

# The impact of farm management on value of management information systems

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## Abstract

The value of management information systems (MISs) arises from improved managerial decision making and, therefore, will vary from farm to farm. Insight into this variation will be of use not only to farmers who consider (new) MIS investments, but also to companies that design and market MISs. In this study, the impact of farm management on the value of sow-herd MISs is investigated. Within the same research population, farm management is assessed with two conceptually different classification approaches — the sociological ‘style of farming’ approach and the farm-economic ‘management level’ approach. Management levels of sow farmers turned out to be positively correlated with MIS value ( $r = 0.35$ ,  $P = 0.02$ ). Although farmers with high management levels tend to be better informed anyway than farmers with low management levels, they get more added value from MISs. © 2001 Elsevier Science B.V. All rights reserved.

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## 1. Introduction

Management information systems (MISs) are systems designed to provide daily production information at the individual animal level that is of potential value in making management decisions (Boehlje and Eidman, 1984). MIS value arises from improved managerial decision making (Hamilton and Chervany, 1981) and, therefore, will vary from farm to farm. The value is affected by goals and competence

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of the farmer(s), and characteristics of the farm, such as the size of the farm (Rougoor et al., 1998). Insight into the variation of MIS value among farms will be of use not only to farmers who consider (new) MIS investments, but also to companies that design and market MISs (King et al., 1990). Moreover, farm advisors can use this insight to more specifically support farmers in improving farm results with MISs.

Characteristics of farms and farmers have been studied extensively in relationship with farm performance (e.g. Alleblas, 1988; Mok and Van den Tillaart, 1990; Rougoor et al., 1998), and in relationship with MIS use (Putler and Zilberman, 1988; Batte et al., 1990; Jarvis, 1990). The purpose of the present study is to determine the impact of farm management on MIS value. We build upon an earlier survey study using panel data of 71 pig farms in the southern part of The Netherlands (Verstege et al., 1995). Unlike many cross-sectional MIS evaluation studies, this study could investigate farm performance over time. A unique dataset was created by merging survey data collected on the same farms in 1983 and 1992. Farm developments before and after MIS use were compared. Results indicate that, from the second year of MIS use onward, average production of the MIS farms (adjusted for farm, trend, and learning effects) increased by 0.56 piglets raised per sow per year. Conversion of this important production indicator into monetary terms showed that MIS use resulted in a profit of US\$15–17 per sow per year, meaning a return on investment of 220–348% and 7.7–8.7% of the typical Dutch income per sow per year. The study also revealed that MIS effects between farms differed significantly.

In this paper, we relate these differences in MIS effects to farm management. Within the same research population, farm management is assessed with two conceptually different classification approaches that are commonly used — the sociological ‘style of farming’ approach (Van der Ploeg, 1990) and the farm-economic ‘management level’ approach (Alleblas, 1988).

## **2. Survey study**

Various sociological, technical and economic data were recorded on 143 Dutch pig farms in a survey study conducted in 1983 (Mok and Van den Tillaart, 1990). These data investigated relationships between farmer characteristics and production performance on pig farms. The farmers belonged to a group of 205 pig farmers who had received questionnaires from their extension officers. The 205 farmers were selected according to three criteria (a) ownership of a farrow-to-finish unit for pigs; (b) 1982-membership of the state advisory service and its central Herd Record System, which means that all farmers received basic information about their overall herd performance; and (c) living in the operational area of one specific district of the state advisory service (including two provinces in the southern part of The Netherlands). An important aspect of this survey (henceforth referred to as 1983-survey) is that very few Dutch pig farmers made use of MISs at that time. This means that the data recorded in this survey are adequate to use as ‘results before MIS use’.

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