the Common Agricultural Policy. System was established in 1965 (*Council Regulation 79/65/EEC*). It consists of annual survey carried out by the Member States of the European Union. FADN is the only source of microeconomic data that is harmonized, which means, that bookkeeping principles are the same in all countries. Its purpose is not to cover all agricultural holdings, but representative sample to get a general overview of agriculture. The aim is to gather accountancy data for farms for the determination of incomes and business analysis of agricultural holdings. Current sample includes around 80.000 farms in all EU and through stratification they represent around 42% of all farms in European Union (*FADN, 2010*).

Besides accounting, Agricultural sector in EU undergoes quite huge bureaucratic demands due to high amount of resources spent for its support and to the stringent

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requirements of the European population at healthy food and clean environment. Farmers are obliged to prepare different reports for competent authorities:

- animal registry and animal movement for different animal kinds (*Regulation (EC) No 178/2002, Regulation (EC) No 1760/2000, Regulation (EC) No 21/2004*),
- FADN Farm Return (*Regulation No 79/65/EEC, Regulation (EC) No 178/2002*),
- veterinary journals (*Regulation (EC) No 852/2004, Regulation (EC) No 853/2004, Regulation (EC) No 854/2004*),
- cross compliance application (*Regulation (EC) No 1698/2005*).

For all the above mentioned paperwork combined, farmer in Germany spends 20 hours per week, in Denmark 7 hours per week and in Finland 3 hours per week from which one third is used for accounting and papers. This virtually means that farmers in Germany spend almost half of an average European time behind the desk doing paperwork instead doing the work he knows best (*Lawson et al., 2011*).

In this brief overview, we have tried to show a wide load of paperwork which farmers are subject to. We will present a tool that could help farmer with minimizing the amount of data input, duplication of entries and mistakes by combining all available information and this could save time and enables faster and probably more correct decisions.

2. ON FARM ACCOUNTING PROCESS

To get a true and accurate financial overview, must be taken into account as many factors. Also one of the challenging parts is how to account them.

Crop production offers a good source of information. With farmers that have to keep records of material usage for agri-environmental registries as a part of cross-compliance application for EU funds (*Regulation (EC) No 1698/2005*), these could be simply financially evaluated and accounted. This way farmer could get quite accurate information.

In animal husbandry, especially in less developed systems, daily tasks are not so thoroughly noted. Partly because there is no need for such records, there is no financial evaluation of tasks and it is hard to dissolve them for evaluation.

To speed up and simplify the process of accounting and reporting in agriculture some of the entries should be simplified. We could start with a simplification of entries for the farmers by providing them software for their own use. Classical accounting software

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could prove too complex for use on a farm and for that reason could even extend the process and consequently consume more time.

To be able to provide such solution, processes in agriculture have to be unified and evaluated. It is quite easy to calculate costs for veterinarian services, but it is hard to evaluate cost of farmer feeding his animals. One of the possible solutions is issuing a catalog of approximate costs for different services (in Slovenia such catalogue was issued by Chamber of Agriculture and Forestry of Slovenia).

Behind every process or action in farm software, our solution predicts a creation of internal or external document. For example: when a farmer buys an animal, he is more interested in information about an animal itself (what is the price, how old is she, who are her ancestors...) than about sellers TAX number or TAX rate. By removing document creation and adaptation from farmers view, he can then concentrate on farming information.

Accountant working for farmer has an opposite story. He is not interested in ancestors of bought animal, but he is concentrating on chart of accounts. He is working on farms balance sheet, costs and income.

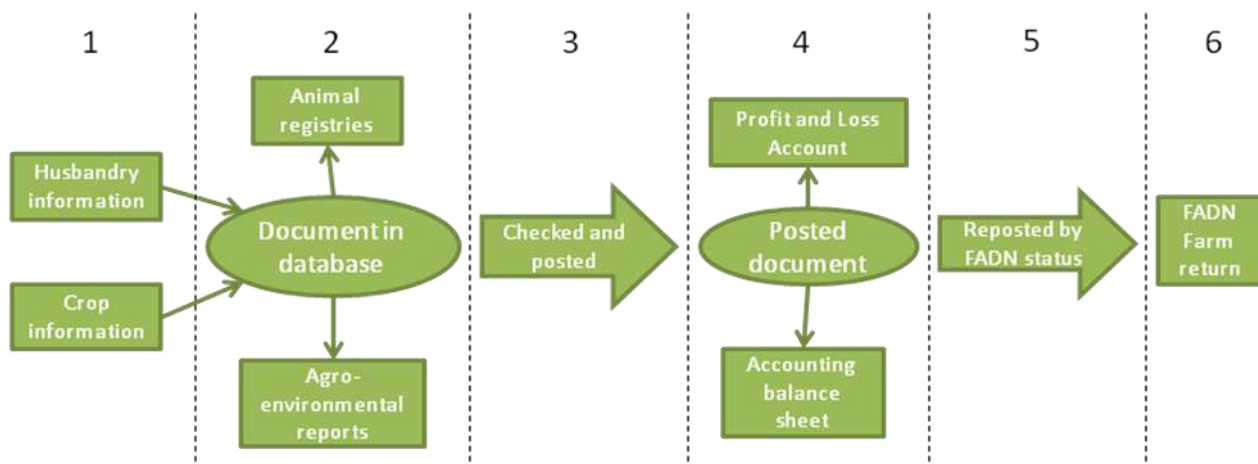


Figure 1. Accounting process on farm

Figure 1 represents a process flow by insertion of information into farm software. In specialized software farmer inserts information about newly bought animal (step 1). By doing that, he updates size of his herd, updates registries and records animal movement and at the same time automatically creates a document of purchase (step 2). This document is not a primary focus of farmer, but is created for accountant in later stage. Step 3 is done by an accountant (or by a farmer, if he possesses the knowledge of an accountant). Document of purchase is checked, updated and posted. This step is usually time-consuming, but by cross-combining different document types and purchase items,

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it is possible to predict accounts for posting. This way animal purchase is always done at the same accounts by just one button click. Once document is posted, balance sheet or profit and loss account can be prepared (step 4). This way farmer gets a feedback about costs and profit and can adapt his production.

With a farmers, that are involved in FADN accounting steps 5 and 6 are welcome addition. If we return to step 1 it should be noted that by animal data input animal or crop FADN types are calculated automatically. Step 5 is intended to reposition bought animal from primary account to an account with correct FADN type assigned. Final result is step 6 where Farm return report is prepared automatically by simple data import. This way reports can be prepared with only one data entry which reduces errors and time usage.

Steps 5 and 6 in this case are only relevant for farmers that are included in FADN project. But with a solution that is prepared for dual accounting in one solution, this could offer a simpler and cheaper process and also a possible expansion of FADN project in EU.

Such a process is usually done with the participation of farmer and accountant where they have a different work and for that get a different view on the same database. This way we avoid the mixing of information and interference with the work. But for farmers that are possessing knowledge in accounting or agricultural companies, step 3 in Figure 1 can be accessed and done by farmer which enables him running his own accounting.

3. CONCLUSION

In our paper, we have tried to present a difficult and time consuming paperwork that European farmers are faced with. In addition to that, we have presented our software solution for automatic accounting and reporting in combination with animal traceability, agro-environmental and FADN reporting for agricultural holdings in same software.

Due to an ongoing process of development of different agriculture equipment, such software could offer a good foundation for a comprehensive solution in agriculture that could bring a better and faster overview to all institution involved and give a lot of vital information to framers for their work.

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