UNIVERSITI PUTRA MALAYSIA

INFLUENCE OF GROUP DYNAMICS FACTORS ON TECHNOLOGY TRANSFER EFFECTIVENESS AMONG MEMBERS AND NON-MEMBERS OF SOYBEAN GROWER GROUPS IN CHIANGMAI, THAILAND

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By

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LIST OF ABBREVIATIONS

DOAE	Department of Agricultural Extension, Ministry of Agricultural and Cooperatives, Thailand
SGG	Soybean Grower Groups
AECV	Agricultural Extension Core Village approach in Thailand
TTE	Technology Transfer Effectiveness
KT	Sub-district Agricultural Officer (Kaset Tambol in Thai)

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The purpose of this study was to determine whether or not the group dynamics factors adapted from selected group behaviour models influence the technology transfer effectiveness (TTE) of the soybean grower group (SGG) farmers and non-soybean grower group (non-SGG) farmers.

The correlational study employed the survey research methodology. The data collection tools included personal interview and self-administered questionnaire. A multi-stage random sampling technique was used to select 200 soybean farmers from 24 villages and 24 extension agents within Chiangmai province. Descriptive and inferential statistics (frequency, t-test, Pearson's correlation, multiple regression, and discriminant analysis) were used to analyse the data.

The study revealed that the technology transfer effectiveness (TTE) in both SGG members and non-SGG members was high. In comparison, the SGG members' TTE was significantly higher than the non-SGG members.

With the use of adapted Robbins' group behaviour model, the study provided a significant comparative insight in explaining the predictors of SGG and non-SGG members' TTE. *External situation factor* was found as the most important predictor factor of SGG members' TTE; and *attitude towards change agent* contributed the most influential variable within this factor. In addition, *exposure to groups/organizations* was found to be the only one variable in *group process factor* to be a significant predictor of both the SGG members and non-SGG members. The study also revealed that the three most important attributes of the High-TTE are those who had more exposure to groups/organizations, had a higher degree of group cohesiveness, and higher total annual income than those who were Low-TTE.

Finally, the study found that the theory of group dynamics, especially, the adapted Robbins' group behaviour model can serve as a functional model in predicting the TTE of group approach in the rural Thai context.

Abstrak dissertation yang dikemukakan kepada Senat Universiti Pertanian Malaysia sebagai memenuhi sebahagian daripada syarat untuk mendapatkan Ijazah Doktor Falsafah.

PENGARUH FAKTOR DINAMIK KUMPULAN TERHADAP KEBERKESANAN PEMINDAHAN TEKNOLOGI DI KALANGAN AHLI DAN BUKAN AHLI KUMPULAN PENANAM KACANG SOYA DI CHIANGMAI, THAILAND

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Pengerusi : Prof. Madya Dr. Haji Azimi Haji Hamzah

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Objektif am kajian ini ialah untuk mengetahui samaada faktor-faktor dinamik kumpulan dari beberapa model tingkah laku kumpulan mempengaruhi keberkesanan pemindahan teknologi di kalangan ahli dan bukan ahli kumpulan penanam kacang soya.

Kajian ini menggunakan kaedah tinjauan dan berbentuk korelasi. Temmuduga dan borang-isi-sendiri telah digunakan sebagai alat pengumpulan data. Teknik persampelan rawak berlapis telah digunakan untuk memilih dua ratus penanam kacang soya dari 24 kampung dan 24 ejen pengembangan daripada kawasan Chiangmai. Kaedah statistik diskriptif dan 'inferential' (bilangan, ujian -t, korelasi Pearson, regresi berganda dan analysis diskriminan) telah digunakan untuk penganalisisan data.

Penemuan kajian menunjukkan bahawa tahap pemindahan teknologi di kalangan ahli dan bukan ahli kumpulan penanaman kacang soya adalah

tinggi. Walau bagaimanapun tahap keberkesanan pemindahan di kalangan ahli kumpulan penanam kacang soya adalah lebih tinggi daripada bukan ahli kumpulan penanaman kacang soya.

Kajian ini menunjukkan penggunaan model tingkah laku kumpulan yang berasaskan model Robbins berkeupayaan menerangkan secara terperinci perbezaan angkubah-angkubah peramal keberkesanan pemindahan teknologi ahli kumpulan penanam kacang soya. *Faktor situasi persekitaran* didapati sebagai petunjuk paling utama bagi keberkesanan pemindahan teknologi ahli kumpulan penanam kacang soya; dan *sikap terhadap ejen pengembangan* pula ditemui sebagai angkubah yang paling berpengaruh di dalam *faktor situasi*. Di samping itu, *pendedahan kepada kumpulan/organisasi* adalah merupakan satu-satunya angkubah dalam *faktor proses kumpulan* yang, signifikan sebagai angkubah peramal bagi ahli dan bukan ahli kumpulan penanam kacang soya. Kajian ini juga mendapati bahawa tiga ciri penanam kacang soya yang mempunyai keberkesanan pemindahan teknologi yang tinggi ialah mereka yang mengalami banyak pendedahan kepada kumpulan/organisasi, yang mempunyai darjah perkaitan dengan kumpulan yang tinggi, dan mempunyai pendapatan keseluruhan yang tinggi berbanding dengan mereka yang berada di tahap keberkesanan pemindahan teknologi yang rendah.

Akhir sekali, dalam konteks kawasan luar bandar Thailand, penemuan-penemuan kajian ini menunjukkan bahawa teori yang berkaitan dengan dinamik kumpulan, terutamanya teori yang diasaskan dari model tingkah laku kumpulan oleh Robbins, boleh berfungsi sebagai model untuk meramal keberkesanan pemindahan teknologi di kalangan penanam kacang soya.

