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Economic Impact of Development Initiatives on Low-Income Households in Kelantan, Malaysia

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Abstract: To improve the socio-economic condition of low-income households, underlying organizations offer a variety of products and services such as access to working capital and training programs. This study examined the impact of access to working capital and training programs on household income and economic vulnerability among participants of AIM, TEKUN, and LKIM in Kelantan, Malaysia. Adopting a cross-sectional design, data were collected randomly from 450 micro-entrepreneurs living in seven districts in Kelantan. The finding revealed that the total amount of economic loan received, length of the programs participation, and number of hours spent on training programs had a positive effect on household income in order to decrease the level of economic vulnerability. The finding provided useful information for policies development that prioritizes poverty eradication among low-income households who were vulnerable to weak economic situation.

Keywords: micro-credit; training; household income; economic vulnerability; Malaysia

1. Introduction

Poverty has become a multidimensional problem in developing and underdeveloped countries. According to the World Bank (2018), 2.4 billion people live in an extremely poor condition spending less than US$1.90 each day. Specifically, poor low-income households are unable to invest in education and generate opportunities due to limited access to credit and financial support. Therefore, various organizations such as United Nations (UN), World Bank, and non-governmental organizations (NGOs) have been introducing different programs, services, and policies to address poverty issue (Akoum 2008). Of all these initiatives, financial assistance is the utmost importance. Nichter and Goldmark (2009) indicated a strong relationship between micro-credit programs and income, which is likely to decrease economic vulnerability (Al-Mamun et al. 2014).

Most poverty measurements are introduced based on the poverty line that distinguishes the income and expenditure between low-income, poor, and non-poor households (Hagenaars and Praag 1985). Although income is an important measurement of poverty, it is not effective to capture the poverty (Chatterjee et al. 2014). Poverty is a multidimensional phenomenon with a richer concept than the traditional approach (Chatterjee et al. 2014). In Malaysia, poverty is measured by using poverty line income (PLI), a quantitative money metric measure. A household is considered poor when it's monthly gross income is below the PLI. Basically, households with a gross monthly income below RM760 and RM460 in Peninsular Malaysia are absolute poor and extreme poor, respectively. The low-income households group is classified based on an average monthly household income of 40% in Malaysia, which is RM2848 (DSM 2017).

Poverty eradication is one of the main objectives that needs to be addressed by the development policy. Therefore, micro-credit and training programs are included in the New Economic Policy (NEP) to alleviate poverty and income inequality. To improve the socio-economic conditions of low-income households, several strategies and policies are proposed such as the NEP, National Development Policy, Vision 2020, and New Economic Model (NEM), reducing the incidence of poverty from 0.6% in 2014 to 0.4% in 2016 (EPU 2018). Unfortunately, poverty has been prevalent that requires organizations such as Amanah Ikhtiar Malaysia (AIM), Tabung Ekonomi Kumpulan Usahawan National (TEKUN), and Lembaga Kemajuan Ikan Malaysia (LKIM) to lessen economic vulnerability and poverty. These three non-governmental organizations provided micro-credit and training programs for the low-income household to generate income.

Undeniably, micro-credit and training programs are prominent tools for poverty eradication in Malaysia. The government can collaborate with AIM, TEKUN, and LKIM by providing low-income households working capital and useful programs to generate income (Ahmed et al. 2011; Md Saad 2011; Al-Mamun et al. 2011) and decrease the level of economic vulnerability (Al-Mamun et al. 2014). Basically, AIM is a private trust established on 17 September 1987 registered under the Truster (Incorporration Act 1952). It provides loans such as I-Mesra Loan, I-Srikandi Loan, I-Wibawa Loan, and I-Penyayang Loan. AIM provides I-Bestari Loan for education and I-Sejahtera Loan for housing and other purposes. Moreover, AIM also provides non-financial assistance programs such as Sahabat Teras, Strengtening Entrepreneurship, and Sahabat Berjaya. These programs include the understanding of skills and risk management plans.

Apart from that, TEKUN is an agency under the Ministry of Entrepreneurial and Cooperative Development established in November 1998. TEKUN provides four economic loans including TEKUN Nasional Financial Scheme, Teman TEKUN Financing Scheme, I-Factoring Financing Scheme, and Ar-RAHNU TEKUN. LKIM is an authorized body under the Ministry of Agriculture and Agriculture Base Industry incorporated under Malaysia Fisheries Development Board Act 1971. LKIM provides several small-scale working capital services to the fishing community. LKIM offers one funding section for loan, which is to plan and coordinate the fisheries funds and economic development fund of fishing for fishermen. All in all, the main purpose of establishing these three organizations is to reduce the poverty issue among low-income households by providing various development activities that assist them in generating more income.

Development initiative programs are the backbone of many developing and emerging economies which hold the key to the possible revival of economic growth and the elimination of poverty (Afrane 2002). In Ghana and South Africa, Afrane (2002) reported that a significant portion of the increased income was channeled into improving access to financial outcomes (savings and accumulation of assets) and non-financial outcomes (education, health, standard of living, housing, and job opportunity) (cf. Hossain and Knight 2008; Odell 2010). Also reported in South Africa, Hietalahti and Linden (2006), found that a great proportion of micro-credit participants were able to secure profit of more than *South African Rand* (ZAR) 50 per month, where half of the participants secured profits of more than ZAR500 per month. In Zimbabwe, Barnes and Keogh (1999) showed that the participant's household income more than doubled.

