

A FOUR-LEVEL AGROPRENEURSHIP TRAINING EVALUATION MODEL FOR RURAL COMMUNITIES

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Abstract: The economy of rural communities is commonly associated with agriculture. Hence, many farming initiatives are organised by government agencies to enhance the socioeconomic status of rural communities, wherein raising the income and standard of living in the Bottom 40 group (B40) is the primary objective of most programmes. This paper presents a robust framework based on the entrepreneurship training courses called the Agropreneurship Community Training Programme (ACTP) conducted by the Northern Corridor Implementation Authority (NCIA) and Yayasan Kemajuan Sosial Malaysia (YKSM). The study assessed the effectiveness of ACTP based on the four-level training model initiated by Kirkpatrick (1959), which is composed of reaction, learning, behaviour and result. The assessment involved 200 participants in Bagan Serai, Perak. A four-level training framework model was developed based on the categorisation derived from factor analysis. A higher mean value for each assessment level and increments to the respondent's income indicated the effectiveness of the programme. Evidently, the model appears to be suitable for assessing rural agropreneur training, and future work may apply a similar model in the design and delivery of entrepreneurship curriculums.

Keywords: Agropreneurship, B40 group, rural community training evaluation model.

Introduction

Rural areas are generally associated with a high level of poverty mainly due to the lack of economic opportunities, poor infrastructure development, and limited access to basic services. Rural residents earn a lower income level than urbanites (Tsvegemed *et al.*, 2018), and almost three-quarters of the world's poor live in rural areas, where they are highly dependent on agriculture and its related activities as a livelihood (Madeley, 2008). Several countries have taken the initiative to enhance the living standard of their rural citizens by developing and providing training for agricultural activities, such as those implemented in China and Latin American countries. Those nations have proven that agricultural reforms could generate positive impact by decreasing their poverty rate by 3.5 and 2.7 times, respectively

(Ligon & Sadoulet, 2007). In Malaysia, the government has encouraged people to embrace modern agriculture technology since the late 1990s. In the 9th Malaysia Plan (2006-2010), the government had begun modernising the country's agriculture (Yusoff *et al.*, 2016) by emphasising agropreneurship training and education (Kadir, 2014).

Involvement of farmers in entrepreneurship denotes agropreneurship. According to Bairwa *et al.* (2014), an agropreneur is one who undertakes a variety of agricultural activities in becoming an entrepreneur. Venketaraman (2002) defined entrepreneurship as a process of handling uncertainty and being innovative to overcome situational issues, as well as to maximise profit for social benefit. Entrepreneurship is vital in transforming the agricultural sector and to act as a new economic catalyst of the country (Alsos,

2011), besides generating lucrative income among agropreneurs (McElwee *et al.*, 2011; Vesala *et al.*, 2007). Sustainable agropreneurship serves as a tool to uplift the standard of living in rural areas (Bairwa *et al.*, 2014).

Effective entrepreneurship education and training is arguably more important than ever for economic growth in a globalising economy (Winsor & Hanlon, 2016). Entrepreneurship education and training significantly enhances management knowledge, apart from developing entrepreneurship psychological attributes and behaviour (Oosterbeek *et al.*, 2010). According to Gbenedio (2012), the importance of entrepreneur training cannot be denied in providing skills for new ventures in seeking national transformation. Osisioma (2012) stressed on the need to provide a radical and structured training programme that caters to the underprivileged and needy community because effective training can positively influence entrepreneurial success (Harper & Finnegan, 1998), alleviate poverty, and help the poor to attain better quality of life (UNESCO, 2004).

Despite the huge allocations provided for various agropreneurship training and education programmes since the 9th Malaysia Plan, the reception of young Malaysians towards agropreneurship appears to be lukewarm (Abdullah *et al.*, 2012). According to Mohamed *et al.* (2011), the Malaysian government has embarked on a mission to enhance agricultural entrepreneurship training using sustainable agricultural methods that enable participants to utilise opportunities in the agricultural business. The relationship between agricultural entrepreneurship training and successful agropreneurship is still unclear, particularly in training programmes among the rural community. Many studies have assessed formal entrepreneurship education at higher education level (Paco *et al.*, 2016; Yusoff *et al.*, 2016) and barriers that impede the enhancement of the agricultural segment (Upadhyay & Barman, 2013; Owoade, 2017).

This study investigated the effectiveness of entrepreneurship training towards sustainable

agropreneurship among the rural community. According to Topno (2012), assessment is the most essential aspect of a training programme. He added that a training evaluation is the process of collecting and measuring the outcome required in determining the efficacy of a programme. Although the available training evaluation models signify the importance of training programme evaluations, Carnevale and Schulz (1990) asserted that the evaluation of training programmes are often inconsistent or neglected. As such, the vastly applied four-level training model (Kirkpatrick, 1959) was adopted in this study due to its strength evaluation approach on the behavioural outcomes displayed by the training participants (Mann & Robertson, 1996; Dahiya & Jha, 2011). The model has been deployed by a broad range of entrepreneurship educators and practitioners engaged in agropreneurship training design and delivery. The remaining of this paper is as follows: The next section briefly describes the agricultural development in Malaysia. After that, the four-level model is presented, and followed by a discussion on the methodology adopted in this study. Moving on, the results are discussed by reflecting on the measures used to assess the four-level model in agropreneurship training for rural communities in the state of Perak, Malaysia. The Agropreneurship Community Training Programme (ACTP) has been implemented by the Northern Corridor Implementation Authority (NCIA) and Yayasan Kemajuan Sosial Malaysia (YKSM). In four districts in Perak, namely Bagan Serai, Manjung, Sungai Siput and Bagan Datuk. For this study, we will report findings on 200 ACTP participants from Bagan Serai.

