Unfolding Sustainability Through the Effectiveness of PDPBT Training for Enhancing Diversification and Digitalization Butterfly Pea Flower MSMEs in Tuban, Indonesia

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ABSTRACT
Indonesia, with its abundant natural resources, can prioritize the development of MSME products rooted in its local environment. Prunggahan Kulon Village is one of the villages in Indonesia with the natural potential of butterfly pea flowers that can be utilized as a local wisdom-based MSME development. Further development of butterfly pea flowers MSMEs can be pursued by trying to diversify products and digitize products for global market expansion. This study aims to analyze the effectiveness of providing PDPBT (Training on Diversification of Butterfly Pea Flower Products) to increase the understanding and intention of diversification and digitalization of the Prunggahan Kulon Village community. The research used a quantitative method with a one-sided pretest-posttest technique on one experimental class. The results showed that the average pretest score was 138 or in the high interval, meaning respondents had a good initial understanding of the diversification and digitalization of bay flower MSME products. After the PDPBT process was carried out, the post-test results were found with an average of 150 with a maximum value of 170, so the posttest value was in the high interval and increased by 8.87% compared to the pretest results. Based on the results of the N Gain test, the values are 0.4 and 40.8%, which means that PDPBT is in the category of moderate effectiveness and less effective. Hence, there is a growing demand for additional initiatives from local governments and residents to continuously train butterfly pea flower MSMEs. Alongside training, ensuring equitable digital access, including coaching on social media content, is crucial for enhancing global marketing efforts.

Keywords: *MSMEs Digitalization, MSMEs Diversification Product, Butterfly Pea Flower, PDPBT Training.*

1. INTRODUCTION

The Indonesian government has identified MSMEs (Micro, Small, and Medium Enterprises) as a strategic sector for sustaining the country's strategic economy. MSMEs are a sector that has demonstrated resilience in the face of various economic and financial crises (Didachos & Tambunan, 2024). The global pandemic caused by the SARS-CoV-2 virus, which emerged in 2019, had a considerable impact on the national economy. Nevertheless, the MSME sector plays an important role in supporting the economy, despite being affected by the global financial crisis. As indicated by data from KemenkopUKM in 2019, the MSME sector contributed 60.51% to the GDP, equivalent to Rp 9,580 trillion. Conversely, MSMEs have been instrumental in providing employment opportunities for 119.56 million individuals, representing 96.92% of the total workforce in Indonesia. It is estimated that by 2023, there will be 66 million MSMEs in Indonesia, contributing approximately Rp 9,580 trillion to the country's GDP. MSMEs in Indonesia have a presence in several sectors, including agriculture. According to data from the Central Statistics Agency (BPS), the number of agricultural business households (RTUP) in 2023 was 28,419,398, while the number of individual agricultural businesses (UTP) was 29,342,202. The empowerment and development of MSMEs are essential for achieving equitable national development. One strategy for doing so is to foster the growth of MSMEs based on local potential.

A review of Ministry of SMEs data indicates that East Java Province ranks third among Indonesian regions in terms of the number of MSMEs registered on the OSS online platform to obtain Indonesian business licenses. The total number of MSMEs registered in East Java is 1,153,576. In 2022, the contribution of K-UMKM's sustained value to East Java's

gross regional domestic product (GRDP) reached 1,034.31, representing a 55% increase from the figure recorded in 2021, which was affected by the global pandemic. Furthermore, the agriculture, forestry, and fisheries sectors represent the second-largest contributor to the GRDP, with a 20% share, trailing only the accommodation sector and the wholesale and retail trade sector. In terms of regional distribution, Surabaya City is the location with the highest concentration of MSMEs in East Java, with a total of 215,364 MSMEs. However, other regions, such as Tuban Regency, occupy the 11th position with 29,578 MSMEs. To facilitate the empowerment of MSMEs towards equitable national development, it is essential to implement a precise and up-to-date strategy, including the adoption of digitalization and diversification of products. A further strategy for diversifying MSME products and penetrating the global market is to focus on local resources (Anom et al., 2023; Hernanik et al., 2023; Hurdawaty & Tukiran, 2024; Meyer & Thu Tran, 2006). In Tuban Regency, the utilization of local resources as a means of empowering MSMEs is pursued through the cultivation of local commodities, namely butterfly pea flowers.