In investigating the impact of Malaysia's development initiative programs, Omar et al. (2012) found that participants of micro-credit programs had seen an increase in average monthly household income, from RM1286.77 to RM2703.63, an increment of RM1416.86 (110%), more than double the previous amount. According to Samer et al. (2015), existing members of the programs enjoyed a higher household income, an increase of 1.5%, as compared to new members. This was because the existing members had spent over three years in the programs with frequent participation in business training.

However, few studies argued that the impact of development initiative programs, in particular, micro-credit and training programs, have been inconclusive (Angelucci et al. 2013; Ganle et al. 2015; Van Rooyen et al. 2012). According to Ganle et al. (2015), the participants underscored the limitations of small-sized loans that put high profit-yielding business venture investments out of reach as they require

larger capital investments. Consequently, some participants failed to invest their loan in economically rewarding ventures, are faced with considerable loan repayment problems, and had even become more vulnerable. Angelucci et al. (2013) further broaden the lens by examining five measures of additional income generated by micro-credit programs in the last six months—total household income, labor income, participation in any economic activity, remittance income, and positive savings—and revealed no significant effects on any of the five measures. Similarly, another study conducted in the Sub-Saharan African region showed micro-credit doing harm as well as good to the poor people it purports to help. Thus, the researchers concluded that micro-credit should not be promoted as the absolute solution due to the potential harm towards the poorest participants (Van Rooyen et al. 2012). Generally, instead of focusing on the hardcore and extreme poor cohort, some micro-credit programs only focused on benefiting the cohort of poor (Altay 2006; Copestake et al. 2001; Rahman and Razzaque 2000) by assisting in utilizing their money (Rutherford 1996). In addition, the majority of these studies were conducted in one geographical area (Omar et al. 2012; Saad and Duasa 2011), within an organization (Mahmood and Rosli 2013; Al-Mamun et al. 2011; Nawai and Bashir 2009), using small sample size (Ganle et al. 2015; Omar et al. 2012), and limited control variables (Hashemi et al. 1996).

To reiterate, this study extends the literature by examining the impacts of access to working capital and training programs on households' income and economic vulnerability among the participants of development initiatives in Kelantan, Malaysia. Rather than proving the positive path of micro-credit and training programs towards household income, we seek to ascertain whether the participants experience a decrease in economic vulnerability level after gaining access to the said programs. Kelantan was chosen as it is the poorest state in Peninsular Malaysia, with 0.4% poverty rate in 2017, and scored the lowest mean monthly household income of RM4214 (EPU 2018).

2. Literature Review

2.1. Theoretical Foundation

Socio-economic development is a complex process. The impact of micro-credit and training programs can be underpinned by modern development theory and human capital theory. The modern development theory is an evaluation of the income inequalities that requires access to working capital. As mentioned by Claessens and Tzioumis (2006), lack of access to working capital can aggravate poverty substantially. Fundamentally, access to working capital increases the ability of low-income households to generate income in order to minimize the level of economic vulnerability. Human capital theory suggests that training programs can help to accelerate the productivity of the participants when they are implanted with knowledge and skills used to generate income in future (Becker 1964). Investing in training programs is likely to increase productivity in an economic system (Schultz 1961). In fact, human capital theory justifies that training program can raise the value of human capital, income, and productivity of the participants (Fitzsimons 2015). According to Schultz (1993), human capital is a process of training that enhances an individual's knowledge, skills, and abilities to reduce the level of economic vulnerability. Many studies highlighted that the importance of micro-credit programs on income generation among low-income households (Samer et al. 2015; Terano et al. 2015; Omar et al. 2012; Al-Mamun et al. 2011; Saad and Duasa 2011). Thus, micro-credit and training programs can be provided for households to improve their income in order to minimize the level of economic vulnerability.

2.2. Impact of Development Initiatives

The development initiatives are programs that intend to eradicate poverty. The mission of these development initiatives is to provide both financial and non-financial assistance for increasing income and decreasing economic vulnerability. In order to accomplish this mission, multilateral organizations such as the UN, World Bank, and NGOs are working together. At the same time, the Malaysia government also encourages private sector to alleviate poverty. Particularly, AIM,

TEKUN, and LKIM provide working capital and enterprise development training program facility for low-income households to conduct income-generating activities (Anderson et al. 2002). Micro-credit programs are expected to uplift the low-income households by providing them a small amount of working capital (Rosenberg 2010). Thus, these micro-credit and training programs are to make sure that those 2.4 billion people who spend less than US$1.90 a day can receive working capital and reliable financial services (Al-Mamun et al. 2011; Daley-Harris and Laegreid 2006). In Micro-Credit Summit Campaign, when there are five persons in a household, providing working capital to 2.4 billion households would affect 875 million households. Then, the household income would increase more than $1 a day, nearly a billion people will rise above extreme poverty (Daley-Harris and Laegreid 2006). The effectiveness of the development initiatives programs is highly reliant on the household's ability to utilize the loans wisely. For instance, Hossain (1988) found that the average household income among Grameen members was 43% higher than normal individuals. In Bosnia and Herzegovina, micro-credit programs had a significant impact on the household income (Dunn 2005). These micro-credit programs were instrumental in lowering the level of economic vulnerability (Otero 1999). Nawaz (2010) confirmed that the programs had a positive impact on the household income and poverty eradication in Bangladesh. Similarly, Hulme and Mosley (1996) found a positive relationship between access to credit and borrower income. Low-income households who participant the micro-credit programs enjoy a high living standard due to adjustment to the family income (Haque et al. 2017).

