



UNIVERSITI PUTRA MALAYSIA

**THE EFFECTIVENESS OF RUBBER TECHNOLOGY TRANSFER
THROUGH PROGRAM PEMAJU MASYARAKAT RISDA (PMR)
IN SELECTED STATES OF MALAYSIA**

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BY:

MAZLAN BIN ISMAIL

**A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia, in
fulfillment of the requirement of PRT 4999 (Final Year Project) for the award of the
degree of Bachelor of Agricultural Science**

**Faculty of Agriculture
Universiti Putra Malaysia**

2014/2015

CERTIFICATION

This project entitled “The Effectiveness of Rubber Technology Transfer Through Program Pemaju Masyarakat RISDA (PMR) in Selected States of Malaysia” is prepared by Mazlan bin Ismail and submitted to the Faculty of Agriculture in fulfillment of the requirement of PRT 4999 (Final Year Project) for the award of the degree of Bachelor of Agricultural Science.

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LIST OF ABBREVIATIONS

NO.	ABBREVIATION	EXPLANATION
1.	RISDA	Rubber Industry Smallholder Development Authority
2.	PMR	Pemaju Masyarakat RISDA
3.	KPK	Koperasi Pekebun Kecil
4.	RRIM	Rubber Research Institute of Malaysia
5.	KKLW	Kementerian Kemajuan Luar Bandar dan Wilayah
6.	GDP	Gross Domestic Product
7.	ha	Hectare
8.	Cm	Centimeter
9.	kg	kilogram

ABSTRACT

Rubber commodity contributes almost RM57 billion in 2012. With a total planting area of 1.04 million hectares, the contribution of this commodity to the national economy is expected to continue to increase due to high demand from the new economy powers like China and India. RISDA, is fully responsible in the smallholder sector, which includes 95% of the crop area and production of rubber, play a very important role in ensuring that this industry continues to expand and maintain Malaysia as one of the world's leading producer of natural rubber. Thus, some of the initiatives committed by RISDA is to appoint a total of 513 Pemaju Masyarakat RISDA (PMR) among proactive, good leadership and committed smallholder to jointly RISDA officers in the field in carrying out the delivery of extension services and technology transfer, especially to 265,274 rubber smallholders. Therefore, by creating PMR throughout the area of operations, RISDA really hope they can assist RISDA officers in the field in delivering the latest technologies in practiced as well as providing and gives a good return to smallholders. The objective of the study is to identify the demographics and farm characteristic of respondent in the study area, to examine the perception level of respondent toward PMR and RISDA extension programme. It's also to clarify the relationship between social demographics and farm profile with the opinion and changing on smallholder farm management, productivity and family living status. 180 smallholders in Temerloh and Jerantut district were selected as respondents and interviewed to fulfill the requirement of this study. The data collected were analyzed by using descriptive analysis and chi-square analysis.

The result of this study shows, the demographic and farm profile have no relationship with changing on smallholder farm management, productivity and family living status. As conclusion, there is need some improvement such as, PMR must constantly update and proficient in all the technologies was introduced and easily to be delivered to smallholders. Communication and collaboration with RISDA officers in the field should be maintained in order to achieve the target.



ABSTRAK

Komoditi getah menyumbang hampir RM57 billion pada tahun 2012. Dengan keluasan tanaman sebanyak 1.04 juta hektar, sumbangan komoditi ini kepada ekonomi negara di jangka terus meningkat berdasarkan permintaan tinggi dari negara kuasa baru ekonomi dunia seperti China dan India. RISDA, sebuah agensi di bawah KKLW yang bertanggungjawab mentadbir urus sektor pekebun kecil yang merangkumi 95 % kawasan tanaman dan pengeluaran getah, memainkan peranan yang sangat penting dalam usaha memastikan industri ini terus berkembang dan mengekalkan Malaysia sebagai antara pengeluar getah asli utama dunia. Justeru, antara inisiatif yang telah dilakukan oleh RISDA adalah dengan melantik seramai 513 orang Pemaju Masyarakat RISDA (PMR) di kalangan pekebun kecil yang proaktif dan komited untuk berganding bahu bersama pegawai RISDA di lapangan dalam melaksanakan aktiviti khidmat pengembangan khususnya penyampaian dan pemindahan teknologi getah kepada 265,274 orang pekebun kecil di seluruh negara. Sehubungan itu juga, dengan perlantikan PMR ini, RISDA sangat berharap ianya akan membantu pegawai RISDA di lapangan dalam menyampaikan teknologi terkini dan dilaksanakan sepenuhnya sekaligus mampu meningkatkan pendapatan pekebun kecil secara keseluruhannya.