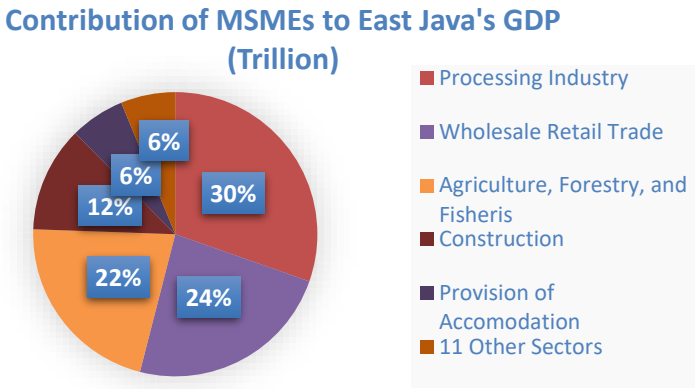

Figure 1 Contribution of MSMEs to Est Java's GDP. Source. DiskopUKM East Java 2022

The Butterfly Pea Flower (Clitoria ternatea) is a locally produced tropical commodity that is widely cultivated in the Tuban Regency. Butterfly Pea Flower contain a variety of bioactive compounds, including flavonoids, anthocyanins, phenolic acids, and antioxidant compounds (Gew et al., 2024; Jeyaraj et al., 2021; Multisona et al., 2023; Netravati et al., 2022; Vidana Gamage et al., 2021). These substances have been shown to have beneficial effects on human health, including anti-inflammatory, anti-cancer, antioxidant, and mental health-promoting properties (Panchal et al., 2022; Shirodkar et al., 2023; Singh et al., 2022). The Butterfly Pea Flower is a tropical legume plant indigenous to Southeast Asia (Oguis et al., 2019), distinguished by its blue flower and yellow coloration at the apex. Butterfly Pea Flowers are employed as a traditional medicinal agent in several countries, including India. In this country, Butterfly Pea Flowers are utilized as an herbal remedy to enhance cognitive function, mental health, and the treatment of various ailments (Kosai et al., 2015; Weerasinghe et al., 2022). In Thailand, Butterfly Pea Flower are utilized as an herbal beverage known as *nam dok anchan*, which is typically served with additional lemon juice or honey. In Indonesia, the use of Butterfly Pea Flowers has recently gained prominence as a natural dye, including as an ingredient for religious ceremonies in Bali. Butterfly Pea Flowers represent a local potential that should not be overlooked. The benefits of Butterfly Pea Flowers and their attractive colors have the potential to become a valuable export commodity if processed properly.

The area of Tuban where Butterfly Pea flowers are cultivated is situated within Prunggahan Kulon Village, Semanding Subdistrict. In the village, the Butterfly Pea flowers are processed into a variety of ready-to-eat herbal beverages and instant powdered products. Nevertheless, additional efforts are required to enhance the visibility and recognition of MSME products derived from the Butterfly Pea flower in diverse domestic and international markets. A diversification strategy that encompasses product diversification may prove an efficacious approach for MSMEs engaged in the cultivation and processing of Butterfly Pea flowers. The proposed diversification of the product range entails the creation of long-lasting, innovative dry food products. Butterfly Pea flower cookies represent a form of product diversification that aligns with the concept of durability and is intended for marketing in other regions. Conversely, this long-lasting pastry product, with an estimated shelf life of three months, is processed naturally through a "tangkring" oven to maintain the integrity of local wisdom. In addition to the aforementioned product diversification process, the implementation of a digitalization strategy represents an effective means of expanding the market reach of MSMEs (Anatan & Nur, 2023; Ika K.W et al., 2022). KemenkopUKM projects that the MSME digital economy will reach a value of 4,531 trillion by 2030. This potential is addressed by calculating the potential for wider market access in the digital ecosystem. A report from the Indonesian Internet Service Providers Association (APJII) indicates that 87%

of MSMEs in Indonesia have utilized the Internet for business purposes. A significant proportion of these businesses (73%) already have a marketplace for the products they produce.