In Malaysia, AIM, TEKUN and LKIM micro-credit schemes are similar to Grameen's micro-credit model. The first internal impact study was conducted by Gibbons and Kasim (1990). The researchers revealed that there was an increase in monthly households' income from an average of RM142 per month to RM220 per month. As supported by Social Science and Economic Research Unit (SERU 1999), the overall households income increased from RM197.78 per month to RM465.66 per month, especially those who participated in micro-credit and training programs. Mahmud (2006) concluded that micro-credit and training programs contribute to income generation much better than other programs. Therefore, this study measures the impact of access to working capital and training programs on household income and economic vulnerability among participants of development initiatives in Kelantan, Malaysia.

2.3. Impact on Household Income

Micro-credit and training programs play a crucial role in increasing the household's income. These programs provided productive capital, social capital, and human capital that help low-income households to live out poverty (Abed 2000). Household income refers to the total of cash-inflows from wage income, net income from business, livestock and agricultural activities, rental income, investment income, and gift earned and/or received by all the household members in the last twelve months. Additionally, micro-credit and training programs are to provide small amount of loan to allow low-income households to engage in income-generating activities (Al-Mamun et al. 2011). These programs are expected to increase the household's income by offering working capital and enterprise development training courses. Hence, the participants have the ability to utilize their loan and manage their finance wisely (Samer et al. 2015). Researchers used different indicators to measure the household income of micro-credit participants. For instance, Saad and Duasa (2011) measured the household income in Malaysia by using level of earning/income, ratio of spending to income, value of assets, education, age, amount of loan, sources of income, and ownership assets. Moreover, Khandker et al. (1998) measured the household income by looking at agriculture and non-agricultural services to determine the effect of income and employment on micro-credit programs in Bangladesh. Based on these two studies, this study selects salient indicators such as total amount of loan received, length of participation, enterprise development training hours, education (number of years in school), age, gender, and household size to predict the effect of micro-credit and training programs on household income.

Numerous studies showed that micro-credit and training programs have a significant impact on poverty reduction (Samer et al. 2015; Omar et al. 2012; Al-Mamun et al. 2011; Morduch 2000). Undoubtedly, participation in micro-credit and training programs can improve the low-income households' ability to yield household income, net working capital, and fixed assets. Others studies (Terano et al. 2015; Rahman and Khan 2013; Saad and Duasa 2011) reported that micro-credit programs contribute to the monthly household's income, amounting RM316.40 per month. Khandker (1998) surveyed 1800 households in 86 villages in Bangladesh and found that micro-credit programs increased the household's income. Based on an AIM internal assessment in 2005, when the low-income households borrowed from the AIM, their average monthly income increased from RM326 to RM932 (AIM 2008).

However, several studies argued that micro-credit and training programs have a low impact on the rise of the income. For example, Khan et al. (2017) pointed out micro-credit and training programs cannot not reach the poorest and three-quarters of the low-income households are not benefited from any forms of assistance from development organizations. Wichterich (2017) argued that micro-credit creates indebtedness that can cause long-term poverty. To overcome cash shortages, many low-income households obtain credit from different sources that eventually force them to be involved in lending-to-pay circle, creating potential poverty trap. In fact, inadequate technical training can contribute to the low performance of low-income household members (Geta and Hamiso 2017). Also, solely receiving credit does not increase the income because changes in income is strongly associated with a household's ability to utilize the credit. Lacking in training will negatively affect the way households utilize their credits due to incompetence managing finance (Panigrahi 2017). Coleman (1999) reported that wealthier households and villagers are more likely to participate in micro-credit and training programs, with the wealthiest villagers being almost twice as likely to participate in micro-credit programs as compared to the poor. Another hotly contested issue raised by the organizations' staff, in relation to the target beneficiaries, was that these programs did improve the income level but not among the low-income and poorest households (Hulme 2000). Although there are a handful of studies with findings of no or even negative impacts of micro-credit and enterprise development training programs on household income, yet most studies reported a positive and significant effect of access to credit and training programs. Thus, this study is to examine the influence of access to working capital and training programs on household income and economic vulnerability among participants of various development initiatives (AIM, TEKUN, and LKIM). Hence, the following hypothesis is developed:

Hypothesis 1. *Access to working capital and enterprise development training programs increases household income among participants of development organizations in Malaysia.*

2.4. Impact on Economic Vulnerability

Micro-credit and training programs are means of improving the socio-economic conditions of the low-income households (Gurses 2009). These programs have also been found to diversify income-earning sources, build assets, and improve the standard of living (Khandker 1998). Basically, vulnerability is defined as risk of exposure to potentially harmful events. Vulnerability includes income poverty, asset poverty, and a risk exposure to political, natural, and economic risk. In response to this issue, both access to micro-credit and training program are to minimize the economic vulnerability among low-income participants (Al-Mamun et al. 2014; Ray-Bennett 2010; Schurmann and Johnston 2009).

