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DESIGN OF APPROPRIATE TECHNOLOGY TRAINING BASED ON ENTREPRENEURSHIP

ABDULLAH BASALAMAH[1], HUSAIN SHAM[2], ABDUL MUIS MAPPALOTTENG[3],BAMBANG DRIYONO[4], A.MUHAMMAD SYAFAR[5]

[1]Postgraduate Program of Makassar State University, Indonesia
[23]Makassar State University Makassar, Indonesia
[4] MakassarAviation Polytechnic Makassar, Indonesia
[5]Alauddin State Islamic University Makassar, Indonesia

Correspondence Email:abdullah.basalamah@umi.ac.id

ABSTRACT

Entrepreneurship-based training programs on the implementation of appropriate technology are considered as a tool to build new prospective entrepreneurs who contribute to the progress of the village economically for the better. Research methods offered by *Research and Development* (R & D) with the concept of Thiagarajan 4D (*define, design, develop, and disseminate*). This 4D stage R&D is to identify and analyze the needs of the training model. Data collection was carried out on 23 partner corn farmers through interviews and filling out questionnaires. It is statistically descriptive to determine the influence of four aspects of entrepreneurship. Meanwhile, the results of data transcripts from interviews wereanalyzed qualitatively. The effectiveness test of the training program is tested by the *intact group comparison method*, which compares the final results of training in the experimental class and the control class. This entrepreneurship-based training is stated to have a positive influence on creating business opportunities for corn farmers fostered partners. While the implementation of appropriate technology through the practice of making corn shellers, farmers are very enthusiastic and more enthusiastic about practicing it. With the resulting sheller products, they say it can help the work to remove corn grains from the stem faster when compared to conventional methods. By implication, these studies are beneficial for educational institutions and colleges that provide and offer entrepreneurship training programs.

Keywords:*training model design, entrepreneurship and appropriate technology*

ABSTRAK

Program pelatihan berbasis kewirausahaan tentang penerapan teknologi tepat guna dinilai sebagai alat untuk membangun calon wirausaha baru yang berkontribusi terhadap kemajuan

ekonomi desa menjadi lebih baik. Metode penelitian yang ditawarkan oleh *Research and Development* (R&D) dengan konsep Thiagarajan 4D (*define, design, develop, dan disseminate*). R&D tahap 4D ini untuk mengidentifikasi dan menganalisis kebutuhan model pelatihan. Pengumpulan data dilakukan pada 23 petani jagung mitra melalui wawancara dan pengisian kuesioner. Secara statistik deskriptif untuk menentukan pengaruh empat aspek kewirausahaan. Sementara itu, hasil transkrip data hasil wawancara dianalisissecara kualitatif. Uji efektivitas program pelatihan diuji dengan *metode perbandingan kelompok utuh*, yang membandingkan hasil akhir pelatihan di kelas eksperimen dan kelas kontrol.Pelatihan berbasis kewirausahaan ini dinyatakan memberikan pengaruh positif dalam menciptakan peluang usaha bagi petani jagung binaan mitra. Sedangkan penerapan teknologi tepat guna melalui praktik pembuatan alat pemipil jagung, petani sangat antusias dan lebih antusias mempraktikkannya. Dengan produk pemipil yang dihasilkan, mereka mengatakan dapat membantu pekerjaan menghilangkan butiran jagung dari batang lebih cepat jika dibandingkan dengan metode konvensional. Implikasinya, studi ini bermanfaat bagi lembaga pendidikan dan perguruan tinggi yang menyediakan dan menawarkan program pelatihan kewirausahaan.