The digitization of the product represents a tangible step towards enhancing the visibility and credibility of Butterfly Pea flower micro, small, and medium-sized enterprises (MSMEs) among a broader domestic and international audience. The role of external parties in facilitating the success of digitalization efforts among bay flower MSMEs is of significant strategic importance (Supriadi et al., 2023). The involvement of the Millennial Generation and Generation Z represents a strategic initiative to facilitate the expansion of Butterfly Pea flower MSMEs through digitalization strategies. A review of data from East Java DiskopUKM revealed that 31.2% of MSMEs were owned by individuals in the Gen Z demographic, while the Baby Boomer generation constituted 49.02% of all MSMEs. This indicates a discrepancy between the attitudes and behaviors of younger and older generations. Members of Generation Z, born between 1995 and 2010, have been identified as having a greater capacity for digital engagement than previous generations (Chang & Chang, 2023; Lazar et al., 2023). The involvement of Generation Z in the digitalization of MSME products is evident in their use of social media for marketing activities, particularly the dissemination of viral content on platforms such as TikTok, Threads on X, and Reels on Instagram (Asenge et al., 2018; Tubalawony, 2023). Furthermore, the input of the younger generation is essential for identifying novel concepts in the development of MSME products, ensuring that they remain innovative and avoid becoming stagnant. Furthermore, younger generations, such as Gen Z, can assist previous generations of pioneers by integrating their products into marketplaces, including Shopee, TikTok Shop, Instagram Shop, and others.

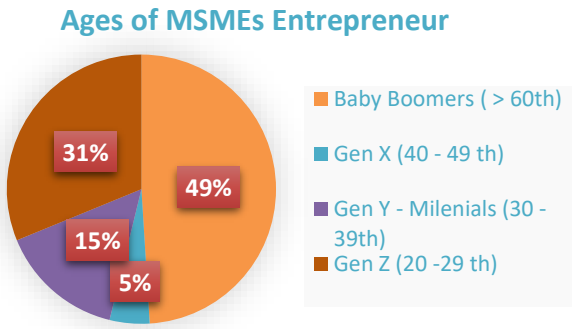

Figure 2 Ages of MSMEs Entrepreneur (%). Source. DiskopUKM East Java 2022

In addition to facilitating collaboration with Generation Z in the digitization process of MSME products, the Butterfly Pea flowers program also provides financial assistance to MSMEs through the LPSE (Electronic Procurement Services) and LKPP, with a maximum value of IDR 50,000,000. The objective of this program is to provide support for the UMKM Go Digital initiative, which has been incorporated into the *Bela Pengadaan*. Similar experimental research has been conducted to empower local potential Butterfly Pea flowers MSMEs to adopt a digital business model and expand their international market presence. The research project designated PDPBT (Training on Diversification of Butterfly Pea Flower Products), is designed to assess the comprehension and capability of MSME stakeholders in diversifying and digitizing Butterfly Pea flower products. Furthermore, this research has two additional objectives. The initial objective is to ascertain the efficacy of PDPBT in enhancing the comprehension of MSME actors about the processing of Butterfly Pea flower products into long-lasting pastries, thereby facilitating their national marketing. Secondly, the objective is to develop sustainable goals through the establishment of Tuban Butterfly Pea flowers Edutourism MSMEs, thereby facilitating the nationalization and internationalization of local potential

2. RESEARCH METHODOLOGY

This research employs quantitative methods with a descriptive approach. A quantitative research strategy with a descriptive approach involves the formulation of problems to explore or identify social situations that will be studied holistically. To obtain valid quantitative data pertaining to the subject matter, questionnaires were distributed to MSME players and individuals from Prunggahan Kulon Village who were able to represent the target population and possess the requisite knowledge to answer the instrument's questions regarding the diversification of bay flowers. Moreover, this research employed experimental research techniques utilizing a one-group pretest-posttest design. This experimental research employs the use of focus group discussions (FGDs) for the purpose of comparing the pretest and posttest results.

2.1. Research Method One Group Pretest-Posttest Experimental Design

A field study was conducted using a one-group pretest-posttest experimental research design to assess the improvement of understanding of three key areas: MSME product diversification, MSME internationalization, and MSME product diversification interest. The reference for the implementation of quasi-experimental research with a one-group pretest-posttest design is from the development of Cohen, Manion, & Morrison (2007) (Cohen et al., 2007; Setiawati et al., 2023), who presented a tabulated one-group pretest-posttest design as follows.

Table 1. Tabulated one-group pretest-posttest design

Group	Pretest	Treatment	Posttest
Experimental	O1	X	O2

2.1.1. Research Sample

The research sample was selected using a purposive sampling technique, with the prerequisite that participants were owners/entrepreneurs of micro, small, and medium-sized enterprises (MSMEs) and had products that had or had not been previously marketed. The study was conducted in Prunggahan Kulon Village, Tuban, East Java, with a total of 14 selected participants engaged in a variety of business activities.