In addition, Feeny and McDonald (2015) examined household vulnerability in two Melanesian countries based on multidimensional vulnerability. The researchers employed a cross-sectional data from household survey and indicated that vulnerability became widespread. Despite strong social support network and semi-subsistence lifestyle, the majority of households in the two countries were experiencing multidimensional poverty (Feeny and McDonald 2015). According to Al-Mamun et al. (2014), economic vulnerability index was utilized to measure economic vulnerability

against micro-credit programs. They also revealed a positive relationship between poverty and vulnerability because micro-credit programs were effective tool in declining economic vulnerability. This finding was consistent with previous studies (Husain and Mallick 1998; Morduch 1998; Montgomery et al. 1996). Additional income sources generated from the micro-credit programs can be used for education, expenditure and saving purpose to address the economic vulnerability (Pearlman 2012; Khandker 2001). Given that one of the objectives of this study is to investigate the impact of access to working capital and training programs on household income and economic vulnerability, thus the following hypothesis is developed:

Hypothesis 2. *Access to working capital and enterprise development training programs decrease economic vulnerability among participants of development organizations in Malaysia.*

3. Research Methodology

This study used a cross-sectional design and collected quantitative data through structured interviews. The population of this study is a total of 88,435 low-income households identified as participants of development programs offered by AIM, TEKUN, and LKIM in Kelantan, Malaysia. The research team approached the said development organizations for a list of at least 150 participants, each with their name, address and contact details. AIM, TEKUN, and LKIM provided a list of 500, 350, and 156 randomly selected existing participants of their programs. The listed participants (1006 participants) were from seven districts including Tumpat, Bachok, Pasir Puteh, Pasir Mas, Tanah Merah, Gua Musang, and Jeli. Then, the research team communicated with each of the listed participants to explain the purpose of the survey and arrange for an appointment with them. Of the 1006 listed participants, this study secured the participation of 450 respondents (AIM-150; TEKUN-150; LKIM-150). Data was collected from the respondents through structured face-to-face interviews conducted at their preferred location.

3.1. Sample Size

The sample size was determined according to Krejcie and Morgan (1970) formula:

$$s = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$$

where

s = required sample size.
X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).
N = the population size (88,435).
P = the population proportion (assumed to be 0.50).
d^2 = the degree of accuracy expressed as a proportion (0.05).

Since the population was 88,435, a sample size of 383 was required. To minimize possible complication regarding small sample size, this study collected data from 450 participants.

3.2. Operational Definitions

Length of participation refers to the duration respondents spend on the participation in micro-credit and enterprise development training programs. The total amount of economic loan received refers to the amount of credit that participant obtain from AIM, TEKUN and LKIM. Hours of enterprise development training refers to the total number of enterprise development training programs attended, total number of training hours attended, and total number of attendants in the last 12 months. Household income refers to 'average monthly income obtained from all sources by all the household members in last twelve months'. Finally, economic vulnerability refers to the risk

of exposure to potentially harmful events. Studies conceptualized vulnerability as vulnerability to income poverty, asset poverty, and the risk exposure to political, natural, and economic disasters. In fact, economic vulnerability is measured by using the index adopted from Al-Mamun et al. (2014), presented below.

$$EV = CV_i AST_A DIV_{si} POV_i \frac{1}{DIV_i} DEP_h$$

EV refers to the vulnerability index that measures the level of economic vulnerability among the participating households. CV denotes the coefficient of variation for the average monthly income earned (last twelve months) among the three groups of households based on their business period. $AST_A = \sqrt{\ddot{A}/A_i}$, where $\ddot{A}$ represents the average net worth of enterprise assets within the same group of respondents, while A_i reflects the net worth of enterprise assets. DIV_{si} is the proportion of total income from enterprise income (businesses owned and managed by the respondents). Meanwhile, the effect of poverty level upon economic vulnerability was measured as $POV_i = \sqrt{PLI_{PH}/I_{HH}}$, where I_{HH} refers to the average monthly income for household; whereas PLI_{PH} denotes the income of bottom 40% of the population in Malaysia, amounting RM2848 per household per month (DSM 2017). The effect of diversification in income sources on economic vulnerability had been measured as $DIV_i\sqrt{SOI}$, where SOI is the total number of income sources (full-time). Households with higher proportion of dependent members per gainfully employed member ratio have been estimated to appear more vulnerable (DEP_h).