Objektif kajian ini adalah untuk mengenalpasti ciri-ciri demografi dan kebun yang di miliki serta perhubungan dan perubahan ke atas kaedah pengurusan kebun, produktiviti dan status kehidupan keluarga mereka. Seramai 180 orang pekebun kecil di daerah Temerloh dan Jerantut telah dipilih sebagai responden dan ditemubual untuk mendapatkan data bagi kajian ini dan hasil yang diperolehi menunjukkan ciri-ciri

demografi dan kebun yang dimiliki tidak memberikan kesan yang ketara terhadap kaedah pengurusan ladang, produktiviti dan taraf hidup keluarga mereka.

Sebagai kesimpulan, beberapa penambahbaikan diperlukan seperti, PMR haruslah sentiasa bersedia, kemas kini dan menguasai semua teknologi yang diperkenalkan supaya mudah untuk disampaikan kepada pekebun kecil. Komunikasi dan kerjasama yang baik dengan pegawai RISDA di lapangan perlu dikekalkan demi mencapai sasaran yang ditetapkan.



CHAPTER 1

INTRODUCTION

1.0 Introduction

This study title The Effectiveness of Technology Transfer Through Program Pemaju Masyarakat RISDA (PMR) in Selected States of Malaysia. In the early stages will describe the agricultural sector in Malaysia in general and then the rubber planting which includes statistic and data related the area, the number of small holders, the total production and consumption, contributing to the economy and so on. And then the explanation about the establishment and function of RISDA for development in the small holder sector that involves the use of the various of technology starting from land clearing, planting and harvesting. Among the RISDA initiatives to ensure that the smallholders practice all the recommended technology is to create a Pemaju Masyarakat RISDA (PMR) which will be described later about the roles, function and the number throughout the country. The problem statement, research questions and objective of the study are then presented, followed by the structure of research.

1.1 Agricultural in Malaysia

1.1.1 Contribution to Economic

Agriculture plays a greater role in the affairs of any state or economy. It is one of the key economic sectors of a nation of which contributions made to a nation's well-being

are of great importance. The transformation in agriculture sector as proposed by the Malaysian government has shown positive achievements.

In Malaysia, agriculture sector was divided into two sub-sectors which is estate sub-sector and smallholders sub-sector. Estate sub-sector is more than 40.5 ha highly commercialized and efficiently managed, owned by private companies, public-listed corporate entities or public land development agencies totally involved in the production of industrial crops such as oil palm, rubber, cocoa and pineapples while Smallholders sub-sector have average farm size about 1.45 ha and owned by the local farmers. Smallholders sub-sector are less commercialized and less efficiently managed main contributors to food crop production as well as industrial crop production.

The Agriculture sector is an important sector to the country economic development. It was one of the highlighted issues during Tun Abdullah Ahmad Badawi's tenure as Malaysia's Prime Minister. Abdullah strongly believed that this industry can generate wealth and reduce poverty, particularly among those from rural areas. Based on statistics, agriculture industry generates approximately 12 percent of the national gross domestic production (GDP) and also reduce the unemployment rate in Malaysia. The history of agriculture can be traced back to during the British administration in Malaya. Several new commercial crops such as palm oil, cocoa and rubber were introduced. Since then, these crops have become the main agricultural exports to global markets. Other than the above mentioned crops, Malaysian farmers also produced another high

quality fruit and vegetables for domestic market consumption, such as durian, coconuts, bananas, pineapples and paddy.