Agricultural Development in Malaysia

The agricultural sector played a major role in the Malaysian gross domestic product in the late 1960s and early 1970s. The 4th Malaysia Plan (1981-1985) had emphasised on the importance of agricultural activities, which led to the initiation of the First National Agricultural Policy (NAP1) (1984-1991) aimed at maximising income earned by farmers through efficient use

of national resources (Dardak, 2015). However, in the 5th Malaysia Plan (1986-1990), the government started to put effort into modernising and commercialising the smallholder sub-sector that rationalised the extent of government involvement, apart from encouraging private sector participation, to revitalise and modernise the agricultural sector (EPU, 1986; Indrani, 2001). Next, the 2nd National Agricultural Policy (NAP2) (1992-2010) was initiated to focus on the productivity and efficiency of the agro-food industry to maximise economic growth (Dardak, 2015). One of the many strategies that NAP2 highlighted was to enhance human-resource development via training.

The 3rd National Agricultural Policy (NAP3) (1998-2010) was formulated during the 7th Malaysia Plan (1996-2000) to facilitate the recovery of the sector after the Asian Financial Crisis struck in 1997. The crisis has made the government realise the importance of self-sufficiency among its citizens. One of the primary objectives is to enhance food security, as well as to increase productivity and competitiveness of the sector. In the 9th Malaysia Plan (2006-2010), the government tried to transform the country to a knowledge-based economy, and the agricultural sector was set as the third pillar of economic growth. This objectives were to encourage creativity and innovation in production, enhance competitiveness in commercialising agro-based products, improve human capital development, produce high value-added primary products, uplift productivity through research and development, increase mastery of science and technology, add knowledge about marketing strategies, and introduce a higher level of professionalism and involvement in agricultural entrepreneurship (Mohamed *et al.*, 2011). Following that, the fourth National Agro-food Policy (2011-2020) (NAP4) was initiated to address issues related to sustainable agriculture, apart from enhancing the competitiveness of agro-based products in light of food security and nutrition aspects. The 10th Malaysia Plan (2011-2015), along with New Economic Model (NEM) and Economic Transformation Programme (ETP), emphasised

the significant role of highly skilled, creative and innovative workforce in transforming Malaysia into a high-yield country (EPU, 2011; Jauhar *et al.*, 2016). The 11th Malaysia Plan (2016-2020) continued with the aim of improving productivity, promoting training for youths, and strengthening supply chain and institutional support. Hence, this study looked into the government transformation agenda that focused on human capital development within the agriculture sector.

Training Evaluation Model

Training evaluation is integral to help training providers assess and digest the outcome of training modules (Abdelhakim *et al.*, 2018; Kaufman & Keller, 1994; Kirkpatrick, 1967; Seaman, 2010). There is a vast range of proposed evaluation models. Among the early models are the CIRO approach (Warr, Bird & Reckham, 1970), Context, Input, Process, Product (CIPP) Evaluation Model 9 (Stufflebeam, 1983), Galvin's CIPP (1983), Phillip's Evaluation approach (Phillips, 1966). The latest include the E.E.E.E. Training Evaluation Model (Khan & Ramsey, 2013), the Training Evaluation Inventory (TEI) (Ritzmann, Hagemann & Kluge, 2014) and Impact-Based Training Evaluation Model (Sutarto, Usman & Jaedun, 2016).

As for this study, the evaluation model developed by Kirkpatrick (1967) is proposed, which is composed of four levels of evaluation: Level 1-Reaction, Level 2-Learning, Level 3-Behavior, and Level 4-Results. The four levels were deployed to address the following elements. The first element refers to trainees' reaction (were they happy with the training?). According to Kirkpatrick and Kirkpatrick (2006), reaction denotes a measure of customer satisfaction. Reactions are the first assessment of the training programme, wherein a positive reaction may not bring adverse effects on learning, but negative reaction can definitely reduce the chances of succeeding (Abdelhakim *et al.*, 2018; Kirkpatrick & Kirkpatrick, 2006; Tamkin, Yarnall & Kerrin, 2002). The second element is learning (what did the trainees learn?).

The learning assessment should compare the changes in their attitude, improved knowledge and increased skills after the training (Winfrey, 1999). The third element refers to behaviour (did the trainees change their behaviour after training?). Trainees' behaviour involves transfer of knowledge or skills in the real-world. Assessing one's behaviour is the most difficult task, but it is also the most important aspect, primarily because if trainees failed to transfer their knowledge into practice, the outcome may be assumed as failure (Kirkpatrick & Kirkpatrick, 2009). The final element — results — consists of the bottom-line contribution of the training programme that can be examined using the following methods; measuring costs, quality and return on investment (ROI). According to Kirkpatrick and Kirkpatrick (2006), each level has vital impact on the subsequent level.

This model has been widely applied across various fields to evaluate the impact of training programmes. For example, Wan *et al.* (2017) applied this four-level model as reference to assess reaction (student satisfaction), learning (achievement that reflects trainees' mastery of expected knowledge, skills and attitude), behaviour (student knowledge transfer ability), and results (achieving and promoting goal realisation). Abdelhakim *et al.* (2018) also used the same model to explore food safety training among airline cabin crew. Jones *et al.* (2018) adopted the model to evaluate a home-based paediatric nursing service, and Alsalamah and Callinan (2021) applied the model to assess training programmes for headteachers. Tamkin *et al.* (2002) asserted that the wide application of this model stems from its simplicity, ease of use and suitability as a conceptual framework for classifying evaluation. According to Choudhury and Sharma (2019) and Perez-Soltero *et al.* (2019), the model is the most recognized method of evaluating the effectiveness of training programs. Furthermore, the model has been selected because it involves both informal and formal training styles, where many researchers and practitioners have found it very useful (Jain *et al.*, 2021). This present study looked into a specific Malaysian government training programme known as the Agropreneurship Community Training Programme (ACTP).

