**The Impact of Entrepreneurship Education, Resource Access, and Technology Adoption on Students' Interest in Entrepreneurship in Recycled Plastic Products**

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**Abstract**

Plastic waste is a global environmental challenge. One potential solution is to promote entrepreneurship in plastic recycling. However, this approach remains relatively limited and requires greater attention. This research seeks to analyse the impact of entrepreneurship education, resource access, and technology adoption on student interest in entrepreneurship in recycled plastic products. A quantitative methodology was utilised, involving a survey administered to 110 students from Muhammadiyah Mataram University who had engaged in entrepreneurship training. The results showed that entrepreneurship education, resource access, and technology adoption positively and significantly affect entrepreneurial interest, with contributions of 26.5%, 34.1%, and 32.7%, respectively. Collectively, these factors contributed a value of 56.6%. The findings highlight the important role of resource access, technology, and education in fostering students' interest in plastic recycling entrepreneurship. These results can inform innovative strategies to promote sustainable entrepreneurship among university students.

**Keywords**: Entrepreneurship; Education; Resources; Technology; Plastic recycling; Sustainable entrepreneurship

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**Introduction**

The issue of plastic waste has emerged as one of the most pressing global environmental challenges of the 21st century. Over 359 million tonnes of plastic are annually manufactured globally, with only approximately 16% recycled (Pilapitiya & Ratnayake, 2024). Most of this recycled plastic is in landfills that fail to meet the requisite standards and are poorly managed (Shareefdeen & ElGazar, 2024). Inadequate waste management practices pollute land and water (Abimbola et al., 2024). Transporting plastic waste by rivers to the sea harms marine and coastal ecosystems (Silva et al., 2023). The crisis has a significant economic and health impact on society. One way to address this issue is through entrepreneurship focused on plastic waste recycling.

In recent decades, there's been a rise in recycling-focused entrepreneurship and a global awareness of the environmental impact of plastic waste (Purwanto et al., 2024). This entrepreneurship approach could solve the plastic waste problem and create economic opportunities for young people (Mehriban, 2024). However, success depends on entrepreneurship education, resource access, and adopting the latest technology.

Entrepreneurship education is a learning process that equips individuals with the knowledge, skills, and mindset to start and manage a business. It emphasises creativity, resilience, problem-solving, and practical application (Dyantyi et al., 2024). This education encourages students to develop creative solutions to environmental problems by transforming plastic waste into value-added products (Patricia, 2024). In addition, “resource access” encompasses obtaining a range of capital resources that facilitate entrepreneurship, including financial capital, social networks, infrastructure facilities, and information resources (Kachan & Mysyura, 2022). These resources help students realise their business ideas, particularly in recycling, which often requires specialised technology and facilities (Klofsten et al., 2024; Roshan et al., 2024). Moreover, the term “technology adoption” is defined as the capacity of individuals or organisations to integrate novel technologies into their production or operational processes to enhance efficiency and competitiveness (Ferrer-Dávalos, 2023).

These three concepts influence entrepreneurship intention, defined as a person's propensity to start a new business based on opportunity, drive, and belief in their ability to succeed (Cekule et al., 2023). In the context of university students, the combination of effective entrepreneurship education, access to adequate resources, and optimal utilisation of technology has the potential to significantly increase their intention to engage in plastic waste recycling-based self-employment.

Prior research has demonstrated that entrepreneurship education can enhance the interest and competencies of individuals engaged in plastic recycling enterprises. Setiawati & Kurniasari (2020) used a random selection method based on the Slovin formula to identify 140 respondents. They found that entrepreneurship training significantly increased the ability to recycle plastic waste into profitable products. Following these findings, Dharmawati et al. (2019) also demonstrated that entrepreneurship education for 25 respondents in class A can enhance their interest and skills in recycling plastic bags into environmentally friendly products. Conversely, a study by Lit et al. (2024) identified several obstacles encountered by plastic recycling businesses, including technological dependence, credibility concerns, and constrained resources. Moreover, Grassin & Dijkstra (2023) found that the success of plastic recycling businesses depends on the team's strength, with financial and social factors exerting a comparatively lesser influence.