CHAPTER I

INTRODUCTION

The Department of Agricultural Extension (DOAE) of Thailand was established in 1967. Since its establishment, it has undergone a number of substantial changes -- the most important of these was the initiation of the National Agricultural Extension Project [NAEP] in 1977. The main functions of agricultural extension are to transfer scientific knowledge and technology to farmers and to provide a two-way flow of information between research and farmers.

The DOAE introduced the Training and Visit (T&V) System of extension in close cooperation with the World Bank in late 1977 to expand and strengthen its extension services. The T&V system in Thailand has been sequentially improved in order to fit the present situation. Since then, there was an impact in promoting Thailand as the world's top exporter of rice. However, during the past couple of decades the international market for rice has been dominated by excess supplies, low prices, and keen competition. Hence, Thai agricultural production policy was revised in terms of promotion by replacing rice production with other crops. Soybean or soya bean (*Glycine max* L., Merrill) is one of the cash crops considered as an alternative to rice.

Generally, most of the soybean product is used to meet domestic demand. Some of the high quality soybean product is exported to Malaysia, Sri Lanka, Singapore, and Saudi Arabia (Uthayopas et al., 1987). For example, 529 metric tons of soybean were exported in 1991 (Centre for Agricultural Statistics, 1992). In addition, soybean oil and soybean cake are

also imported for agro-industrial processing and animal feed since soybean production in Thailand is still insufficient to meet the country's demand. While there have been efforts to increase the planting area and its production, the soybean yield has remained low. For instance, the national average of soybean production in Thailand [1991-1992] was 1.37 ton/hectare against 1.89 ton/hectare for the world average [1990] (Centre for Agricultural Statistics, 1992).

The FAO conference in 1987 on Thailand's "Agriculture toward 2000" stated that the future growth in consumption would depend more on domestic production. Therefore, the possibility of switching some land from cereal production (rice) into oil seeds (soybean) to reduce cereal surpluses would enable Thailand to become self-sufficient in oil seeds and cakes/meals (FAO, 1987a). In reference to these statements, improvements in agriculture in Thailand should focus on the promotion of increasing domestic production of presently imported crops because rice production has excessive competition in the world market which tends to depress the price of exported rice.

In order to minimize the problem of world market competition in rice and also in order to conserve the nation's water supply, the DOAE of Thailand has implemented the policy of reducing the production area of rice, especially off-season or dry-season rice production, by replacing it with substitution crops (DOAE, 1986). Soybeans are considered to be one of the substitution crops in Chiangmai Province. Appropriate technology of soybean farming practices has been transferred to farmers in order to raise soybean production to meet the country's demand for soybean products and to obtain self sufficiency. Some of the policies and directions of the DOAE extension activities have been implemented and adjusted to fit the particular characteristics of the administrative system and the society within which it

must operate. For this purpose, the Training and Visit System (T&V) of the World Bank has been modified to fit the characteristics of the administrative system and the society within which it must operate (DOAE,1990). The highlighted key aspects of the current extension system in Thailand are: impact points, regular training, regular field visits, sub-district agricultural centers, and group approach.

Group approach is considered to be an effective process in extension work enhancing the activities of agricultural technology transfer to farmers. The primary goal of agricultural extension development is in generating farmers' groups and institutions. Meanwhile, informal groups are formed to facilitate the farmers' and extension activities. A number of informal groups, encouraged and efficiently improved by the DOAE, were developed into legislated or registered farmer's institutions.

The formation of farmers' groups by the DOAE (1988) is based on the assumptions that:

1. farmers may be more receptive to agricultural extension efforts;
2. group members can act as the coordinating body between government officials and farmers;
3. groups may strengthen the farmers' bargaining position with regards to agricultural production and marketing of agricultural products;
4. group activity can help farmers help themselves; and
5. groups have a role in the rural development process.

While the group approach is given more emphasis by the DOAE program planners, the basic structure of group establishment in villages is the "Agricultural Extension Core Village (AECV) Approach". The tambol or sub-

district includes at least one AECV surrounded by satellite villages. Each extension agent or Kaset Tambol (the Thai term) is required to create at least one AECV under his/her responsibility in order to transfer the appropriate agriculture knowledge and techniques. The core village will be the centre for agricultural technology transfer by the Kaset Tambol (KT) and other extension workers. Under the concept of the AECV approach, these technologies will be accepted and practiced by the farmers in the AECV and transferred to farmers within the cluster villages (Timpatanapong, 1991).

The Context of the Study

On the basis of the AECV concept and involvement of people in the technology transfer process, it is believed that forming the farmers into groups is an effective approach to transfer technology. Group members are expected to play active parts in the process of technology transfer. A number of extension activities are going on at the local group level with the expectation that farmers will participate fully and finally adopt the recommended technology. In the AECV approach these activities are supposed to be attended by both groups of clients, that is soybean grower group (SGG) members and non-members. A question can be raised here: Are these beliefs and expectations valid?

In terms of soybean production, in order to realize the country's aspiration for self sufficiency in soybeans, farmers are supposed to be actively involved in group action. Therefore, group actions are essential to accelerate development. The established groups are assumed to be contributing towards technology transfer effectiveness. This assumption is supported by many studies in group dynamics research (Festinger et al., 1963; Phillips and Erickson, 1970; Heap, 1977; Payne and Cooper, 1981;