The independent variables in this study are the capacity to manage food-beverage products derived from Butterfly Pea flowers, as well as an understanding of information technology and digitalization. The dependent variable is the objective of increasing the interest and prospects of Butterfly Pea Flower MSMEs, with indicators of knowledge of Butterfly Pea flower diversification. To assess the outcomes, the researchers utilized the pretest and posttest results of the variables following the intervention.

In this experimental research design, data were collected using questionnaires, documentation, and observation instruments. Moreover, the t-test and gain test were employed to ascertain the extent of improvement between the pretest and posttest results. In this study, the questionnaire method was employed to collect data from 14 PDPBT (Butterfly Pea Flower Training) participants. The documentation method was employed to procure the requisite respondent data, including age, income, the specific business type or name, occupation, and the level of education attained by the respondents. The observation method, in the form of a focus group discussion (FGD), was employed to ascertain the level of engagement among PDPBT participants. The research questionnaire employs a Likert scale with a value range of 1–5. The questionnaire instrument comprises 34 statements pertaining to four variables, which were assessed in the pretest and posttest. Thus, the maximum value for the pretest and posttest is 170 points, while the minimum value is 34 points.

2. RESULT AND DISCUSSION

3.1. Result

The data collection process for research activities was conducted with 14 research respondents, specifically groups of mothers who manage their own MSME businesses, including both those that have been successfully marketed and those that have not yet been marketed. In order to collect the requisite data for the research project, a pretest technique was employed in the form of the distribution of questionnaires to PDPBT (Butterfly Pea Flower Training) participants. The questionnaires comprised a total of 34 statements, with respondents invited to indicate their level of agreement with each statement on a five-point Likert scale. Moreover, quasi-experimental research techniques were employed by administering the PDPBT (Butterfly Pea Flower Product Diversification Training) intervention to 14 participants. Following the implementation of the treatment, a posttest was administered to the participants, comprising questions similar to those posed in the pretest. This was done with the intention of enhancing the participants' comprehension of the diversification of bay flowers, the digitalization of bay flower MSMEs, and their understanding of global MSMEs.

3.1.1. Respondent Profile

The respondent profile comprises 14 individuals who participated in research activities in the form of focus group discussions (FGDs) and the PDPBT (Butterfly Pea Flower Training) as part of the experimental research treatment on June 8-9, 2024. The respondent profile analysis encompassed an examination of the respondents' income, occupation, age, business type, and educational background. It is noteworthy that all participants were female.

The age of the respondents. The data indicate that there were two respondents in the 39-, 40-, 42-, and 45-year age groups, representing 15-14% of the total number of respondents. The age groups comprising one respondent each were 44 years, 46 years, 47 years, 50 years, 52 years, and 56 years, representing 7% of the total number of respondents.

The educational background. The data indicate that the majority of respondents have completed either a Bachelor's degree or an undergraduate program (S1) and have obtained a high school diploma. There are five respondents in this category, representing 36% of the total sample. Meanwhile, two respondents (14%) had completed junior high school. A minority of respondents have completed elementary school or vocational training, with each group comprising one respondent, representing 7% of the total sample.

The respondent's occupation. The data indicate that the majority of respondents are employed in entrepreneurial roles, with 11 respondents (79%) falling into this category. Subsequently, two respondents (14%) indicated that they had become housewives. A minority of respondents, specifically one individual representing 7% of the total sample, indicated that they were employed in a civil service role.

Type/Name of Respondent's Business. As with the preceding data regarding employment, the majority of respondents are engaged in entrepreneurial activities. Conversely, the requisite condition for the respondent sample is a community that has an MSME business in addition to their primary occupation. The data indicate that the majority of respondents (n=2) operate a single type of business, namely a pastry shop. Moreover, the types of businesses represented by the respondents are diverse, exhibiting a range of characteristics and specializations. Thus, other businesses, including mushroom cultivation and kripik mushroom chips, legen chocolate and Butterfly Pea flower chocolate, kemplang rici-rici, crab crackers, flavor variants chips, various wet cakes, various pastries and wet cakes, fried pastries, herbal instant drinks, Rikha pudding, rengginang and cofee powder, and Uswah Catering, are each cultivated by one respondent out of a total of 12 other respondents.

Income of respondents. The data indicate that the majority of respondents have income levels between Rp 1,500,000 and Rp 3,000,000 per month, representing 8 respondents and 57% of the total sample. Additionally, four respondents (29%) reported income levels below Rp 1,500,000 per month. A minority of respondents (n = 2, 14%) reported an income level of Rp 3,000,000 - Rp 4,500,000 per month.