1.1.2 Export Value

Department of Statistics Malaysia stated that exports in Malaysia decreased to RM56 million in January of 2013 from RM57 million in December of 2012. Historically, from 1970 until 2013, averaged of Malaysia Exports are RM17906.68 million, reaching an all-time high of RM63471.70 million in July of 2008 and a record low of RM328.10 million in February of 1970. Malaysia has an export oriented economy. The Malaysia main exports products are electrical and electronics products (35%), palm oil (15 %), petroleum products (9 %), liquefied natural gas (7%), timber and natural rubber. Malaysia also exports chemicals, machinery, appliances and manufactures metals. Malaysia main export partners include Singapore (15%), China (13%), Japan (12%), European Union (9%) and United States (9%), and also Thailand, Hong Kong and Indonesia.

Malaysia's export sector has evolved significantly over the five recent decades. In line with the nation's economic industrialization, the composition of exports had gradually shifted from comprising mainly of agricultural and mining products in the 1960s to manufactured goods in the 1980s. The development and growth of the manufacturing sector was so rapid that by the late 1990s, the sector accounted for more than 80% of total exports. Today, manufactured goods remain the largest component of total exports.

Since 2000, two notable trends have emerged in Malaysia's export structure. First, the gradual move away from a heavy concentration in electrical and electronics (E&E) exports, towards non-E&E manufactured products and commodities. The second key trend is the diversification of Malaysia's export markets. This box article examines Malaysia's changing export structure since 2000, identifies the reasons underpinning this trend and broadly outlines key challenges facing the export sector going forward (Department of Statistics, Malaysia and Bank Negara Malaysia).

1.2 Rubber Industry in Malaysia

Rubber industry was first introduced in 1887 when rubber seeds planted in Kuala Kangsar, Perak. Establishment of Rubber Research Institute (RRI) in 1926 has started to make Malaysia a leading producer of natural rubber in the world for several centuries until the late 1980s. Contribution to Gross Domestic Production (GDP) has increased to RM25 billion in 2009, compared to RM6.8 billion in 1995 and this figure is expected to increase based on higher demand and better prices. Rubber industry in the country has offered many employment opportunities, especially in rural areas. Establishment of the development agency like Federal Land And Development Authority (FELDA) Federal Land consolidation and rehabilitation (FELCRA) and Rubber Industry Smallholder Development Authority (RISDA) and regional development agencies has intensified the clearing of new land for industrial crops in addition to achieving the goals of eradicating poverty of the New Economic Policy (NEP). Today, Malaysia was ranked third, behind Thailand and Indonesia as the world's leading producer of natural rubber.

1.2.1 Rubber Contribution to Economic

The rubber industry is the second highest contributor to the country's economy after oil palm. Other than exporting natural rubber in block form Standard Malaysia Rubber 20 (SMR20) and rubber wood furniture, Malaysia is also a major producer of rubber gloves in the world market and to return billions of Ringgit to the country. Table 1.1 shows the Malaysia's natural rubber production and consumption while table 1.2 shows the Malaysia's natural rubber export and import.

Table 1.1: Malaysia's Natural Rubber Production VS Consumption ('000 tonne)

Year	Production	Consumption
2008	1,072 365	468 894
2009	857 019	468 669
2010	939 241	457 919
2011	996210	401 923
2012	922 798	441 398

Source : Department of Statistic, Malaysia

Table 1.2: Malaysia's Natural Rubber Export VS Import ('000 tonne)

Year	Export	Import
2008	915 507	521 931
2009	697 562	738 758
2010	900 770	706 250
2011	946 081	996 210
2012	771 194	922 798

Source : Department of Statistic, Malaysia

1.2.2 Rubber Area in Malaysia

Planted rubber areas are decreasing until now due to several factors such as changes to oil palm planting, residential and industrial development and so on. However,

recognizing the importance of this industry's contribution to the country, the government has set and maintain the existing plants so that Malaysia continues to remain one of the world's leading producer of natural rubber in addition to providing employment opportunities to the people especially in rural areas.