Kata kunci: *desain model pelatihan, kewirausahaan dan teknologi tepat guna*

A. INTRODUCTION

In early 2020, the Ministry of Education and Culture issued the Merdeka Belajar Kampus Merdeka (MBKM) policy. This was emphasized by the Director General of Higher Education, (2020) that higher education must have concern by contributing to strengthening through the application of science and technology, policy models, and research-based social engineering. MBKM on the campus of the Indonesian Muslim University (UMI) Makassar is named the Partner Village Development Program (PPDM). The aim is to encourage the creation of innovations in job creation and the provision of new jobs in the country that are beneficial for the development of the village economy. According to Yasa et al., (2021), the PPDM program can empower the community in preparing, designing and developing various potentials owned by farmers in theworld. One of the community and village programs is appropriate technology training activities for farmers in processing dried jagung crops to be used as animal feed which are processed conventionally. However, related to quality and continuity and its development on a level of income is not guaranteed, because the ability of human resources is still limited, has notapplied technology through household agro-industry partnerships (Supriyati &; Suryani, 2016).

Borisallo Village in Parangloe District, Gowa Makassar with residents livingas farmers, traders and laborers. With their education background on average low, several challenges and obstacles faced by farmers, such as lack of capital, limited access to modern technology, climate change, product processing and marketing of crops especially high yields. According to the results of the analysis on social capital due to poverty, active participation, beliefs, social norms and high dominant responsibilities are influenced by low quality and resources (Purnomo, 2022; Harahap &; Herman, 2018). For this reason, programs developed through entrepreneurship-based technology training are needed. Lestari et al., (2016) stated that entrepreneurship training can improve independent attitude, family environment and motivation have a positive effect on entrepreneurial interest. By learning entrepreneurship, it is able to shape the character and behavior of individuals who will be inventive, work, unpretentious and strive to create business income, while adding social interaction that contributes to helping the network develop interactively can develop into a community of practice (Brier &; Dwi J, 2020; Toutain et al., 2017).

This finding reinforces that learning entrepreneurship can create confidence, work attitudes and intentions to start a business and can form a strong character in facing challenges in creating a business (Soomro &; Shah, 2022; Nuraeni, 2022). With entrepreneurship training is considered a fundamental tool to produce new entrepreneurs who are better to energize business networks and regional development (Santana-Domínguez et al., 2022). Similarly, according to Galvão et al., (2018) stated that entrepreneurshiptraining can be a strong strategic tool for regional development, and it is important for academics, government, and business to work together to achieve the same goal to strengthen the entrepreneurial intentions of the community.

According to Olugbola, (2017) that the role of entrepreneurship training both formal and informal implies young individuals can develop their entrepreneurial abilities. Although women entrepreneurs face a number of challenges, the legal and regulatory environment, tailored entrepreneurship training offers opportunities for women entrepreneurs to enhance their knowledge and technical skills (Rudhumbu et al., 2020 Matricano, 2017)). As atraining program for micro-entrepreneurs, that in a randomly selected group to be visited by the alumni program, successs and is able to increase household income one year later. This is largely due to increased business participation and business revenue (Lafortune et al., 2018).

Thus we agree, that training with entrepreneurial values material can be said to be able to increase independence and individual work attitudes. However, one's psyche in creating a business requires the ability to make decisions and perform actions, despite the risk of failure or loss. Someone in entrepreneurship also needs cooperation between individuals and groups in order to develop their business faster.

In this study, training has the concept of entrepreneurship by building the job skills of corn farmers by applying appropriate technology. The appropriate technology in question is technology that is right on target and useful for the community by utilizing simple materials and materials that exist in everyday life.

Therenewal of this research is to place aspects of daring to take risks and aspects of cooperation taken from entrepreneurship theory will be studied together with aspects of independence and cooperation. In these four aspects, the relationship and effect will be tested on the ability to create business opportunities for corn farmers. The improvement of farmers' skills is tested through the manufacture of shellers used to remove corn grains from the stem, corn that has been dried and assessed through rubrics.