Agropreneurship Community Training Programme (ACTP)

The ACTP has been implemented by the Northern Corridor Implementation Authority (NCIA), a statutory body that is responsible for driving development in the northern states of Peninsular Malaysia under the Northern Corridor Economic Region (NCER). The objective is to eradicate poverty in rural areas by elevating the household income of those earning less than RM2,388 a month, which is the amount usually earned by farmers. The targeted group for this initiative includes youths who are interested in venturing into modern farming.

The ACTP is an initiated collaboration between the Agriculture & Agro-based Industry Ministry (MOA), the NCIA, the district offices and Village Security and Development Committees of local farming communities. The NCIA is an agency established under the Finance Ministry (previously under the Prime Minister's Office until 2018). This programme is run by Yayasan Kemajuan Sosial Malaysia (YKSM). The ACTP aims to equip agropreneurs with expertise in using the fertigation system to improve their crop quality and yield, besides increasing household income. It is developed in parallel to the agenda stipulated in the National Agro Food Policy (2011-2020), so as to educate farmers on good farming practices, including soil and water management, as well as judicious use of fertilisers and pesticides.

The initiative is also in line with the NCER Blueprint 2.0 (2016-2025) under the NCIA to develop sustainable agropreneurs. The NCIA has assigned YKSM, a non-governmental organisation (NGO) dedicated to enhancing the socio-economic status of the rural community, as a training provider for the Bottom 40 (B40) group. YKSM has more than a decade of experience in the agriculture industry, as well as excellent knowledge in farming and the fertigation system. The main aim is not only to eradicate poverty in rural areas, but also to enhance inclusiveness towards an equitable society under the shared value concept in the agriculture sector. The training programme has been certified by the Skill Development Department of the Human Resources Ministry. Figure 1 illustrates the objectives of the ACTP.

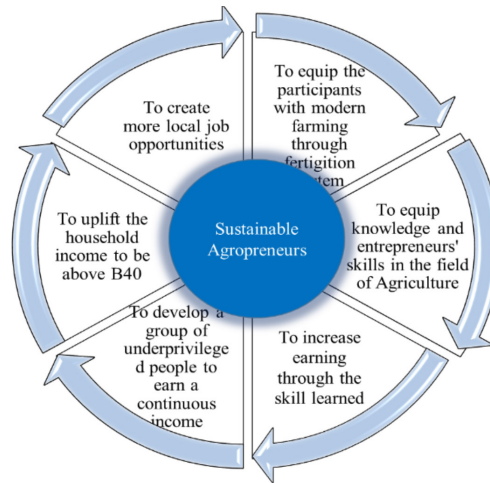


Figure 1: The objective of the ACTP
 Source: Yayasan Kemajuan Sosial Malaysia

The ACTP has been implemented in four locations in Perak, namely Bagan Serai (2013-2014), Manjung (2014-2015), Sungai Siput (2015-2016), and Bagan Datuk (2018-2019). In total, 800 farmers had participated in its

initiatives. The farmers underwent four stages of training for eight months, which consisted of 30 per cent theory and classroom learning, and 80 per cent practical, plus a six-month post-training course. Table 1 lists the training stages.

Table 1: ACTP implementation stages

Stages	Activities	Duration
Stage 1	Recruitment process	2 months of pre-training
	Selection of participants, including shortlisting them	
	Identify location for practical training	
Stage 2	Execution of Training	2 months
	Theory Classes & Land preparation process	
Stage 3	Theory and practical training 12 modules to be completed with 600 training hours	6 months
Stage 4	Monitoring	6 months of post-training

Figure 2 portrays the four-level framework of the ACTP training effectiveness model in generating sustainable agropreneurs.

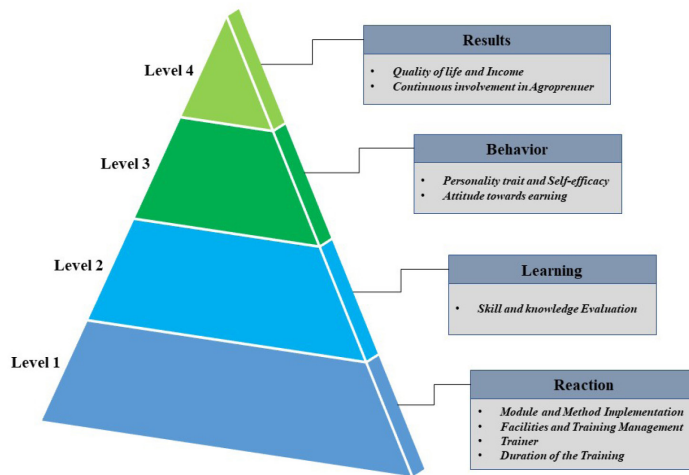


Figure 2: Framework on training effectiveness model for the ACTP programme

The framework shows the categorisation of items to measure the practical implementation of Kirkpatrick's model in the ACTP programme. Levels 1 and 2 are differentiated from levels 3 and 4 based on the argument put forward by Dick and Carey (1996). According to the researchers, evaluation for levels 1 and 2 typically focuses on the training criteria and facilities provided by the training provider. Levels 3 and 4, which reflect a formative point of view, are integral but rarely assessed (Bramley & Kitson, 1994), thus limiting the findings on the evaluation of Kirkpatrick's model for levels 3 and 4. These two levels may be applied to determine if the skills acquired actually provide implications to the participants. Changes in behaviour can be evaluated several months after the training, particularly on how the participants apply the skills and knowledge acquired from the training (Topno, 2012). This study presents significant outcomes on the four-level assessment in assessing the efficacy of the ACTP programme.