Table 1.3 : Malaysia's Rubber Hectarage By Sector ('000 ha)

Year	Estate	Smallholder	Total
2008	61,10	1,185.93	1,247.03
2009	61.10	967.14	1,028.24
2010	64.20	956.18	1,020.38
2011	64.20	962.84	1,027.04
2012	64.20	977.34	1,041.54

1.2.3 Rubber Smallholders

Rubber smallholders is the owner of land with an area of less than 40.4686 hectares or 100 acres and planting a rubber as a main crop on the land. Normally, they live in rural areas and depend entirely on the rubber farm as a main income. Today, the smallholders title is not only for those are living in villages, but there is also a government servant, private, businessman, and also a politician. The level of education also increasing in line with the national development and this factor will affect the level of acceptability of a new technology

While, for the area 100 acres and above is classified as a estate. The estate management approach are better and systematically compared with the smallholder sector. It requires many employees and sufficient equipment to provide good returns and

profitable. Among the successful plantation company in Malaysia such as Sime Darby, Tabung Haji and Genting Plantation.

1.3 RISDA As A Smallholder Development Agency

RISDA is the statutory body agency entrusted to serve the country's rubber industry. It was incorporated by an Act of Parliament through the Smallholders' Development Authority Rubber Industry RISDA, Act 85, 1972, and Ordinance of the Rubber Industry (Replanting) 1952 and established on 1st January 1973. RISDA is one of the departments under the Ministry of Rural and Regional Development (KKLW). Its main role is to promote and develop national objectives, policies and priorities for the smallholders to ensure that national planning, especially under the NKEA get the objectives and significantly contribute to the national economy.

After 40 years that RISDA was incorporated, RISDA intend to continue and to increase the productivity and the production by smallholders. This is because the smallholders was contributing around 95 percent of the production national rubber. The rubber industry continues to prove its integrity, since it was introduced in this country. In 2012, the rubber Industry contributes substantial income totaling RM52 billion to the national economy. Currently, the demand and price of rubber are very good and are expected to increase due to high demand from industry. It also gives a benefit to the smallholder.

The government has given a high degree of confidence to RISDA in assist smallholders to enhance their profit. Every year, RISDA is receiving a high amount of a provision in the budget announcement by the government. RISDA can grow as a lead agency under the Ministry of Rural and Regional Development (KKLW). It can assist smallholder especially from rural area to enhance their profit and to ensure they can survive in this rubber industry.

1.3.1 Mission, Vision And Objectives of RISDA

RISDA has set to create a progressive and prosperous small holder community through the plantation and commercial activities as a mission and to become the leading agency for small holder development. To make sure smallholders get a better in their lives, RISDA also set up the main objective, by the end of 2015, small holders earn a monthly income of at least RM2500 per family. So, If all small holders work hard and practice all of the introduced technology, of course this target will be successfully achieved.

1.3.2 Responsibility

There are a number of responsibilities set by the government to ensure that smallholders to achieve a higher level in a future. First, to implement the agricultural reforms derived from research, especially from Malaysia Rubber Board (MRB). Second, is to collaborate and communicate with other agencies such as research, extension, financial, processing and marketing of rubber to accelerate the modernization of smallholder sector. The next, RISDA is also constantly working with agencies such as the MRB to carry out replanting and new planting rubber for smallholder by supplying good planting material.

The fourth is, RISDA from time to time giving the knowledge to ensure that the smallholder can be modernized to increase their income. And the last one is, always take a part in all the activities organized by the Ministry to improve knowledge and update all the information regarding about the rubber such as a scheme that provided by government and the latest technology.