B. RESEARCH METHOD

This research approach is descriptive, qualitative and quantitative. Data collection activities for 23 corn farmers in Borisallo village Makassar through interviews and continued filling out questionnaires containing indicators of aspects of independent attitude, work attitude, dare to take risks and cooperation. These four aspects are the pillars of entrepreneurship that have the potential for farmers to create business opportunities. The collected data is identified, then analyzed according to the purpose of the study. Furthermore, the data is defined and formulated according to the needs of the training model. The data were analyzed qualitatively and quantitatively. There are 5 questionnaire instruments and 2 observation sheets used as data collection tools. The questionnaire instrument before use is submitted to the validator team to be validated through FGD activities.

The research model chosen *by Research and Development* (R&D) Borg and Gall (1983) with the concept of Thiagarajan (1974) through 4D stages (d *efine, d esign,* d *evelop*

and disseminate) presented in Figure 1. Furthermore, for hypothesis testing, the study was carried out using multiple linear regression to determine the relationship and the influence of four aspects (X1, X2, X3 and X4) on creating business opportunities (Y). Meanwhile, the effectiveness test of training products related to the manufacture of corn shellers was carried out using the *Intact Group Comparison* method, comparing the test post values in the corn farmer class group who were given training with the control class group in other group farmers who were not given training. The results of identification and analysis of needs through 4D stage R&D research can be summarized in Table 1 and Table 2 below.

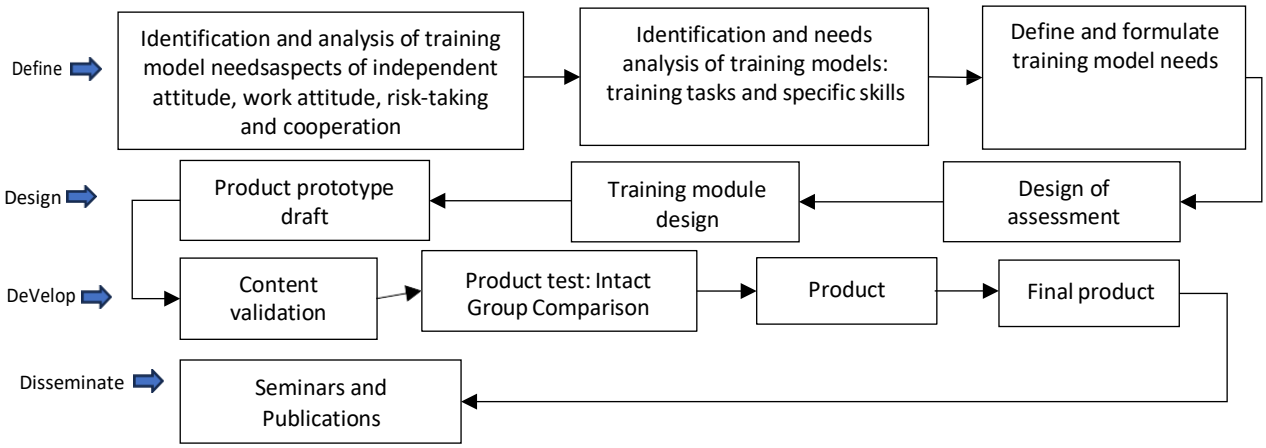

Figure 1 Research Design R&D Stages 4D Training Model

C. FINDINGS AND DISCUSSION

FINDINGS

1. Results of the *Define Stage*

Table 1 is a transcript of interview data grouped and reduced according to research needs.

Table 1. Data summary of the defining stage

Component	Aspects	Findings
Interview Farmer	Independent attitude	Farmers arenot able to do something by themselves or always ask others for help
	Work attitude	1. Farmersdo not have a strategy in solving work problems 2. Farmers are not able to improve on their own
	Dare to take risks	1. Farmers are unhappy at challenging and risky jobs. 2. Pethani needs practice for himself
	Cooperation	Farmers do not have a strategy in cooperating
Farmer	In general, the answers on the questionnaire sheet on all four aspects of	

questionnaire entrepreneurship are low on average.