3.3. Control Variables

Several variables such as gender, age (Islam et al. 2017; Samer et al. 2015), number of sources of income (Al-Mamun and Mazumder 2015; Al-Mamun et al. 2014), and gainfully employed household members (Al-Mamun and Mazumder 2015) are discovered to affect household income and economic vulnerability. Other variables include education, household size, household income, and enterprise income. To further elaborate, in terms of gender, women's participation in income generating activities is not common in developing countries because of the social and religious practices. Therefore, male household members with income are expected to be higher and less economically vulnerable than female. In terms of age, older participants are more skilled and experienced, they are able to enjoy higher household income compared to new participants. Additionally, participants with high level of education earn more and are less economically vulnerable than others. For gender, specifically, this study coded '1' for Male while '0' for Female.

4. Summary of Findings

4.1. Demographic Characteristics

Demographic characteristics of the 450 respondents, including their gender, age, marital status, government support, education, type of firm and number of years firm established presented in Table 1.

Table 1. Profile of the Respondents.

	n	**%**		***n***	**%**
Gender			*Education*		
Male	224	49.8	Never attended school	15	3.3
Female	226	50.2	Primary School	251	55.8
Total	450	100.0	Secondary school	136	30.2
			STPM/Diploma	48	10.7

Table 1. *Cont.*

	n	%		*n*	%
Age			Total	450	100.0
Up to 30 years old	21	4.7			
31–40 years old	64	14.2	*Firm Established*		
41–50 years old	200	44.4	1 to 5 Years	52	11.6
51–60 years old	125	27.8	6 to 10 Years	192	42.7
61 years old and above	40	8.9	11 to 15 Years	144	32.0
Total	450	100.0	16 to 20 Years	60	13.3
			21 Years and Above	2	0.4
Marital Status			Total	450	100.0
Married	423	94.0			
Single	22	4.9	*Types of Firm*		
Divorced	1	0.2	Manufacturing	52	11.6
Widowed	4	0.9	Retailing	80	17.8
Total	450	100.0	Service	266	59.1
			Livestock	17	3.8
Received government support			Wholesaling	2	0.4
No	395	87.8	Fishing	33	7.3
Yes	55	12.2	Total	450	100.0

Source: Author(s) own compilation.

4.2. Descriptive Analysis

In Table 2, the mean value for the average monthly household income was RM1834.75 with the standard deviation of RM865.74. After program participation, the mean value for monthly changes in household income was RM1082.49 with the standard deviation of RM605.59. Concurrently, the mean value for economic vulnerability was 0.67% with the standard deviation of 0.59%. The number of years in development program was 10.87 years with the standard deviation of 4.43 years. Moreover, the mean value for total amount of economic loan received was RM21,454.44 with the standard deviation of RM11,167.23. The mean value for the total number of training program attended by respondents was 5.5 times with the standard deviation of 2.77 times. Their total number of training hours obtained the mean value of 40.47 h with the standard deviation of 22.87 h. The total number of centre meeting or discussion attended by the respondents was 32.77 times with the standard deviation of 20.94 times. Besides that, the mean value for age was 48.31 years old with the standard deviation of 9.612 years old. The mean value for the number of years in school was 5.82 years with the standard deviation of 3.560 years. Then, the mean value for household size was 7.80 members with the standard deviation of 1.74 members.

Table 2. Respondents and Participation Details.

	Minimum	**Maximum**	**Mean**	**Std. Dev.**
Average Monthly Household Income	100	3583	1834.75	865.74
Changes in household income after participation (Monthly)	50.00	3458.33	1082.49	605.59
Economic vulnerability	0.14	3.75	0.67	0.59
Number of Years	1	22	10.87	4.43
Total amount of economic loan received	1000	95,000	21,454.44	11,167.23
Total number of training programs attended	0	16	5.50	2.77
Total number of training hours	0	180	40.47	22.87
Number of Centre Meeting or Discussion	0	48	32.77	20.94
Age	19	77	48.31	9.619
Education (Number of Years in School)	0	15	5.82	3.560
Household Size	2	17	7.80	1.742

Source: Author(s) own compilation.

In Table 3, the mean values for various groups indicated that respondents who joined the micro-credit programs for over 16 years achieved higher number of training programs and number of hours of training programs. In other words, underlying organizations might have provided useful enterprise developing training programs before. ANOVA f-test revealed that the *p*-value less than 0.01, indicating that the mean value for number of training programs, number of hours of training programs and number of center meetings or discussions attended by respondents were statistically different among the groups. Furthermore, new participants were discovered to receive higher amount of economic loan as compared to existing participants because high-income households might have the ability to generate more income using their loan. Two groups of respondents after participating the programs for up to 5 years and more than 16 years had high level of 'changes in household income'. As for economic vulnerability, the existing respondents were less economically vulnerable.

Table 3. Length of Participation and Key Determinants.

