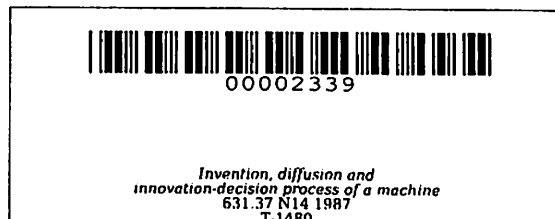


INVENTION, DIFFUSION AND INNOVATION-DECISION PROCESS
OF A MACHINE TECHNOLOGY: THE CASE OF FARM
TRUCK (or TANK), THAILAND

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INVENTION, DIFFUSION AND INNOVATION-DECISION PROCESS
OF A MACHINE TECHNOLOGY: THE CASE OF FARM TRUCK
("E-TAN"), THAILAND

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ABSTRACT

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The study sought to determine the diffusion of E-tan; to describe how E-tan was invented, the process and structure of the diffusion and innovation-decision, the rate of adoption, factors that facilitated adoption, and the consequences of the diffusion and adoption.

The study was mainly conducted in three villages of Phetchabun Province. Data were gathered from the E-tan inventor, modifier, manufacturers, dealers, repairmen, users, non-users, village headmen and government agents through personal interview using structured interview schedules. Documents also served as secondary data. Descriptive as well as statistical methods were used to analyze the data.

E-tan was invented in 1970 by a two-wheel walking tractor factory owner in Samut Prakan Province upon the suggestion of a two-wheel walking tractor dealer.

E-tan is a modified farm truck made of recycled automotive parts with a small diesel engine and transmission belts to transmit

power from the engine to its clutch. The E-tan provided farmers with means of transportation, water pumping, generating electricity, threshing machine, and other forms of uses.

In a period of 17 years from its invention until 1986, E-tan has become widely used throughout Thailand except in the southern part. In the course of its diffusion, it has been modified to suit farmers' needs and conditions.

E-tan information diffused through horizontal network through interpersonal communication. Relatives, neighbours, and mechanics were significant sources of information. The diffusion of E-tan information was a proliferation-of-centers in which many receivers became sources and disseminators of the information. Farmers unintentionally became change agents and local demonstrators.

An owner of a machine shop significantly contributed to E-tan fabrication and diffusion in Phetchabun Province. About 31.00, 16.00 and 7.32 percent of the households in Potong, Dongmoonlek and Donglan, respectively, adopted E-tan in 1986. An average of 2.81, 1.41 and 0.66 percent of the households in Potong, Dongmoonlek and Donglan, respectively, adopted E-tan per year from 1976 to 1986. The diffusion curve appeared s-shaped. Those who did not adopt E-tan said they lacked money to buy E-tan whose price averaged 41,604.35 baht.

The attributes of E-tan (relative advantage, compatibility, trialability, and observability), interpersonal communication and

nature of social system (social mobility, value on material possession, value on mechanization, aspiration, and number of accessible credit agencies) were found to have positive and significant relationship with the rate of E-tan adoption. Interconnectedness was found to have negative and significant relationship with the rate of E-tan adoption.

Utilization cost and maintenance cost of E-tan were low compared to that of the pick-up. About one-half of users earned more income from hiring out E-tan. They bought more land with that income. The diffusion and adoption of E-tan appeared to facilitate the decrease in the number of buffaloes, and to change the method of land preparation from using buffalo to using a tractor. The adoption of E-tan led to adoption of other technologies such as water pump, two-wheel walking tractor. Users and their family members positively changed their attitude toward science and technology. The agents involved in the manufacture, selling, use, and repair of E-tan also increased their knowledge and skills on machineries.

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CHAPTER I

INTRODUCTION

One major aspect of economic development is agricultural development. According to Mosher,¹ one of the essentials for agricultural development is dynamic technology. "For agricultural developments to proceed, these must constantly be changing. When they stop changing agriculture becomes stagnant."

Agricultural mechanization is often considered an important input for increasing agricultural production and productivity. To increase production, new innovative agricultural machines must be invented, developed, modified, mass manufactured, disseminated, and adopted. As an innovation, agricultural machinery may diffuse from one system to another.

Many innovations require a lengthy period, often years, before they are widely adopted. Therefore, a common problem for many individuals and organizations is how to speed up the diffusion of an innovation.

'E-tan', a farm truck which uses small diesel engine as power source was invented by a farmer in Phetchabun province and has been in use for fifteen years. To date, more than 40,000

1

A.T. Mosher, Getting agriculture moving - Essentials for development and modernization, Frederick A. Praeger, Publishers, New York, 1966, p. 75.