2. Results Tahap *Design*

Table 2 is the model component outlined in the draft prototype of the training product presented in Table 2.

Table 2 Summary of training prototype components

No	Training Model Components	Description
1	Purpose of model design	To assess the ability and skills of entrepreneurship-based appropriate technology training in corn farmers
2	Design characteristics of the model	1. Integration of the theory of entrepreneurship concepts and the implementation of appropriate technology 2. Produce entrepreneurship-based training products to create independent corn farmer business opportunities
3	Training model design components	1. Training tools include: RPP, entrepreneurship-based training modules 2. Assessment instruments in the form of test and non-test questions (questionnaires) 3. Training achievement assessment rubric
4	Model syntax	1. Orientation, 2. Exploration, 3. Conceptualization, 4. Implementation, 5. Evaluation and Reflection
5	Model instruments	1. Questionnaire instrument of entrepreneurial aspects, 2. Questionnaire instruments increase business opportunities, 3. Questionnaire instrument on the effectiveness of using training modules, 4. Training model design questionnaire instrument, 5. Instruments for observing farmer activity, 6. Trainer activity observation instrument, 7. Questionnaire instrument of the final results of training.

3. Results of Tahap *Develop*

This stage is to validate the RPP, training modules and assessment instruments by *the apprasal judgment* pad of FGD activities. Review of validation assessments that include: format, content, contextual and linguistic. Validator suggestions and inputs are then revised. The revised results stated validators on the validation sheet are appropriate and feasible with the quality of the instruments and training devices are excellent.

a. Test the effectiveness of the training model

Analysis of the effectiveness test of the training model using a comparison of training results in the experimental class of corn farmers and control classes of other group farmers is presented in Table 3.

Table 3 Test results N_Gain Score

Range of Values	Experimental Class N_Gain Score (%)	Range of Values	Control Class N_Gain Score (%)
Average	71.89	Average	29,59
At least	58,70	At least	17,95
Maximum	85,71	Maximum	44,90

Table 4 List of interpretations (%)

Percentage (%)	Interpretation
< 40	Ineffective
40 - 55	Less Effective
56 - 75	Quite Effective
> 76	Effective

(Source: Hake, R.R, 1999)

In Table 3 is theresult of trying the training class using the test post valuem through the formula *N_Gain Score*, obtained in the experimental class average score of 71.89 or 7 2%, suse in the control class an average score of 29.59 or 30%. By referring to Table 4, the two results of training scores in the experimental class are included in the category of quite effective and the control class in the category of ineffective.

b. Test the hypothesis

Test the research hypothesis on questionnaire data with a partial t test to determine the influence and relationship of aspects of independent attitude (X_1), work attitude (X_2), dare to take risks (X_3) and cooperation (X_4) on business creation opportunities (Y). The results of the validity and reliability test of variables X_1, X_2, X_3 and X_4 were obtained with r Table 0.413 and Cronbach Table 0.6, this gives an understanding of the four aspects declared valid and reliable.

c. Partial t-test

The t test is used to determine the relationship and partial influence of each aspect of independent attitude (X_1), work attitude (X_2), dare to take risks (X_3) and cooperation (X_4) on business creation opportunities (Y). Based on the SPSS model summary data as follows:

1) In the aspect of independent attitude, R Square obtained 0.313 or 31%. This gives an understanding that the independent aspect (X_1) has a 31% influence on creating business opportunities (Y).
2) Pthere is an aspect of work attitude obtained R Square 0.387 or 39%. This gives an understanding that the aspect of work attitude (X_2) has an influence of 3.9% on creating business opportunities (Y).
3) Pthere is an aspect of daring to take risks obtained R Square 0.3, 23 or 32%. This gives an understanding that the aspect of daring to take risks (X_3) has an influence of 3.2% on creating business opportunities (Y).