Data Collection

The quantitative approach was employed to evaluate the training efficacy, which was similar to prior training and development studies (Tannenbaum & Yukl, 1992). The sampling procedure involved only the total population of 200 participants in Bagan Serai. Participants from Bagan Serai were selected as it was the first programme held and the gap within the period (one-and-half years after the programme) could provide better outcome to measure training effectiveness. The data collection process was conducted from July to September 2020. The questionnaires were distributed to the participants at their training location. The questionnaires were composed of four-level variables; reaction, learning, behaviour and result. The five-point Likert scale was used for all measures. A pilot study was carried out among 30 participants from a different location (Bagan Datuk) to ensure that the actual study participants could comprehend all items after the back-to-back translation process, so as to maximise the translation equivalence of the questionnaire. A factor analysis was performed to probe into categorisation of items. All variables were tested for reliability and the Cronbach alpha values exceeded 0.60.

Results

Demographic Profile of Participants

Table 2 presents the demographic profile of 200 training participants. The main profiles were age,

gender, marital status, race, level of education, family size, occupation, as well as monthly household income before and after joining the ACTP. The bar chart in Figure 3 displays the significant increase in the income earned by the participants.

Table 2: Background profile of ACTP participants in Bagan Serai, Perak

Description	Criteria	Frequency	Percentage (%)
Age	20-30 years	10	5.0
	31-40 years	19	9.0
	41-50 years	97	49.0
	51-60 years	74	37.0
Gender	Male	113	57.0
	Female	87	43.0
Marital Status	Single	19	6.0
	Married	175	88.0
	Divorced	6	3.0
Race	Malay	151	76.0
	Chinese	3	1.0
	Indian	45	22.5
	Others	1	0.5
Education Level	Primary Education	-	-
	Secondary Education	179	89.5
	Diploma/STPM	17	8.5
	Higher Education	4	2.0
Family Size	Below 3	36	18.0
	4-6	154	77.0
	7-9	6	3.0
	Above 10	4	2.0
Current Job	Government Sector	8	4.0
	Manufacturing	24	12.0
	Self-employed	107	53.5
	Housewife	56	28.0
	Others	4	2.5
Monthly Income Before ACTP	Below RM1000	42	21.0
	RM1001-RM2000	106	53.0
	RM2001-RM3000	46	23.0
	Above RM3001	6	3.0
Monthly Income After ACTP	Below RM1000	6	3.0
	RM1001-RM2000	77	38.5
	RM2001-RM3000	90	45.0
	Above RM3001	27	13.5

Based on Figure 3, the four categories of income are summarised as follows: For the RM1,000 and below income category, the number of participants before and after the training programme were reduced from 42 to

six. For the RM1,001-RM2,000 range, it had decreased from 106 to 77. As for the range of RM2,001-RM3,000, an increase was noted from 46 to 90. Lastly, for those earning above RM3,000, the number had increased from six to 27.

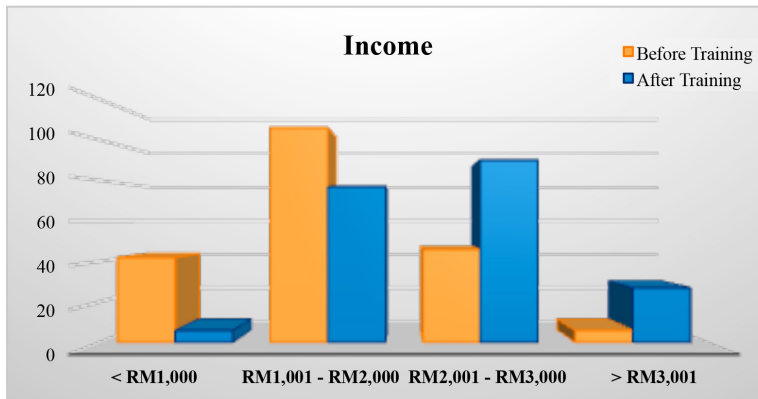


Figure 3: Comparison of participants' income before and after training

Effectiveness of Entrepreneurship Training towards Sustainable Agropreneurship

Factor analysis has been conducted on the four main variables that are reaction, learning, behaviour and sustainable agropreneurship. The results

are illustrated in Table 3. Bartlett's Test indicated whether the items were correlated highly enough to provide a reasonable basis for factor analysis. The value of the KMO test was larger than 0.70, and Bartlett's Test was significant at $p \leq 0.05$ (Leech et al., 2013).

Table 3: KMO and Bartlett's Test

Variable	KMO	Bartlett's Test		
		Value	df	Sig. (p)
Reaction	0.876	3285.798	153	0.000
Learning	0.879	818.192	15	0.000
Behavioural	0.823	727.686	28	0.000
Sustainable Agropreneurship	0.827	1198.978	36	0.000

Tables 4 to 7 present the results retrieved from factor analysis with Cronbach's alpha,

mean, and standard deviation (SD) values for the four-level training effectiveness measures (reaction, learning, behaviour and results).