3.1.2. Descriptive Data

The pretest and posttest results regarding the diversification and digitalization of Butterfly Pea flower MSME products exhibit minimal discrepancy. It can be observed that the increase that occurred from the posttest to the pretest was within the medium interval, specifically 8.87% or 12.2 points. Notwithstanding, the provision of PDPBT and FGD to respondents, namely the mothers of Prunggahan Kulon Village, was conducted in a satisfactory manner. This is corroborated by the respondents' enhanced comprehension of the techniques required to produce more resilient Butterfly Pea flower cookies. To facilitate further diversification of product types within the existing business portfolio. Furthermore, the results indicate that descriptive data can enhance the interest and potential for growth of Butterfly Pea flower MSMEs. The involvement of a significant number of individuals in the Butterfly Pea flower product diversification program can facilitate the empowerment of regional MSMEs based on local potential. However, in subsequent follow-up, the variables pertaining to the knowledge of diversification of bay flower derivative products have not been significantly conveyed. In order to facilitate the creation of research evaluation material, it would be beneficial for researchers to consider incorporating further insight into the diversification of Butterfly Pea flower products, not only in the context of dried food, but also in relation to skincare and body care products. Moreover, the fourth variable allows for further investigation into the role of digitalization in marketing Butterfly Pea flower products. Should respondents have previously engaged in marketing activities via WhatsApp and Instagram, researchers may wish to consider providing further training on content creation for the latest social media platforms, such as TikTok Shop or Shopee Live. It is therefore evident that a collaborative initiative involving academics, practitioners, the local community, and local government is required to facilitate the empowerment of local MSMEs and achieve the development of the Tuban Edutourism Village.

Table 2. Descriptive Data

Variable	Mean	Std. Dev	Interpret	High	Low	Median	Mode
Pretest	137.5	20.04	High	169	91	136	136
Posttest	149.7	16.25	High	170	134	139.5	136

3.1.3. Pretest-Posttest Normality Test

By doing the Shapiro Wilk test to determine whether the data is normally distributed or not (González-Estrada & Cosmes, 2019; Mishra et al., 2019), the hypothesis is determined first

H0 = Data is not normally distributed if the significance value < alpha error degree 0.05

H1 = Data is normally distributed if the significance value> alpha error degree 0.05

Based on the table and histogram above, the pretest variable data on diversification and digitalization of Butterfly Pea flower MSMEs fails to reject H1 and reject H0 because the significance result> 5% alpha degree = 0.365> 0.05. This means that the pretest data on diversification and digitalization of the Butterfly Pea flower MSMEs are normally distributed. Meanwhile, the data on the posttest variable diversification and digitalization of the Butterfly Pea flower MSMEs reject H1 and fail to reject H0 because the significance results < 5% alpha degree = 0.001. This means that the posttest data on diversification and digitalization of Butterfly Pea flower MSMEs are not normally distributed.

Table 3. Shapiro-Wilk Statistic

	Shapiro-Wilk Statistic	df	Sig.
Pretest	0.936	14	0.365
Posttest	0.732	14	0.001

3.1.4. Wilcoxon Signed Ranks Analysis

In order to satisfy the prerequisites of a paired t-test sample test, it is essential to ensure that the data adheres to the criteria of a normal distribution and that the selected population is clearly defined. However, the results of the normal distribution test, conducted using the Shapiro-Wilk test, indicate that the posttest data does not adhere to a normal distribution. Consequently, a non-parametric analysis test is required, which does not rely on the normality test as a paired t-test. The Wilcoxon signed-ranks test is employed to ascertain whether there is a significant difference between two groups with one treatment (Anaene Oyeka & Ebuh, 2012). The Wilcoxon test is employed when the data set is not normally distributed (Harris & Hardin, 2013). The results of the pretest and posttest normality tests indicate that the pretest data is normally distributed, whereas the posttest data is not. In order to ensure that the subject being evaluated remains consistent throughout the course of the study, it is essential that the pretest and posttest are conducted on the same individual. Thus, two distinct scores are observed on two disparate measurements, despite the respondents belonging to the same group. The Wilcoxon sample test allows researchers to measure differences between two time points (Kim, 2014; Miyaji & Fukui, 2020; Rey & Neuhauser, 2008). In this study, the objective is to ascertain the level of comprehension regarding diversification and digitalization among the respondents' Butterfly Pea flower micro, small, and medium enterprises (MSMEs) in Prunggahan Kulon Village, both prior to their involvement in the FGD-PDPBT Pastries program and following the completion of the program. The results of the paired sample t-test are presented in the following tabulation.