1.3.3 The Function of RISDA

The main function of RISDA is as the administer the Rubber Industry (Replanting) Monetary Fund established under Section 3 of the Rubber Industry (Replanting) Monetary Fund Ordinance 1952. This allocation will be returned to smallholders when their replanting the rubber farm. Now, The rate of the rubber replanting scheme is RM 9230 for one hectare in Peninsular and RM 13500 in Sabah and Sarawak. RISDA is also managed and operate the approved plans under the provisions of Part III of the Rubber Industry (Replanting) Monetary Fund Ordinance 1952 successfully. For example, other than rubber, RISDA also offer to smallholders to replanting their old rubber farm to oil palm and fruits. This approach can give a choice to smallholders to increase their income. Figure 1.1 shows the RISDA organization chart. In overall there are 17 department at RISDA and have their own function to achieve the target. RISDA also has offices in all capital state and district to provide the best services to rubber smallholders. Department of Extension and Technology Transfer is fully responsible to ensuring that all the new technology in rubber is properly delivered to smallholders through RISDA officers on the field and PMR has appointed.

CARTA ORGANISASI RISDA

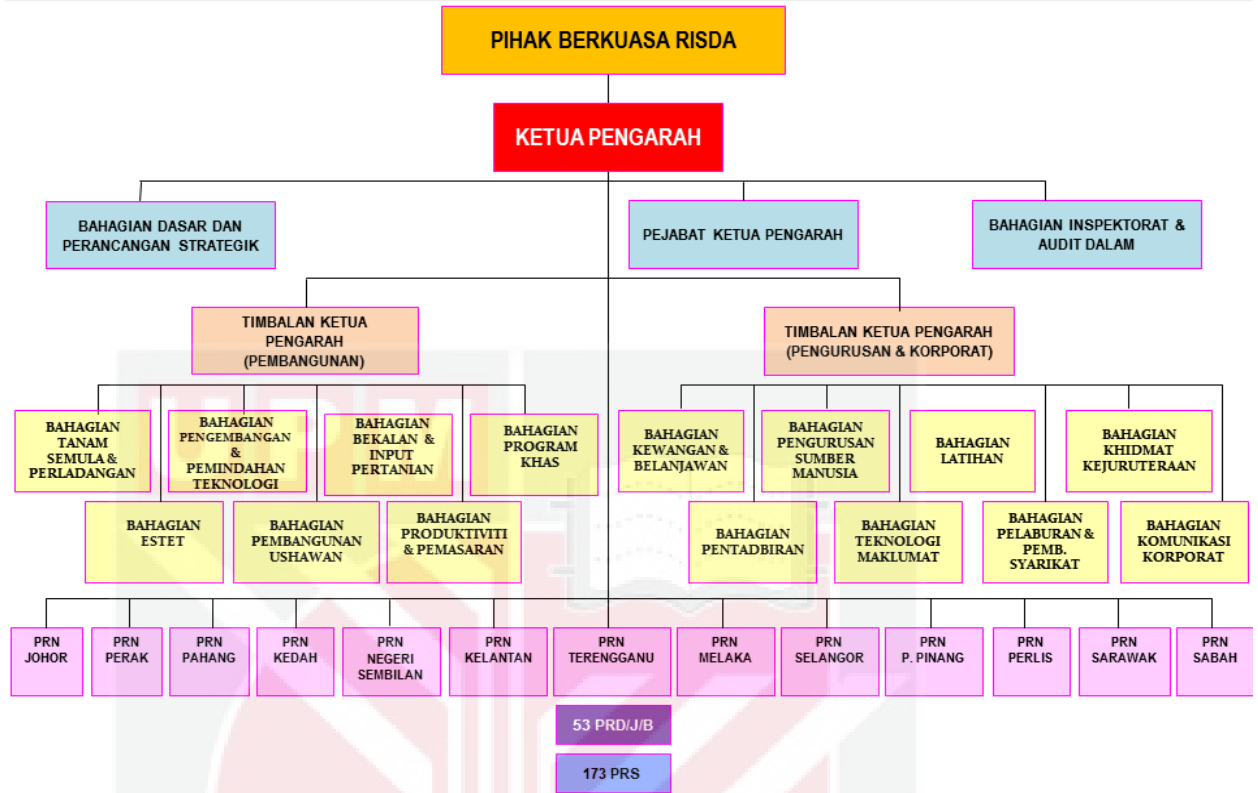


Figure 1.1: RISDA Organization Chart

1.4 Smallholders under RISDA

Based on Smallholder information System in 2011, the total rubber smallholder under RISDA is 265 274, follow by 339 908 lots with area 588 340 hectares. Below table has shown the number of smallholder by state.

