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Conceptual model of a future farm management information system

C.G. Sørensen[a,*], S. Fountas[b], E. Nash[f], L. Pesonen[d], D. Bochtis[a], S.M. Pedersen[e], B. Basso[c], S.B. Blackmore[g]

[a] Århus University, Faculty of Agricultural Sciences, Department of Agricultural Engineering, Research Centre Foulum, Blichers Alle 20, 8830 Tjele, Denmark
[b] Center for Research and Technology, Institute of Technology and Management of Agricultural Ecosystems, Technology Park of Thessaly, 1st Industrial Area, GR 385 00, Volos, Greece
[c] University of Basilicata (UNIBAS), Via N. Sauro, 85-(85100) Potenza, Italy
[d] MTT Agrifood Research Finland, Vakolantie 55, 03400 Vihti, Finland
[e] Institute of Food and Resource Economics, University of Copenhagen, Rolighedsvej 25, 1958 Frederiksberg C, Denmark
[f] Rostock University, Faculty of Agricultural and Environmental Sciences, Institute for Management of Rural Areas, Justus-von-Liebig-Weg 6, 18059 Rostock, Germany
[g] King Saud University, Riyadh 11451, Saudi Arabia

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ABSTRACT

Future and even current European farmers are experiencing that the managerial tasks for arable farming are shifting to a new paradigm, requiring increased attention to economic viability and the interaction with the surroundings. To this end, an integration of information systems is needed to advise managers of formal instructions, recommended guidelines and documentation requirements for various decision making processes. In the EU funded project FutureFarm, a new model and prototype of a new Farm Information Management System (FMIS) which meets these changing requirements will be developed. The aim of the work presented in this paper is to define and analyse the system boundaries and relevant decision processes for such a novel FMIS as a prerequisite for a dedicated information modelling.

The boundaries and scope of the system are described in terms of actors and functionalities, where actors are entities interfacing with the system (e.g. managers, software, databases). In order to analyse the complex and soft systems situations of how to develop an effective FMIS, which effectively meets farmers' changing needs a conceptual model was developed based on soft systems methodology (SSM) and based on information derived from four pilot farms representing diverse conditions across the EU that are partners of the FutureFarm project. The system components were depicted as part of rich pictures and linked to the subsequent derived conceptual model of the overall system as an outline for the development of the specific FMIS requirements. This research has shown the benefit of using dedicated system analysis methodologies as a preliminary step to the actual design of a novel farm management information system compared with other more rigid and activity oriented system analysis methods.

1. Introduction

The managerial tasks in agriculture are currently shifting to a new paradigm, requiring more attention on the interaction with the surroundings, namely environmental impact, terms of delivery, and documentation of quality and growing conditions (e.g. Sigrimis et al., 1999; Dalgaard et al., 2006). Among other things, this managerial change is caused by external entities (government, public) applying increasing pressure on the agricultural sector to change production from a focus on quantity to an alternate focus on quality and sustainability (Halberg, 2001). This change has been enforced by provisions and restrictions in the use of production input (e.g. fertilisers, agrochemicals) and with a change of emphasis for subsidies to an incentive for the farmer to engage in a sustainable production rather than based solely on production. In general, this change of conditions for the managerial tasks on the farm has necessitated the introduction of more advanced activities monitoring systems and information systems to secure compliance with the restrictions and standards in terms of specific production guidelines, provisions for environmental compliance and management standards as prerequisites for subsidies. Until now, farmers most often have dealt with this increased managerial load by trying to handle manual a mass of information in order to make correct decisions. The increasing use of computers and the dramatic increase in the use of the internet have to some degree improved and eased the task of handling and processing of internal information as well as acquiring external information. However, the acquisition and analysis of information still proves a demanding task, since information

* Corresponding author. Tel.: +45 89991930.
E-mail address: claus.soerensen@agrsci.dk (C.G. Sørensen).

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