Table 4: Factor loading, mean, and SD for reaction element

Reaction Component	Factor Loading			
	1	2	3	4
Factor 1: Module and Method Implementation				
I'm satisfied with the training module	.767			
I understand the classification method given in the diagram	.855			
I like the way the division of the modules per skill	.811			
I am satisfied with the training module which is 30% theory and 70% practical	.725			
I feel motivated by my group members (five in a team)	.735			
I am comfortable with the 'handholding' by coaches	.732			
Factor 2: Facilities and Training Management				
I feel easy to learn because all agricultural materials have been provided		.622		
I am provided with equipment for practical training		.609		
I am satisfied with systematic training management		.805		
Training management using a merit system has encouraged agropreneurs to attend sessions without fail		.784		
Training management involving 4 days a week (part-time) to learn the intricacies of agriculture is enough		.780		
Factor 3: Trainer				
Trainers are always ready to help in using electronic devices			.762	
The trainers use a suitable and respectful approach			.887	
Trainers have extensive experience in the field of agriculture			.873	
Site training with suitable facilities is an effective training approach for agropreneurs			.521	

Factor 4: Duration of the Training				
I'm satisfied with the eight months of training				.826
Eight months provided a comprehensive training exposure				.884
Duration of training is suitable as an attempt to become a continuous agropreneur				.874
<i>Cronbach's alpha value</i>	0.922	0.905	0.864	0.918
<i>Mean and SD</i>	M: 4.365 SD: 0.487	M: 4.363 SD: 0.506	M: 4.30 SD: 0.477	M: 4.242 SD: 0.603

Table 5: Factor loading, mean, and SD for learning element

Learning Component	Factor Loading
Factor 1: Skill and knowledge Evaluation	
I have gained adequate skills in the technological aspects of fertigation to start farming effectively	.776
Practical sessions provided me with real-life skills in agriculture	.837
I have learned business skills	.808
Agricultural knowledge is obtained through specific hand on workshops on agriculture	.878
I have gain knowledge on agricultural business network	.861
I learned how to use a logbook in assessing and monitoring farming activities.	.865
<i>Cronbach's alpha value</i>	0.913
<i>Mean and SD</i>	M: 4.307 SD: 0.461

Table 6: Factor loading, mean, and SD for behavioural element

Behavioural Component	Factor Loading	
	1	2
Factor 1: Personality trait and Self-efficacy		
I believe that working tirelessly is the key to making me a successful agropreneur	.757	
I like working in groups	.814	
I'm very interested in agriculture business	.808	
I applied what I learned to succeed in agriculture	.799	
I believe after gaining skills from this training, I will succeed as an agropreneur	.805	
I am confident that I will be a successful entrepreneur	.715	

Factor 2: Attitude towards earning		
I often look for opportunities to increase my income		.778
My positive attitude towards money has motivated me to become a sustainable agropreneur		.868
<i>Cronbach alpha value</i>	0.884	0.587
<i>Mean and SD</i>	<i>M: 4.321</i>	<i>M: 4.278</i>
	<i>SD: 0.429</i>	<i>SD: 0.513</i>

Table 7: Factor loading, mean, and SD for sustainable agropreneurship aspect

Sustainable Agropreneurship Component	Factor Loading	
	1	2
Factor 1: Quality of life and Income		
I have been involved in agriculture for more than 2 years	.662	
I have gained a better quality of life by balancing my career and agropreneur	.807	
By venturing into this business, I have more time with my family	.809	
I have a healthy lifestyle	.763	
My income is increase by implementing what I have learnt	.848	
This business has generated additional revenue	.816	
The surplus from my income has been saved for the future	.739	
Factor 2: Continuous involvement in Agropreneur		
I have extended my planting area		.696
I am able to diversify my agriculture-based products		.620
<i>Cronbach alpha value</i>	0.897	0.789
<i>Mean and SD</i>	<i>M: 4.254</i>	<i>M: 4.137</i>
	<i>SD: 0.447</i>	<i>SD: 0.589</i>

Discussion

The primary objective of this study is to develop and evaluate the effectiveness of sustainable agropreneurship training to the selected rural community. Upon adopting Kirkpatrick's (1967) model, the four-level of assessment was deployed to evaluate the effectiveness of training towards generating sustainable agropreneurs. Level 1 focused on topics, contents, methodology and the instructors; whereas level 2 emphasised the impact of training on the participants' knowledge, skills and attitude (Topno, 2012). The third level looked into the participants' behaviour towards sustainable agropreneurship, which should be nurtured after acquiring

knowledge from learning, and applying the knowledge in real time. The last level denoted results from the tangible impact of the training programme on participants in terms of income and quality of life. Based on the factor analysis results, the mean value for each categorisation ranged from 4.24 to 4.36, which reflected the effectiveness of the programme.

Reaction measures the trainees' level of understanding towards the training (Hanafi *et al.*, 2017). The reaction level concentrates on the participants' perception of the training programme, which comprised of their feelings towards the instructors or trainers, as well as towards the overall content (Bezrukova *et al.*,

2016). The participants assessed if the trainers had provided sufficient knowledge and facilities within acceptable duration (eight months) by knowledgeable trainers. This signified the capability of YKSM as the training provider within the agriculture segment.

Learning is defined as the achievement of knowledge, behavioural change, skills and attitude (Knowles *et al.*, 1988, cited in Ehlers & Schneckenberg, 2010). Based on this definition, a training programme offers the following three aspects: (i) increasing knowledge, (ii) improving skills and (iii) changing attitudes. Level 2 is targeted at evaluating how much the participants had learned by comparing their acquired knowledge before and after the training programme. If one's knowledge had been enhanced, with skills and attitude improved after the training programme, it indicated that learning had successfully taken place. In order to measure the level of learning in management studies, two approaches had been proposed: (1) to assess the difference in scores, such as changes from pre-training to post-training (see Bretz & Thompsett 1992; Warr *et al.*, 1999), and (2) to assess post-training evaluation (see Davis & Mount 1984; Warr & Bunce 1995). Both approaches were adopted in this present study by measuring the scores on their behavioural changes after training. A higher mean value (4.31) indicated improved skills and knowledge, signifying that learning had successfully taken place during the training programme.