Additionally, numerous studies have investigated a variety of innovative technologies aimed at addressing the issue of plastic waste. Technologies such as pyrolysis, hydrogenolysis, photocatalysis, and electrocatalysis exhibit substantial potential for converting plastic waste into value-added resources in alignment with the principles of a circular economy (Shi et al., 2024). Furthermore, Babaremu et al. (2024) emphasised the significant advancements in global plastic recycling technologies, particularly in mechanical recycling techniques, which have markedly improved the efficiency of plastic waste processing for specific plastic types such as HDPE, PET, and thermoplastic elastomers. Moreover, Kunlere & Shah (2023) demonstrated that the Recycling Technology Selection Framework (RTSF) provides a systematic methodology for evaluating plastic recycling technologies, incorporating economic, technical, environmental, social, and policy considerations. Additionally, Mumtaz et al. (2023) underscored the importance of plastic waste-to-energy conversion within a circular economy, identifying hydrothermal treatment as a promising solution.

Additionally, students conducted several studies related to programmes that aim to convert plastic waste into value-added products with the potential to empower communities. Arico & Jayanthi (2017) achieved the objective of increasing the participation and skills of mothers on the coast of Langsa in producing marketable goods, thereby contributing to economic welfare. Following the studies above, Sakuntalawati & Ibad (2021) investigated ecopreneurship, repurposing domestic plastic waste to develop sustainable fashion items. Training at 75 waste banks in Surakarta demonstrated that the Ecobricks technology reduced plastic waste, producing functional furniture while fostering environmental awareness.

A further study by Sakuntalawati et al. (2022) highlighted the efforts of Bank Sampah Sejahtera in Surakarta, where plastic waste is used as a raw material to create innovative products, such as bags, through an ecopreneurship strategy. The production of each item results in a reduction of up to 1,500 grams of waste. The training programme effectively enhanced the participants' knowledge and skills while fostering their confidence in developing environmentally-based businesses. Meanwhile, Angelina & Komalasari (2019) conducted a collaboration with SME WARP Surabaya, utilising the design thinking method, which resulted in the transformation of plastic waste into innovative interior decoration. The approach combined technological, user, and business aspects, thus increasing recycled products' market value and aesthetic appeal. Conversely, Haryati et al. (2023) investigated the efficacy of entrepreneurship training for high school students in processing plastic waste into handicrafts. The findings indicated a notable enhancement in the students' entrepreneurship abilities and environmental consciousness, accompanied by favourable shifts in attitudes toward entrepreneurship and inorganic waste management.

Previous studies have consistently demonstrated a positive relationship between entrepreneurship education and interest in entrepreneurship within the plastic recycling sector (Dharmawati et al., 2019; Setiawati & Kurniasari, 2020). Some research highlights the potential of plastic recycling entrepreneurship programmes to empower communities, successfully enhancing people's entrepreneurial interests and skills, particularly in community settings (Arico & Jayanthi, 2017; Sakuntalawati et al., 2022; Sakuntalawati & Ibad, 2021). However, most studies have primarily focused on the community or general public level. Despite the great potential of this research area, there has been limited investigation into its impact on concrete entrepreneurial behaviours, such as business establishment, especially among university students. Research that explores the effects of entrepreneurship education, resource access, and technology adoption on students' interest in entrepreneurship related to recycled plastic products remains scarce, highlighting a critical need for further exploration.

This study investigates the impact of entrepreneurship education, resource access, and technology adoption on students' interest in entrepreneurship in recycled plastic waste products. The aim is to identify which factors significantly stimulate students' interest in entrepreneurship and how the interaction of these three variables substantially impacts students' decisions to start a sustainable business focused on plastic recycling. The insights and strategies from this research are expected to increase student participation in entrepreneurship that focuses on sustainable innovation, particularly in more efficiently managing plastic waste and adding value to it. Following the research objectives, the conceptual framework for the study is illustrated in Figure 1.



**Figure 1.** **Conceptual framework**

Source: Data processing, 2024

Based on the established conceptual framework, the research hypotheses are structured as follows:

1. H1: Entrepreneurship education (X1) has a positive impact on student interest in entrepreneurship in recycled plastic products (Y).
2. H2: Resource access (X2) has a positive impact on students' interest in entrepreneurship in recycled plastic products (Y).
3. H3: Technology adoption (X3) has a positive impact on student interest in entrepreneurship in recycled plastic products (Y)
4. H4: Entrepreneurship education (X1), resource access (X2), and technology adoption (X3) simultaneously affect student interest in entrepreneurship in recycled plastic products (Y).

**Methodology**

This research utilises a quantitative methodology using a survey to examine the impact of entrepreneurship education, resource accessibility, and technology adoption on students' entrepreneurship interest in plastic waste recycling products. The subjects of this study were students at University Muhammadiyah Mataram who satisfied at least one of the following criteria: (i) they had completed, or were completing, entrepreneurship courses, or (ii) they had participated in ecopreneurship or entrepreneurship training. The sample was obtained using non-probability techniques, resulting in 110 respondents. The research instrument was a structured questionnaire employing a five-point Likert scale, as detailed in Table 1.