Table 1.4: The Number of Smallholders by State

No.	State	Smallholder	Lot	Area (ha)
1.	Kedah	48 104	64 398	107, 471
2.	Kelantan	46 786	57,575	88,135
3.	Pahang	40,611	52,945	113,106
4.	Perak	35,107	44,992	69,063
5.	N.Sembilan	29,462	38,126	64,779
6.	Terengganu	19,532	25,631	48,241
7.	Johor	22,415	27,612	52,266
8.	Melaka	11,569	15,628	23,210
9.	Selangor	7,111	8,986	14,948
10.	Perlis	2,262	2,569	4,396
11.	Pulau Pinang	1,282	889	1,611
12.	W.P	566	-	-
13.	Sarawak	395	395	616
14.	Sabah	162	162	498
Total		265,274	339,908	588,340

1.5 Transfer of Rubber Technology Through PMR

The success of smallholders earns high yields of cultivated rubber is closely related to the practice of all the technology that they received. Extension agents such as RISDA have to make sure all derived from research, communicated with effectively and gives a benefit to the recipient. Thus, by creating Pemaju Masyarakat RISDA throughout the area of operations, RISDA really hope they can assist RISDA officers in the field in delivering the latest technologies and in practiced as well as providing and gives a good return to the smallholders.

The model process of distribution and transfer of technology produced by researchers to smallholders are follow the steps as Figure 1.2. It through the several stages which have their respective roles in order to ensure achieve the target. From the figure, all the new

technology that related to the rubber is needed an approval and recommendations from the Malaysian Rubber Board. After it was confirmed suitable to be practiced, all of these technologies is delivered to the extension agent such as RISDA. Upon received of the technology, RISDA will ensure that it is understood and skillfull practiced by all the field officer. There are two methods of technology delivery, it is is through PMR or directly from RISDA officer. This method is also used by other agencies to deliver the technologies related to the role and function of agencies.

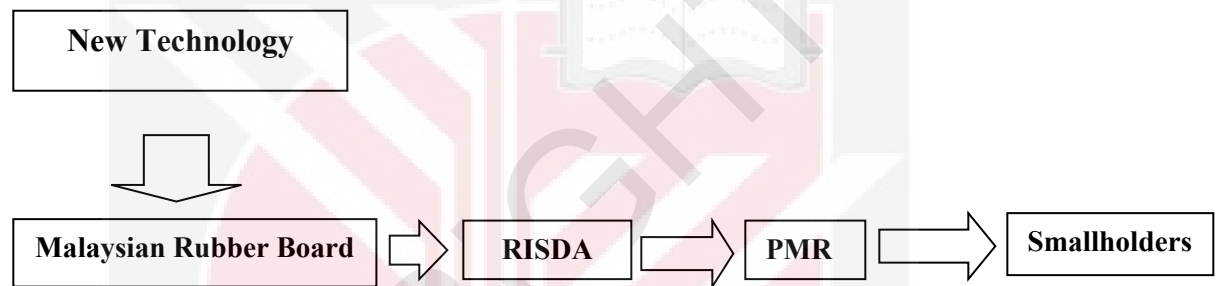


Figure 1.2: Model Process of Transfer Technology through PMR

1.6 Problem Statement

Productivity of smallholders can be increased with the implementation of technology. Too much technology and new knowledge was discover and ready to be transferred by extension agent to rubber smallholders. RISDA, through the Department of Extension and Technology Transfer will deliver and educate the small holder to use the technology through PMR.