The purpose of any training programme was to increase knowledge, skills, and behaviour for work purpose. For an organisation, Ghosh *et al.* (2011) perceived training as a tool to enhance employee performance, which was beneficial to an organisation due to application of new skills and knowledge in the current employment activities. Kirkpatrick (1967) stated that if learning was not applied to the job, the process would then have no impact on the enterprise. However, Kirkpatrick (1994) asserted that it was indeed difficult to assess the success of any training programme since it demanded a follow-up with close observation. Mohammad

et al. (2017) defined behaviour as the realised usefulness of the skill that a trainee gained in training to enhance his job performance and satisfaction. Meanwhile, Mohamed and Alias (2012) mentioned that one of the significant changes included the motivation and reward for shifting. This present study had identified changes in the participants' behaviour in terms of personality traits and self-efficacy (mean=4.32), and attitude towards income (mean=4.28); which were measured using nine items in the questionnaire. Level four (result) included evaluation on the participants' quality of life and income (mean=4.25), and continuous involvement as an agropreneur (mean=4.14).

Conclusion

Transformation in the agriculture sector can eradicate poverty for many people worldwide. Malaysia had also progressively focused on agricultural development since its 4th Malaysia Plan (1980s), while aggressively emphasising the creation of human resources in the 9th Ninth Malaysia Plan. During this period, many training activities were conducted by the government agencies to increase the awareness and involvement of people in the agriculture segment. The training programmes instilled knowledge about agricultural businesses to the participants. Providing farming and business knowledge served as a double-edged sword in increasing the socioeconomic level of the low-income group, particularly amongst farmers. This was a significant move as most farmers in Malaysia resided in rural areas, possessed small lots of land (less than 5 acres), and did not have opportunity to generate substantial income due to limited skills and knowledge (Ungku Aziz, 1964).

Therefore, increasing the income level of those residing in rural areas, particularly among those involved in the agriculture sector, had been a major agenda under the 11th Malaysia Plan. The agencies under the MOA had been urged to develop initiatives, so well as to enhance the wellbeing of agropreneurs in rural areas through the existing ecosystem with the mission of helping

the communities to generate lucrative income (Khairul, 2014). In parallel to that mission, the ACTP was developed and implemented in collaboration with multiple agencies through the National Blue Ocean Strategy (NBOS). As a result, the implementation of ACTP by NCIA and YKSM was aimed at producing sustainable agropreneurs by equipping the farmers with adequate skills. The skills and knowledge transferred to local farmers in rural areas under the ACTP could increase their yield and quality of crops, while reducing operation cost and helping them to earn sustainable income. Ultimately, through ACTP, NCIA could reduce the poverty rate among B40 farmers in the northern region.

As a matter of fact, ACTP offered an interesting and effective platform for the rural B40 participants to improve their socioeconomic situation. The higher mean value for the four-level assessment (ranging from 4.24 to 4.36) indicated that ACTP had successfully applied the suitable agricultural training, prepared the participants to be self-reliant and sustained in their agricultural businesses. The skills and knowledge provided during the training had contributed to a certain level of behavioural changes, which equipped them with modern farming knowledge and entrepreneur mindset. Hopefully, the acquired knowledge might be applied to sustain the entrepreneur ecosystem. It was noteworthy to highlight that this present study had several shortcomings. The survey method used disabled the identification of the type of sustainable agropreneurship activities undertaken by the participants. It would be interesting to determine their level of achievement after a few years participating in the training. The YKSM listed a few objectives for this training programme from a basic level, such as to increase income, to a more advanced level in terms of job provision for locals. This might be explored in future by measuring the real impact of training programmes through qualitative or empirical studies. Besides, future studies might include those that measure the behavioural impact on selected success by individuals. The results in Figure two indicated

that 27 per cent of the participants (n=54) had successfully increased their monthly income for the “above RM3000” category. The results suggested there could be exciting entrepreneurship figures derived from the programme. Hence, it would be an interesting study to explore their entrepreneurship venture after their participation in training.

The main contribution of this study was sharing the outcome derived from the effectiveness assessment on a practical agropreneurship training programme. It could be concluded that the practicality of the four-level training effectiveness assessment was crucial in equipping new knowledge for sustainable agropreneurship training. Based on theoretical gaps mentioned earlier, this study offered two significant contributions: 1. Providing training effectiveness assessment on rural B40 trainees, in which most of the previous training evaluations had focused on students at higher-learning institutions, and 2. Reporting of levels 3 and 4 outcome based on Kirkpatrick’s model, which was very seldom assessed by researchers. On top of that, this study presented an established framework that might be adopted by organisers for planning of any agropreneurship training for rural communities.

References

- Abdelhakim, A. S., Jones, E., Redmond, E. C., Griffith, C. J., & Hewedi, M. (2018). Evaluating cabin crew food safety training using the Kirkpatrick model: An airlines’ perspective. *British Food Journal*, 120(7), 1574-1589.
- Abdul Kadir, M. K. (2014). Development of young agropreneur in Malaysia. Paper presented at the *FFTC-RDA International Seminar on Enhanced Entry of Young Generation into Farming.*, Jeonju, Korea.
- Abdullah, F. A., Abu Samah, B., & Othman, J. (2012). Inclination towards agriculture among rural youth in Malaysia. *Journal of Basic & Applied Scientific Research*, 2(11), 10892- 10894.