Table 4. Wilcoxon Signed Ranks Test

Ranks		N	Mean Rank	Sum of Ranks
Pretest Posttest	Negative Ranks	1a	2.50	2.50
	Positive Ranks	10b	6.35	63.50
	Ties	3c		
	Total	14		
Z = -2.719				
Asymp. Sig. (2-tailed) = 0.007				
c. Posttest Butterfly Pea MSMEs = Pretest Butterfly Pea MSMEs				

Source: Primary Data Processing SPSS 2024

There is a hypothesis that shows whether or not there is a difference in pretest and posttest scores on respondents.

H0 = There is no difference in the pretest and posttest scores of respondents regarding the diversification and digitalization of Butterfly Pea flower MSMEs

H1 = There is a difference in the pretest and posttest scores of respondents regarding the diversification and digitalization of the Butterfly Pea flower MSMEs

Based on the results of the table above, shown in the blue column for the Wilcoxon statistical test, the calculated z test result is -2.719. By comparing the z table for the p value (Z < Z Count), Z count> Z table to find out if there is a chance that there is a difference in pretest and posttest scores. The results of the Z table comparison for Z count -2.719 = 0.0034, p (0.0034 < 2.719) (assuming one side) means that there is a chance to reject H0 and fail to reject H1 or there is a difference in respondents' pretest and posttest scores. This is also evidenced by the probability significance level of 0.007 which means less than the error degree of 0.05 or there is a difference in the pretest and posttest scores of respondents.

To find out the effect of increasing or decreasing the score that occurs, it is necessary to look at the results of the Wilcoxon "Ranks" descriptive table found in the green and yellow columns. The yellow rank column shows that there is 1 respondent with a posttest < pretest result, while 3 respondents have a posttest = pretest score, and 10 respondents have a posttest > pretest score. Moreover, the average negative ranking column for posttest and pretest results is 2.5 and for the positive improvement ranking is 6.35. Nevertheless, these results still show a positive increase in the majority of respondents. So that there is an increase in the understanding of diversification and digitalization of MSMEs of Butterfly Pea flowers after receiving FGDs and PDPBT. Thus, it can be concluded that the Butterfly Pea flower product diversification training (PDPBT) has a significant effect on increasing the understanding of diversification and digitalization of Butterfly Pea flower MSMEs.

3.1.5. Calculation of Training Effectiveness through N Gain

The N Gain Value test is a methodology employed to ascertain the efficacious contribution or the degree of influence (effectiveness) of an intervention result. Furthermore, the N Gain Value test is conducted on the condition that the pretest-posttest difference test results are statistically significant. As has been demonstrated, the findings of this study indicate that, in accordance with the Wilcoxon t-test, there is a notable discrepancy between the pretest and posttest scores.

Table 4. N Gain Pretest and Posttest Result

Pretest	Posttest	Post-Pre	Nmax (170)/Pretest	N Gain	Percentage
91	136	45	79	0.569620253	56.96202532
169	169	0	1	0	0
136	136	0	34	0	0
130	138	8	40	0.2	20
135	141	6	35	0.171428571	17.14285714
168	170	2	2	1	100
128	136	8	42	0.19047619	19.04761905
150	170	20	20	1	100
136	136	0	34	0	0
134	170	36	36	1	100
146	154	8	24	0.333333333	33.33333333
113	136	23	57	0.403508772	40.35087719
149	170	21	21	1	100
140	134	-6	30	-0.2	-20
137.5	149.7143	12.21429	32.5	0.404883366	40.48833657

Based on the N Gain calculation method by Hake R.R (1999) the Normalized Gain formula is as follows.

$$\text{N Gain} = \frac{Score\ (Posttest) - Score\ (Pretest)}{Score\ (Ideal) - Score\ (Pretest)} \qquad (1)$$

The N-Gain Posttest and Pretest table, based on the Gain Criteria (Melzer, 2002) and N-Gain Criteria Effectiveness (Hake, 1999) (Meltzer, 2002; Sagita & Aminatun, 2019), indicates that the average N-Gain value and percentage fulfill the Gain criteria. The N-Gain value of 0.4 indicates that the efficacy of the training and FGD (treatment) can be classified as moderate. The 40.8% figure indicates that the training and FGD (PDPBT treatment) can be classified as less effective.