The main purpose PMR was created is as an assistant RISDA officer in the field in all aspects of the delivery of technology that is practiced in the rubber industry. The PMR also serves as a middleman between RISDA and smallholders who deliver of important information from the RISDA such as the annual target, budget, latest programs and so on.

However, there are some problems among PMR to assist RISDA. With a ratio of 1 PMR: 517 smallholders, the number of 513 PMR is not enough to cover is quite wide areas. Total smallholders based on Sistem Maklumat Pekebun Kecil (SMPK) in 2011 was a total of 265 274.

The effectiveness delivery of information and technology is quite questionable related the average maturity rubber productivity is 1453 kg/ha/year compared to the national 1650 kg/ha/year. In terms of achieving maturity 41/2 years was only 78% of the planting is reached the trunk circumference of 10 cm/year.

Capability, expertise, leadership and the influence of PMR on smallholder is disputed. There are some PMR are not performing as hoped and facing problems in an area of care.

Impact transfer of technology and information through PMR to Knowledge, Skills, Practices and Attitude of the smallholder are not able to be fully evaluated. Other

factors such as the market price of rubber is not stable, rising prices of agricultural inputs such as fertilizers, pesticides, etc. may affect.

Therefore we need to know the perception of participants toward PMR in transferring the technology and information of rubber, the leadership of PMR and the impacts of PMR roles and tasks to smallholders' knowledge, skill, attitude and practices.

The research questions for this study are:

- 1) What is the perception of rubber smallholders toward PMR?
- 2) What is the relationship between social demographics factor and technology acceptance through PMR roles?

1.7 Objectives of The Study

1.7.1 General Objective

The general objective of this study is to identify the impact of the PMR Program to rubber smallholders in Pahang.

1.7.2 Specific Objectives

Specifically, the objectives are:

- 1) To identify the demographics characteristic of respondent in the study area.
- 2) To examine the perception level of respondent toward PMR.

- 3) To clarify the relationship between social demographics factor and technology acceptance through PMR roles.

1.8 Significance of study

The results of this study are expected to use by RISDA, particularly in assessing the effectiveness of PMR in assisting technology transfer and delivery of information to the smallholder. Appropriate actions such as specialization the job, and so increase the number of PMR may be implemented based on the results of this study. Smallholders who are customers and target groups RISDA will eventually get better benefits when improvement efforts performed. The results of this study are expected to contribute to the discipline of Theory of Technology Acceptance Model (TAM)

1.9 Thesis Organization

The first chapter will explain about agricultural in Malaysia in general. Then a description of the rubber industry production and contribution to the national economy. Statistics on the acreage, the number of small holder will also be explained. Further clarification on the agency to manage and develop the smallholder sector. The main focus is Pemaju Masyarakat RISDA (PMR) will be explained in detail about the meaning, purpose and the roles in assisting technology transfer to rubber smallholder.

Chapters 2 provide literature review. The purpose of a literature review is to describe the work that has been reported in a subject or field. It helps fill in the gap in the research that the work will address, and generates rationale or justification for the study. It demonstrates an individual's ability to identify the significant information and sketch existing knowledge. In another meaning, the main purpose of a literature review is to demonstrate the scholarly capacity, identify information, and outline the presented knowledge. It places each work in the context of its role in the understanding of the topic under review. It explains how the information in the report will be used to supplement the original purpose statement. The review is also useful in describing the relationships of each work to the others under consideration. It also includes activities or studies that have been done are others who portray our ability to develop and evaluate research done either closely linked or have opposition. We can associate an earlier study by the research we are doing to establish continuity and useful references. Explain about matters related to the implementation of the study.

Chapter 3 is methodology and discussing in details about location of study, sampling design, questionnaire design, data collection and data analysis that will be used in this study.

Chapter 4 is the result and details discussion of the research project and Chapter 5 conclude the research project including limitation of the study and recommendation for the future study.

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