

**The comparative influence of intervening variables in the adoption  
behaviour of maize and dairy farmers in Shashemene and Debrezeit,  
Ethiopia**

by

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## Dedication

*This thesis is dedicated to my brother Berhanu Abate  
(1946-1998).*

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## ACRONYMS

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AEZ	Agro ecological Zone
AI	Artificial insemination
ALWDDPMA	Ada Liben Woreda Dairy and Dairy Products Marketing Association
ANOVA	Analysis of variance
ANRS	Amhara National Regional State
AKS	Agricultural knowledge system
AKIS	Agricultural knowledge and information system
B	Behavior
BH	Bacco hybrid
BoA	Bureau of Agriculture
CBO	Community based organizations
CSA	Central Statistics Authority
CSG	Controlled selective grazing
DAP	Diamonium phosphate
DA	Development agent
EARO	Ethiopian Agricultural Research Organization
EMTP	Extension management training plot
F	Function
F2	Second generation crossbred
E	Environment
GDP	Gross domestic product
GNP	Gross national product
GWE	Growth with equity
ILRI	International Livestock Research Institute
ITK	Indigenous technical knowledge
LSP	Life space
masl	Meters above sea level
MoA	Ministry of Agriculture
NC	Need compatibility
NGO	Non Governmental Organization
NI	National income
NT	Need tension
OLS	Ordinary least squares
OM scale	Overall modernity scale
P	Person
PA	Peasant Association
PADC	Peasant Association Development Committee
PADEP	Peasant Agriculture Development Project
PADETES	Participatory Demonstration and Training Extension System
PCE	Perceived current efficiency
PHB	Pioneer hybrid
PTA	Perceived total attributes
SAA	Sasakawa Africa Association
SD	Standard deviation
SG2000	Sasakawa Global 2000
SPSS	Statistical package for social sciences
TV	Television
TVET	Technical Vocational Education and Training
UP	University of Pretoria
WAC	Woreda Administrative Council

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## Abstract

The impact of the package based extension program in Ethiopia in terms of its influence on yield improvement is not well known. The objectives of this study have been to assess the relationships and determine the factors responsible for behavior change and production efficiency of farmers participating in the program. Identification and analysis of the critical factors affecting adoption or non-adoption is believed to assist in the formulation of policy in the areas of research and extension aimed at alleviating production constraints of small-scale farmers and thereby improves agricultural productivity.

It was hypothesized that there is a significant difference among participant farmers in their technology use and production efficiency. Based on this assumption, it was also hypothesized that adoption behavior is determined by independent and intervening variables, of which, the influence of the former is indirect and only becomes manifested in behavior via intervening variables, which are the immediate and direct precursors of decision making and adoption behavior.

Independent variables included in this study are age, education, gender, farming experience, attitudinal modernity, organizational participation, contact with extension, media contact, farm size, and agro ecology. The intervening variables, on the other hand, refer to the farm operators' needs as manifested in their problem perception, and the need compatibility of the production practices and the perception regarding advantages and disadvantages of the recommended practices.

In order to test the hypotheses, the Ordinary Least Squares (OLS) method i.e. standard and hierarchical multiple regression analyses were employed on data from a survey of 200 maize and 200 dairy farming households in the Southern and Central Ethiopia.

The study reveals that, in general, maize farmers using recommended technologies are more efficient than those who do not use them. In dairy, clear differences are found only

with regard to breeding practices suggesting that the rest of the practices included in dairy package were not very important for dairy farmers.

Independent factors responsible for the difference in the adoption behavior of maize farmers include agro ecology, media exposure, education, age, farm size, extension contact, and attitudinal modernity. As far as dairy farming is concerned, education, farm size, farming experience, and media exposure are found to be significant predictors of adoption behavior. While all of the need related factors are significantly related with adoption behavior, perceptions of farmers towards production practices included in both of the maize and dairy packages are not found to be significantly associated with adoption behavior.

In general, although both the independent and intervening variables are significant predictors of the adoption behavior of farmers in the study area, the latter are much more prominent. In support of the hypothesized association, the contribution of intervening variables to the variance in the adoption behavior of maize and dairy farmers is as high as 87.2 percent in maize and 68.3 percent in dairy compared to the significantly lower contribution of independent variables, which is 32.4 percent in maize and 17.8 percent in dairy. The contribution of intervening variables is significantly higher even after the possible effect of independent variables is controlled, which is 56.6 percent in maize and 55.9 percent in dairy as opposed to 32.4 percent and 17.8 percent respectively in the case of independent variables.

Finally, this study raises issues that call for immediate policy interventions and have implications for further research.