This may be attributed to the limitations imposed by time constraints and the initial stage of the PDPBT. It is recommended that respondents, namely mothers of MSME actors, receive additional treatment or an intensive implementation of training in the long term to ensure effective results. Nevertheless, the moderate category of training is sufficient to demonstrate that external assistance is required by the region to develop local potential, particularly in Prunggahan Kulon Village, Tuban, East Java.

3.2. Discussion

3.2.1. Internalization of PDPBT for MSME Actors in the Strategy of Diversification and Digitalization of Butterfly Pea Flower Products

Training conducted by academics is one of the efforts to empower MSMEs to Go Digital and Go Global. PDPBT (Butterfly Pea Flower Product Diversification Training) is carried out to increase the understanding and ability of MSME actors to develop their business products. So that efforts to Go Digital and Go Global MSMEs can be pursued through the role of the general public including academics and the awareness of local residents themselves. The central government through various national and private institutions has provided convenience in terms of empowering MSMEs. The National Energy Company, Pertamina, provides the UMK Academy program which is intended to attract and print MSMEs so that they can increase business productivity. UMK Academy activities last for 5-6 months with various development curricula, namely UMKM Go Modern, Go Digital, Go Online, Go Global with the integration of Go Green principles in each program. Kominfo (Ministry of Communication and Information) RI also provides a series of MSME empowerment programs through the Digital Talent Scholarship and MSME Scaling-Up. Kominfo also provides training in English language skills and digital marketing for MSMEs. However, the training provided by the central government has not been able to reach all millions of MSMEs in Indonesia. Information and also socialization of the programs provided have not been able to reach rural communities. So that empowered MSMEs tend to be centered in urban areas.

The encouragement provided by the general public, including academic students and academics, contributes to the efforts to empower and equalize the abilities of MSME actors (Bartin, 2020; Phillips, 2020; Tereshchenko, 2024). The findings of this experimental research indicate that training provided by academics has a moderate and significant impact on community empowerment. Training for MSME players encourages the utilisation of creative product development techniques, including brainstorming, prototyping, and design thinking approaches (Burroughs et al., 2011; Machfiroh et al., 2023). Product training for MSME players can facilitate the generation of novel concepts for business actors with regard to product diversification. Furthermore, the training provided has been observed to enhance comprehension of product digitalization, particularly with regard to digital literacy and the utilization of social media for product marketing. The PDPBT for business actors in Prunggahan Kulon Village comprises two strategic elements: The Butterfly Pea flower packaging innovation strategy (product diversification) and the global marketing strategy (product digitalization).

3.2.1.1. Butterfly Pea Flower Packaging Innovation Strategy

The Butterfly Pea flower packaging innovation strategy aims to increase the added value of business products and support the Butterfly Pea flower dry product diversification strategy. Packaging in Butterfly Pea flower innovation products also requires a durable and sustainable concept. Sustainable packaging is defined as a form of packaging that reduces the impact on the environment either from material sources, distribution, manufacturing, use, or can be recycled. Currently, consumers are also starting to have an interest in caring for the environment so that they are more conscious in making purchasing decisions. McKinsey studies show that more than 80% of consumers across all ages are willing to pay more for environmentally friendly packaging. Sustainable packaging solutions can also reduce production costs in the long run (Boz et al., 2020; Coelho et al., 2020; Vrabič-Brodnjak & Jestratijević, 2024). Moreover, innovative eco-friendly packaging is also lighter and requires less energy to produce. Some of the green product innovations in 2024 include.

1. Edible packaging. The packaging of this product employs a futuristic concept, utilizing seaweed as the fundamental material for edible coatings. This innovation offers the dual benefit of safety for human consumption and environmental friendliness.
2. Vegetable Plastic Plant-based plastics, including those derived from corn fiber, sugarcane, and plant cellulose, can be utilized as biodegradable plastics that are readily decomposed and environmentally benign.

3. Flexible Packaging: Facilitates Recycling. The utilisation of cardboard packaging represents an innovative and environmentally friendly packaging option. This can be employed for the packaging of butterfly pea flower cookies, with a combination of vegetable plastic jars and edible packaging on each piece of cookies packaged.

Apart from considering environmentally friendly packaging, MSMEs can also consider using canned packaging that is more durable. Canned product packaging with aluminum-based materials is also more environmentally friendly and has a higher recycling rate than other canned packaging (Marsh & Bugusu, 2007; Raabe et al., 2022). Butterfly Pea flower innovation products such as herbal drinks, jams, or syrups can use aluminum can packaging with considerations including.