- Alsalamah, A., & Callinan, C. (2021). Adaptation of Kirkpatrick's Four-Level Model of training criteria to evaluate training programmes for head teachers. *Education Sciences*, 11(3), 1-25.
- Alsos, G. A. (2011). *Handbook of research on entrepreneurship in agriculture & rural development*. Cheltenham, UK: Edward Elgar.
- Bairwa, S. L., Lakra, K., Kushwaha, S., Meena, L. K., & Kumar, P. (2014). Agripreneurship development as a tool to upliftment of agriculture. *International Journal of Scientific and Research Publications*, 4(1), 2250–3153.
- Bezrukova, K., Spell, C. S., Perry, J. L., & Jehn, K. A. (2016). A meta-analytical integration of over 40 years of research on diversity training evaluation. *Psychological Bulletin*, 142(11), 1227-1274.
- Bramley, P., & Kitson, B. (1994). Evaluating training against business criteria. *Journal of European Industrial Training*, 18(1), 10-14.
- Bretz, R. D., & Thompsett, R. E. (1992). Comparing traditional & integrative learning methods in organizational training programs. *Journal of Applied Psychology*, 77(6), 941-951.
- Carnevale, A. P., & Schulz, E. R. (1990). Return on investment: Accounting for training. *Training & Development Journal*, 44(7), 1-32.
- Choudhury, G. B., & Sharma, V. (2019). Review & comparison of various training effectiveness evaluation models for R & D Organization performance. *PM World Journal*, 8(2), 1-13.
- Dahiya, S., & Jha, A. (2011). Review of training evaluation. *International Journal of Computer Science and Communication*, 2(1), 11-16
- Dardak, R. A. (2015). Transformation of agricultural sector in Malaysia through agricultural policy. *Malaysian Agricultural Research & Development Institute (MARDI), Malaysia*, 7, 1-8.
- Davis, B. L., & Mount, M. K. (1984). Effectiveness of performance appraisal training using computer assisted instruction & behavior modeling. *Personnel Psychology*, 37(3), 439-452.
- Dick, W., & Carey, L. (1996). *The systematic design of instruction* (4th ed.). New York: Harper-Collins.
- Economic Planning Unit. (1986). *The Fifth Malaysia Plan (1986-1990) Malaysia*. <http://www.pmo.gov.my/dokumenattached/RMK/RM5.pdf>
- Ehlers, U. D., & Schneckenberg, D. (Eds.). (2010). *Changing cultures in higher education: Moving ahead to future learning*. Germany: Springer Science & Business Media.
- Gbenedio, U. B. (2012). Education for national transformation, institutional innovation: Challenges & prospects. In *A keynote address presented at the National Conference*. Faculty of Education Unizik, Awka, 1-4 August 2012.
- Ghosh, P., Joshi, J. P., Satyawadi, R., Mukherjee, U., & Ranjan, R. (2011). Evaluating effectiveness of a training programme with trainee reaction. *Industrial & Commercial Training*, 43(4), 247-255.
- Hanafi, W. N. W., Mohamad, M., & Hanapiyah, Z. M. (2017). Measuring the influence of emotional intelligence towards teacher job performance. *International Journal of Business Management*, 2(7), 15-27.
- Harper, M., & Finnegan, G. (1998). *Value for money? Impact of small enterprises development*. London: Intermediate Technology Publications.
- Indrani, T. (2001). Agriculture and food security: Developments in Malaysia. In Education & Research Association for Consumers (Ed.), *Situation of agriculture in Malaysia - A cause for concern* (p. 72). Malaysia: ERA Consumer Malaysia.

- Jain, G., Sharma, N., & Shrivastava, A. (2021). Enhancing training effectiveness for organizations through blockchain-enabled training effectiveness measurement (BETEM). *Journal of Organizational Change Management*, 34(2), 439-461.
- Jauhar, J. B., Ghani, A. B. A., & Islam, R. (2016). Malaysia's development policies. In *Brain Drain* (pp. 33-49). Singapore: Springer.
- Jones, C., Fraser, J., & Randall, S. (2018). The evaluation of a home-based paediatric nursing service: Concept & design development using the Kirkpatrick Model. *Journal of Research in Nursing*, 23(6), 492-501.
- Kaufman, R., & Keller, J. M. (1994). Levels of evaluation: Beyond Kirkpatrick. *Human Resource Development Quarterly*, 5(4), 371-80.
- Khan, S., & Ramsey, P. (2013). Easy, economic, expedient-An effective training evaluation model for SMEs. In *Proceedings of the International Conference on Intellectual Capital Knowledge Management & Organisational Learning* (pp. 540-551). Washington, DC.
- Kirkpatrick, D. L. (1959). Techniques for evaluation training programs. *Journal of the American Society of Training Directors*, 13, 21-26.
- Kirkpatrick, D. L. (1967). Evaluation of training. In *Training & development handbook* (pp. 87-112). New York, NY: McGraw Hill.
- Kirkpatrick, D. L. (1994). *Evaluating training programs*. San Francisco: Berrett-Koehler Publishers, Inc.
- Kirkpatrick, D. L., & Kirkpatrick, J. D. (2006). *Evaluating training programs: The four levels*. Evaluating training programs. Inc San Francisco, CA.: Berrett-Koehler Publishers.
- Kirkpatrick, D. L., & Kirkpatrick, J. D. (2009). *Transferring learning to behavior: Using the four levels to improve performance*. Inc San Francisco, CA: Berrett-Koehler Publishers.
- Leech, N., Barrett, K., & Morgan, G. A. (2013). *SPSS for intermediate statistics: Use & interpretation*. Routledge.
- Ligon, E. A., & Sadoulet, E. (2007). *Estimating the effects of aggregate agricultural growth on the distribution of expenditures*. Available at SSRN 1769944.
- Madeley, J. (2008). *Food for all: The need for a new agriculture*. Halifax, NS: Fernwood.
- Mann, S., & Robertson, L. T. (1996). What should training evaluations evaluate. *Journal of European Industrial Training*, 20(9), 14-20.
- McElwee, G., Smith, R., & Sommerville, P. (2011). Theorising illegal rural enterprise: Is everyone at it? *Qualitative Market Research: An International Journal*, 1(1), 40-62.
- Mohamed, R., & Alias, A. A. S. (2012). Evaluating the effectiveness of a training program using the four level Kirkpatrick model in the banking sector in Malaysia. In *3rd International Conference on Business and Economic Research*, 12-13 March 2012, Bandung, Indonesia.
- Mohamed, Z., Rezai, G., & Shamsudin, M. N. (2011). The effectiveness of entrepreneurship extension education among the FOA Members in Malaysia. *Current Research Journal of Social Sciences*, 3(1), 17-21.
- Mohammad, N., Mohamad, A. B., Kadhum, A. A. H., & Loh, K. S. (2017). Effect of silica on the thermal behaviour & ionic conductivity of mixed salt solid acid composites. *Journal of Alloys and Compounds*, 690, 896-902.
- Oosterbeek, H., Van Praag, M., & Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills & motivation. *European Economic Review*, 54(3), 442-454.