		N	Mean	Std. Dev.	Sig.
Number of Training Programs Attended	1–5 years	45	5.31	3.38	0.000
	6–10 Years	193	5.96	2.05	
	11–15 Years	139	4.40	2.79	
	16 Years and Above	73	6.53	3.28	
	Total	450	5.50	2.77	
Number of Hours of Training Programs	1–5 h	45	40.11	29.59	0.000
	6–10 h	193	42.98	16.71	
	11–15 h	139	32.07	22.05	
	16 h and Above	73	50.03	28.37	
	Total	450	40.47	22.87	
Number of Centre Meetings or Discussions	1–5 years	45	36.31	19.25	0.000
	6–10 Years	193	43.93	12.75	
	11–15 Years	139	19.87	21.58	
	16 Years and Above	73	25.67	21.65	
	Total	450	32.77	20.94	
Total amount of Economic Loan	1–5 years	45	24,573.33	14,878.94	0.035
	6–10 Years	193	23,798.45	9598.82	
	11–15 Years	139	18,400.00	10,090.36	
	16 Years and Above	73	19,150.68	12,544.00	
	Total	450	21,454.44	11,167.23	
Changes in household income after participation (Monthly)	1–5 years	45	1150.70	593.65	0.645
	6–10 Years	193	1089.49	541.59	
	11–15 Years	139	1034.32	691.43	
	16 Years and Above	73	1113.67	603.86	
	Total	450	1082.49	605.59	
Economic vulnerability	1–5 years	45	0.57	0.53	0.000
	6–10 Years	193	0.43	0.38	
	11–15 Years	139	0.95	0.68	
	16 Years and Above	73	0.83	0.59	
	Total	450	0.67	0.58	

Source: Author(s) own compilation.

In Table 4, the number of years of program participation, total amount of economic loan, changes in household income after the program participation, and level of economic vulnerability were grouped according to the number of training programs participated by the respondents. The mean value for this particular group showed that many existing participants received little training. The mean value for amount of economic loan showed that respondents who underwent regular trainings received more economic loans from the underlying organizations. However, there was no clear relationship between

number of training received and the changes of household income, and economic vulnerability among various groups.

Table 4. Training and Key Determinants.

		N	Mean	Std. Dev.	Sig.
Number of Years (Member)	Up to 2 Trainings	50	12.30	4.23	0.001
	3 to 4 Trainings	152	10.96	4.73	
	5 to 6 Trainings	154	9.81	3.68	
	7 to 8 Trainings	20	10.85	4.24	
	More than 9 Training	74	11.93	4.93	
	Total	450	10.87	4.43	
Total amount of Economic Loan	Up to 2 Trainings	50	15,240.00	8725.52	0.000
	3 to 4 Trainings	152	19,358.55	10,489.53	
	5 to 6 Trainings	154	21,873.38	8572.31	
	7 to 8 Trainings	20	23,250.00	8010.68	
	More than 9 Training	74	28,601.35	15,132.28	
	Total	450	21,454.44	11,167.23	
Changes in household income after participation (Monthly)	Up to 2 Trainings	50	892.16	676.76	0.718
	3 to 4 Trainings	152	942.54	574.84	
	5 to 6 Trainings	154	990.63	545.82	
	7 to 8 Trainings	20	975.00	419.81	
	More than 9 Training	74	891.44	589.14	
	Total	450	946.44	572.76	
Economic vulnerability	Up to 2 Trainings	50	1.37	0.73	0.000
	3 to 4 Trainings	152	0.68	0.56	
	5 to 6 Trainings	154	0.45	0.28	
	7 to 8 Trainings	20	0.42	0.30	
	More than 9 Training	74	0.70	0.66	
	Total	450	0.67	0.58	

Source: Author(s) own compilation.

Table 5 presents the mean difference of number of years of participation, number of training programs attended, changes in household income after program participation, and level of economic vulnerability among various groups according to the total amount of economic loan received by the respondents. The finding revealed a relationship between economic loan received and number of years of participation, changes in household income after the program participation, and economic vulnerability. This implied that respondents received better economic loan had a higher amount of changes in household income and were economically vulnerable.

Table 5. Loan Received and Key Determinants.

		N	Mean	Std. Dev.	Sig.
Number of Years (Member)	Up to 10 k	66	4.76	3.42	0.000
	11 k to 20 k	195	4.91	2.09	
	21 k to 30 k	115	5.60	2.40	
	31 k and Above	74	7.59	3.20	
	Total	450	5.50	2.77	
Number of Training Programs Attended	Up to 10 k	66	13.70	5.38	0.000
	11 k to 20 k	195	10.71	4.05	
	21 k to 30 k	115	10.06	3.72	
	31 k and Above	74	10.04	4.55	
	Total	450	10.87	4.43	

Table 5. *Cont.*

		N	Mean	Std. Dev.	Sig.
Changes in household income after participation (Monthly)	Up to 10 k	66	754.16	686.47	0.004
	11 k to 20 k	195	926.75	560.54	
	21 k to 30 k	115	1000.36	501.47	
	31 k and Above	74	1086.03	558.27	
	Total	450	946.44	572.76	
Economic vulnerability	Up to 10 k	66	1.22	0.63	0.000
	11 k to 20 k	195	0.67	0.59	
	21 k to 30 k	115	0.51	0.41	
	31 k and Above	74	0.44	0.42	
	Total	450	0.67	0.58	

Source: Author(s) own compilation.

4.3. Partial Correlations

A partial correlation was performed to determine the relationship between the changes in household income, economic vulnerability and the participation indicators. Table 6 reported that the changes of average monthly household income had a positive correlation with the number of years of participation (p-value 0.026), number of hours spending on training programs (p-value 0.001), and total amount of economic loan (p-value less than 0.01) after controlling the effect of gender, age, education, and household size. In fact, economic vulnerability showed that the changes in the level of economic vulnerability had an unexpected positive correlation with the number of years of participation (p-value 0.003). Nevertheless, a negative effect on number of training programs (p-value 0.044), number of hours spent on training programs (p-value 0.000), number of center meeting or discussion (p-value less than 0.01), and total amount of economic loan received (p-value less than 0.01) after controlling the effect of gender, age, education, and household size.