1. Convenience. Beverage cans are more appreciated for their convenience. Canned products can be carried anywhere because they are light, strong, and not easily damaged.
2. Product protection. Canned packaging can also protect the flavor and quality of the product from sunlight or humid environments.
3. Sustainability. Canned packaging is also more environmentally friendly because it can be recycled and is more attractive.

3.2.1.2. Global Marketing Strategy of Butterfly Pea Flower Products

Global marketing strategies focus on segmenting global consumers and emphasizing local potential products that are internationally standardized in terms of quality or value (Fregidou-Malama et al., 2023; Kalam, 2020; Samiee et al., 2021). On an economic scale, global marketing reaches a wider audience, increases brand recognition, diversifies risks, capitalizes on global trends, optimizes resources, and gains innovative insights. Global marketing strategies are also a business method to distribute products internationally for market expansion. There are several global marketing strategies including.

a) Market research. The intended market research is to identify local bureaucracy and business regulations. Market research is important for Butterfly Pea flower MSME players to find out the potential and threats of product sales. MSME actors can make observations or surveys to the public about the Butterfly Pea flower products they produce.
b) Global Segmentation, Targeting, and Positioning (STP). Butterfly Pea flower MSME players can make market segmentation efforts by grouping consumers into geographic divisions (city or village areas), demographics (age, education, occupation), psychographics (lifestyle, values, attitudes), behavior (customer loyalty to brands). MSME actors can also target consumers who are tailored to their production, whether it is from local cultural characteristics or socio-economic conditions. MSME actors can also place positioning or create brands that characterize the products they produce.
c) Localized marketing mix 4P (Product, Price, Place, and Promotion). MSME players can focus on marketing mixes such as 4P and 7P. Business actors can focus on product quality, appropriate pricing, how products or services are distributed and available to consumers, business product promotion strategies, the quality of human resources in MSME production, the process of products being delivered to consumers, and physical evidence in strengthening consumption perceptions of product or service quality.
d) Global Branding. Business actors can carry out global branding through the process of creating and maintaining the image, identity and reputation of product brands so that they can be accepted in the global market. This aims to obtain a consistent and positive perception in the minds of consumers around the world.
e) Digital Integration. MSME players can start considering digital integration in their marketing activities, production activities, and distribution activities. MSME players can carry out digital integration in their financial activities. Government programs in financial assistance themselves have also been digitally integrated so that services to MSME players are much easier and faster. In terms of marketing, MSME players can start marketing digitally through social media such as Instagram, TikTok, and WhatsApp. Business actors can also take part in digital management training programs through marketplaces such as Shopee.
f) Distribution supply chain management. Distribution supply chain management is needed so that the business products produced are delivered to consumers with a good process. Distribution supply chain management aims to optimize the efficiency and effectiveness of product distribution from suppliers to end consumers.
g) Continuous Evaluation and Improvement. Continuous evaluation and improvement are needed to assess the entire production process from planning to the consumer assessment stage. Evaluation is needed in order to

improve quality and optimal service to consumers. Evaluation is also needed as a quick fix step to achieve business sustainability.

Some of the challenges faced in trying to achieve a global market strategy are 1) differences in language and culture, 2) different rules and regulations, 3) there is higher local competition, 4) logistical complexity (Sudirjo, 2023).

4. CONCLUSION

Butterfly Pea flower MSMEs were chosen because the commodities developed are part of Indonesia's local potential. Butterfly Pea flowers with their content are efficacious as herbal plants that can be processed into a variety of foods and drinks. Efforts to diversify Butterfly Pea flower MSME products aim to improve product quality and durability so that they can be accepted by the domestic and global markets. Butterfly Pea flower MSME product diversification training is also carried out together with product digitization training. The digitalization of MSME products focuses on the introduction of marketing Butterfly Pea flower products through social media Reels Instagram. This experimental research program is named PDPBT (Butterfly Pea Flower Product Diversification Training) with the theme of pastry training for Butterfly Pea flower product diversification strategies and the introduction of Reels Instagram as a product digitization social media. The results showed that PDPBT was quite effective in increasing the understanding of MSME actors in terms of product diversification and digitalization. However, the helping hand of academics must be supported by the relevant local and central governments so that it is more effective in improving the ability of MSME actors. The central and regional governments should re-arrange the Go Digital, Go Global, and Go Green programs through equitable distribution of training socialization in all regions, both villages and cities, so that the benefits can reach all MSME players in Indonesia. A joint business movement from the awareness of MSME actors, academics, the general public, local governments, and the central government is mandatory as a basis for empowering digitalization and diversification of MSME products.

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