- Osisoma, B. C. (2012). National transformation beyond rhetoric: A development agenda. In *Paper presented at the Annual Conference of Faculty of Management Sciences*, Ebonyi State University.
- Owoade, O. A. (2017). Agropreneur development: A framework for sustainable food security & rural livelihood. *IIARD International Journal of Economics & Business Management ISSN*, 3(3), 53-62.
- Paço, A., Ferreira, J., & Raposo, M. (2016). Development of entrepreneurship education programmes for HEI students: The lean start-up approach. *Journal of Entrepreneurship Education*, 19(2), 39-52.
- Perez-Soltero, A., Aguilar-Bernal, C., Barcelo-Valenzuela, M., Sanchez-Schmitz, G., Meroño-Cerdan, A. L., & Fornes-Rivera, R. D. (2019). Knowledge transfer in training processes: Towards an integrative evaluation model. *The IUP Journal of Knowledge Management*, 17(1), 7-40.
- Phillips, J. J. (1996). *Accountability in human resource management*. Routledge.
- Ritzmann, S., Hagemann, V., & Kluge, A. (2014). The Training Evaluation Inventory (TEI)-Evaluation of training design and measurement of training outcomes for predicting training success. *Vocations & Learning*, 7(1), 41-73.
- Seaman, P. (2010). Food hygiene training: Introducing the Food Hygiene Training Model. *Food Control*, 21(4), 381-387.
- Stufflebeam, D. L. (1983). The CIPP model for program evaluation. In Madaus, George, F., Scriven, Michael, S., & Stufflebeam, Daniel, L. (Eds.), *Evaluation Models: Viewpoints on educational & human services evaluation*. Hingham: Kluwer Academic Publishers.
- Sutarto, S., Usman, H., & Jaedun, A. (2016). Impact-Based Training Evaluation Model (IBTEM) for school supervisors in Indonesia. *International Education Studies*, 9(2), 149-165.
- Tamkin, P., Yarnall, J., & Kerrin, M. (2002). *Kirkpatrick and beyond: A review of models of training evaluation*. Brighton, England: Institute for Employment Studies.
- Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, 43(1), 399-441.
- Topno, H. (2012). Evaluation of training and development: An analysis of various models. *Journal of Business and Management*, 5(2), 16-22.
- Tsvegemed, M., Shabier, A., Schlecht, E., Jordan, G., & Wiehle, M. (2018). Evolution of rural livelihood strategies in a remote Sino-Mongolian border area: A cross-country analysis. *Sustainability*, 10(4), 1011-1034.
- UNESCO. (2004). *Education for all global monitoring report 2005: Education for all, the quality imperative*. Paris: UNESCO and Oxford University Press.
- Ungku Aziz, A. (1964). Poverty & rural development in Malaysia. *Kajian Ekonomi Malaysia*, 1(1), 75-105.
- Upadhyay, A. P., & Barman, U. (2013). Identification of problems & formulation of extension strategies for upliftment of women agropreneurship in Sericulture: An exploratory study in Garo Hills of Meghalaya. *Journal of Academia & Industrial Research*, 2(6), 369-373.
- Venkataraman, S. (2002). Stakeholder value equilibration & the entrepreneurial process. *The Ruffin Series of the Society for Business Ethics*, 3, 45-57.
- Vesala, K. M., Peura, J., & McElwee, G. (2007). The split entrepreneurial identity of the farmer. *Journal of Small Business and Enterprise Development*, 14(1), 48-63.
- Wan, C., Xu, A., Zhang, X., & Wu, J. (2017). Research on practice teaching model of entrepreneurship education based on experience degree. *Revista de La Facultad de Ingenieria*, 32(12), 1014-1020.

- Warr, M. P. Bird & Reckham, N. (1970). *Evaluation of management training*. London: Gower Press.
- Warr, P., Allan, C., & Birdi, K. (1999). Predicting three levels of training outcome. *Journal of Occupational and Organizational Psychology*, 72(3), 351-375.
- Warr, P., & Bunce, D. (1995). Trainee characteristics and the outcomes of open learning. *Personnel Psychology*, 48(2), 347-375.
- Winfrey, E. C. (1999). Kirkpatrick's four levels of evaluation. *Encyclopaedia of Educational Technology*, 1(1), 1-6.
- Winsor, B., & Hanlon, D. (2016). An opportunity evaluation framework for introductory courses in entrepreneurship. *Journal of Entrepreneurship Education*, 19(2), 24-38.
- Yusoff, A., Ahmad, N. H., & Halim, H. A. (2016). Entrepreneurial orientation & agropreneurial intention among Malaysian agricultural students: The impact of agropreneurship education. *Advances in Business-Related Scientific Research Journal*, 7(1), 77-92.