4) Pthere is a cooperation aspect obtained R Square 0.275 or 28%. This gives an understanding that the cooperation aspect (X_4) has a 28% influence on creating business opportunities (Y).

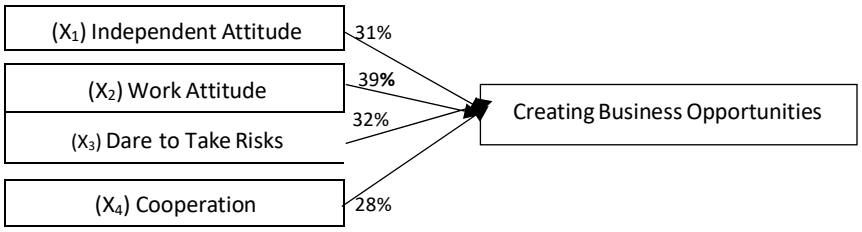

Figure 2 The Relationship of Four Aspects Simultaneously with Creating Business Opportunities

d. Simultaneous F test

The F test is used to determine the relationship and influence of independent attitude (X_1), work attitude (X_2), dare to take risks (X_3) and cooperation (X_4) simultaneously on business creation opportunities (Y). Based on the SPSS summary model data on these four aspects, an R square of 0.995 or 99% was obtained. This gives an understanding that these four aspects have a 99% influence on creating business opportunities (Y).

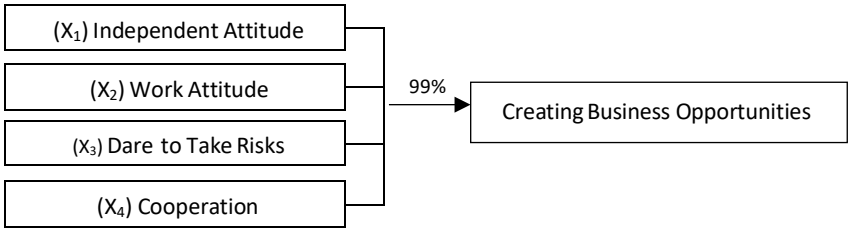

Figure 2 Partial Four-Aspect Relationship to Create Business Opportunities

DISCUSSION

The results of the training effectiveness trial, in the experimental class were declared quite effective in creating business opportunities. Meanwhile, from the results of regression analysis, the aspect of work attitude obtained by 39% has the highest influence on creating business opportunities. These results are compared with the influence of the other three aspects of entrepreneurship studied. The results of the simultaneous F test showed the effect of four aspects by 99% on the ability to create business opportunities. This result gives understanding, that corn farmers are said to be successful in creating their own business opportunities with the condition that they must have four aspects, namely: independent attitude, work attitude, dare to take risks and cooperation.

Looking at the educational background of farmers in this study, they have a low school background on average. This phenomenon is one of the factors that influence the understanding of entrepreneurship material that is not good, this is reflected in the results in each aspect studied, their entrepreneurial knowledge is on average below 50%. This means that the educational factor has a significant effect on their ability to learn entrepreneurship. Expect future researchers to continue this research for farmers who have a higher educational background than the studies that have been conducted.

D.CONCLUSION

The results of this study show that the entrepreneurship-based appropriate technology training model is quite effective. With this training, there is an increase in entrepreneurial knowledge or farmers have a farmer entrepreneurial spirit to equip them to dare to open their own businesses. Farmer skills are increasing in using tools and practicing appropriate technology. Farmers are able to make shellers with simple technology that can help them overcome the processing of corn harvests released from the cobs which previously this processing was still carried out conventionally.

Thus, the design of training through the results of investigations on various aspects of entrepreneurship with the use of appropriate technology in corn farmers, they farmers can be said to have been able to create their own business opportunities. This training model is in line with the expectations of farmers in Borisallo village Makassar who are not familiar with appropriate technology and they do not have knowledge of entrepreneurship, so that farmers find it difficult to obtain economic improvement for their families and the community in general.

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