Table 6. Partial Correlation.

Variables		Income	EV	Year	Training	Hours	CM/D	Loan
Changes in household income	Correlation	1.000						
	Sig. (1-tailed)	0.000						
Economic Vulnerability	Correlation	−0.509	1.000					
	Sig. (1-tailed)	0.000	0.000					
Number of years of Participation	Correlation	0.092	0.128	1.000				
	Sig. (1-tailed)	0.026	0.003	0.000				
Number of Training Programs Attended	Correlation	0.039	−0.081	0.163	1.000			
	Sig. (1-tailed)	0.204	0.044	0.000	0.000			
Number of Hours of Training Programs	Correlation	0.144	−0.159	0.180	0.782	1.000		
	Sig. (1-tailed)	0.001	0.000	0.000	0.000	0.000		
Number of Centre Meeting or Discussion	Correlation	0.052	−0.551	−0.343	0.168	0.178	1.000	
	Sig. (1-tailed)	0.137	0.000	0.000	0.000	0.000	0.000	
Total amount of Economic Loan	Correlation	0.187	−0.179	−0.057	0.287	0.263	0.211	1.000
	Sig. (1-tailed)	0.000	0.000	0.117	0.000	0.000	0.000	0.000

Note: (a) Income—Changes in household income after participation; EV—Economic vulnerability; Years—Number of years; Training—Number of Training Programs Attended, Hours—Number of Hours of Training Programs, CM/D—Number of Centre Meeting or Discussion, and Loan—Total amount of economic loan received; (b) Control variables—gender, age, education, household size. **Source:** Author(s) own compilation.

4.4. Impact on Household Income

The finding revealed the Durbin-Watson statistic of 1.920 marked the absence of auto-correlation. The VIF and tolerance values were lower than 5 and 2, respectively, indicating that no multicollinearity

issue. The F and p-value from the ANOVA statistic is 4.622 and 0.000, respectively. Considering that the p-value for ANOVA is less than 0.001, it means that at least one variable can be used to model 'changes in household income after program participation'. However, the normality of the residuals of the Kolmogorov-Smirnov test provided the p-value of 0.000, which was less than 0.05, failing to meet the assumption of normality. The Unstandardized Residual Stem-and-Leaf Plot presented the outliers based on the Unstandardized Residual values. This study removed the outliers and reanalyzed the data using 338 respondents. Since the p-value for Kolmogorov-Smirnov test of normality (N = 338) was 0.20, therefore the assumption of normality was satisfied.

Since the r^2 value was 0.365, it meant that 36.5% of the variation in changes in household income after the program participation was explained by years of participation, number of training programs, number of hours spent on training programs, number of center meeting or discussion, total amount of economic loan received, gender, age, education, and household size.

As presented in Table 7, the finding revealed that number of years of participation had a positive effect on the changes of household income after participating the development programs. Furthermore, total amount of economic loan had a positive effect on the changes of household income. The effect of number of training hours and total number of center meeting and/or discussion had a positive effect on the changes of household income. In terms of control variables, there was a positive effect of gender and education. On the contrary, there was a negative effect of age and household size on the changes of household income.

Table 7. Regression Coefficients.

	N = 450					N = 338	
	Unst. Beta	**Std. Error**	**Stan. Beta**	**Sig.**	**VIF**	**Stan. Beta**	**Sig.**
(Constant)	765.406	260.247		0.003			0.013
Years	18.341	7.367	0.142	0.013	1.566	0.296	0.000
Training	−48.246	16.342	−0.234	0.003	3.016	−0.468	0.000
Hours	5.112	1.907	0.204	0.008	2.793	0.389	0.000
CM/D	2.844	2.209	0.104	0.199	3.141	0.507	0.000
Loan	0.009	0.003	0.178	0.001	1.295	0.276	0.000
Gender	97.122	75.500	0.085	0.199	2.097	0.161	0.009
Age	−5.342	3.400	−0.090	0.117	1.570	−0.134	0.015
Education	16.471	9.346	0.102	0.079	1.625	0.227	0.000
Household Size	−17.354	15.873	−0.053	0.275	1.123	−0.141	0.003

Note: (Dependent variable) Income—Changes in household income after participation; (Independent variables) Years—Number of years; Training—Number of Training Programs Attended, Hours—Number of Hours of Training Programs, CM/D—Number of Centre Meeting or Discussion, and Loan—Total amount of economic loan received; (Control Variables) gender, age, education, household size. **Source:** Author(s) own compilation.

4.5. Impact on Economic Vulnerability

Given that the r^2 value for economic vulnerability was 0.545, it implied that 54.5% of the variation in economic vulnerability could be explained by number of years of participation, total amount of economic loan received, total number of training hours, number of center meeting or discussion, gender, age, education, and households size. Since the Durbin-Watson statistic was 1.078, it indicated the absence auto-correlation. In Table 8, the VIF values for all variables were below 5, thus no multicollinearity issue was identified. The F value and p-value of the ANOVA statistic was 58.516 and 0.000, respectively. As the p-value was less than 0.05, at least one variable could be used to model economic vulnerability.

Table 8. Regression Coefficients.

	N = 450					N = 290	
	Unst. Beta	**Std. Error**	**Stan. Beta**	**Sig.**	**VIF**	**Stan. Beta**	**Sig.**
(Constant)	0.930	0.188		0.000			0.000
Years	−0.008	0.005	−0.061	0.128	1.566	0.027	0.157
Training	0.032	0.012	0.151	0.007	3.016	0.088	0.003
Hours	−0.004	0.001	−0.139	0.010	2.793	−0.087	0.003
CM/D	-0.020	0.002	−0.728	0.000	3.141	−0.983	0.000
Loan	-3.310×10^{-6}	0.000	−0.063	0.086	1.295	−0.084	0.000
Gender	−0.032	0.055	−0.027	0.561	2.097	−0.088	0.000
Age	0.010	0.002	0.156	0.000	1.570	−0.020	0.276
Education	−0.001	0.007	−0.008	0.846	1.625	−0.011	0.583
Household Size	0.013	0.011	0.039	0.252	1.123	0.014	0.375

Note: (Dependent variable) EV—Economic Vulnerability; (Independent variables) Years—Number of years; Training—Number of Training Programs Attended, Hours—Number of Hours of Training Programs, CM/D—Number of Centre Meeting or Discussion, and Loan—Total amount of economic loan received; (Control Variables) gender, age, education, household size. **Source:** Author(s) own compilation.

However, the normality of the residuals of the Kolmogorov-Smirnov test (N = 450) provided the p-value less than 0.01, failing to meet the assumption of normality. The Unstandardized Residual Stem-and-Leaf Plot presented the outliers based on the Unstandardized Residual values. After the outliers were removed, the data were reanalyzed using 290 respondents. The p-value for Kolmogorov-Smirnov test of normality (N = 290) was 0.20, thus the assumption of normality was satisfied. Table 8 presents the standardized beta and p-values.

With 290 respondents, the r^2 value was 0.935, it indicated that 93.5% of the variation in economic vulnerability could be explained by number of years of participation, total amount of economic loan received, total number of training hours, number of center meeting or discussion, gender, age, education, and households size. Durbin-Watson statistic of 0.193 indicated the absence of auto-correlation. Considering the VIF values for all variables were below 5, there was no problem of multicollinearity identified. ANOVA analysis reported that the F value and the p-value were 450.278 and 0.000, respectively. As the p-value was less than 0.05, at least one variable could be used to model economic vulnerability.

Table 8 revealed that the effect of numbers of years of participation on economic vulnerability is negative, which indicates that participation in development programs reduced economic vulnerability among the low-income respondents. However, the effects are not statistically significant (N = 450 and N = 290). The number of hours of training, number of center meetings and/or discussions, and total amount of working capital showed a negative and statistically significant effect on economic vulnerability. In respect of control variables, several factors such as gender, age, and education had a negative effect on economic vulnerability.

5. Conclusions

Based on the objectives of development initiatives, this study concluded that participation in micro-credit and training programs had encouraged the changes of household income that actually decreased economic vulnerability. This finding was consistent with previous studies conducted in Malaysia (Al-Mamun et al. 2014), India (Ray-Bennett 2010), Bangladesh (Schurmann and Johnston 2009), and Turkey (Khandker 2001; Gurses 2009). The main finding suggested that micro-credit and training programs were discovered to influence the household income and level of economic vulnerability, which heralded useful information for formulating economic and social policies as well as poverty eradication programs, especially for low-income households in Kelantan. To further augment the design of better anti-poverty policies, investigations should expand towards understanding the characteristics of households that are on average, more exposed to income shocks. This economic vulnerability could be noteworthy to deserve further examination not only for the purposes of economic performance

evaluation but also its relevant sensitivity to the exposed risks of financial crisis and downturns. Additionally, it would be interesting to understand how economic vulnerability levels can be reduced, by first initiating investigation paths at the household level and then relate the exposure to risks with other variables.

Therefore, development policymakers and organizations should focus on providing flexible access to credit programs and more training and motivational programs in the areas of management and marketing support to further enhance entrepreneurial capabilities. Essentially, these training programs can yield higher micro-enterprise profits, subsequently minimizing economic vulnerability among low-income households. However, given the mandate to deliver national and regional development initiatives, development organizations should be audited by the proper authorities to safeguard against corruption and mismanagement. In addition, the beneficiaries of credit should be provided with adequate grievance and feedback channels on the performance of the respective MFIs. Finally, for the low-income household participants, micro-credit and training programs might be the key stimulus in creating small and positive impacts on overall standards of living, by way of additional income. Thus, it is necessary to establish training centres that provide enabling environments to motivate continued and frequent participation in future training programs. It would be ideal for future researches to examine the micro-credit-to-development initiatives path towards other outcomes (i.e., education, health, nutritional status), beyond just household levels, but at community and regional levels.

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