**Table 1.** **Variables and indicators of research**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Indicator** | **Source** |
| Entrepreneurship education (X1) | 1. Knowledge
 | (Meyanti et al., 2023) |
| 1. Comprehension
 |
| 1. Training
 |
| 1. Skills
 |
| 1. Attitude
 |
| Resource access (X2) | 1. Operational support
 | (Zhou & Gao, 2019) |
| 1. Financial support
 |
| 1. Technical support
 |
| 1. Individual support
 |
| 1. Facility support
 |
| Technology adoption (X3) | 1. Technology literacy
 | (Soegoto & Hervina, 2019) |
| 1. Understanding of usage
 |
| 1. Skills
 |
| 1. Motivation
 |
| 1. Effectiveness of use
 |
| Entrepreneurship interest (Y) | 1. Entrepreneurship motivation
 | (Mabrur et al., 2024) |
| 1. Business opportunities
 |
| 1. Entrepreneurship ability
 |
| 1. Confidence in entrepreneurship
 |
| 1. Environmental support
 |

Source: Data processing, 2024

The data were gathered online and offline by administering surveys to students who fulfilled the criteria. The data were collected according to several variable aspects, including entrepreneurship education, resource access, adoption of technology, and entrepreneurship interest. The collected data were subjected to validity and reliability assessments, and classical assumption tests were used to ensure compliance with statistical requirements. Descriptive statistics were used to characterise respondents, while multiple linear regression analyses were used to test hypotheses. The latter was conducted using the following formula:

Y=α+β1X1+β2X2+β3X3+c.

Y: Student Interest in Entrepreneurship in Recycled Plastic Products

α: Constant

β1, β2, β3: Variable Regression Coefficient

X1: Entrepreneurship Education

X2: Resource Access

X3: Technology Adoption

**Result and Discussion**

One hundred and ten students were surveyed, and the data were summarised using descriptive statistics. These statistics provide an overview of the variables in the study and their characteristics, as presented in Table 2.

**Table 2.** **Descriptive statistics of the research**

|  |
| --- |
| **Descriptive Statistics** |
|  | N | Minimum | Maximum | Mean | Std. Deviation |
| Entrepreneurship education (X1) | 110 | 12,00 | 25,00 | 18,2364 | 2,47900 |
| Resource access (X2) | 110 | 7,00 | 25,00 | 19,1364 | 2,62478 |
| Technology adoption (X3) | 110 | 13,00 | 25,00 | 18,1273 | 2,58119 |
| Entrepreneurship interest (Y) | 110 | 11,00 | 25,00 | 17,7727 | 2,79468 |
| Valid N (listwise) | 110 |  |  |  |  |

Source: Data processing, 2024

Based on the descriptive results in Table 2, the average scores of the entrepreneurship education, resource access, and technology adoption variables show that all three are at a moderate level, with average values of 18.2364, 19.1364, and 18.1273, respectively. This finding reflects that although students have an adequate understanding and access, there is still room to improve the quality of entrepreneurship education, resource availability, and technology utilisation, particularly in plastic recycling-based businesses. Students' interest in plastic recycled product entrepreneurship is also moderate, with an average of 17.7727, indicating the need for a more strategic approach to increase their motivation and participation.

With a relatively small standard deviation, this data reflects the consistency of respondents' perceptions and underscores the importance of more focused efforts to strengthen the entrepreneurial ecosystem through more integrated education, resources, and technology. The research data were collected through the distribution of questionnaires. Before analysis, the data were tested to ensure compliance with the required analytical standards. Subsequently, validity and reliability assessments were conducted, with the results summarized in Table 3.

**Table 3. Summary of test results: Validity and reliability of research**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Data Tested | Variables | Indicator | Criteria required | Results | Remarks |
| Validity Test | Enterpreneursip Education (X1) | X1.1 | It is requisite that the item value exceeds the r-table (with df= 110-3)= 0.1882. | 0.726 | Valid |
| X1.2 | 0.806 | Valid |
| X1.3 | 0.774 | Valid |
| X1.4 | 0.787 | Valid |
| X1.5 | 0.719 | Valid |
| Resource Access (X2) | X2.1 | 0.744 | Valid |
| X2.2 | 0.790 | Valid |
| X2.3 | 0.797 | Valid |
| X2.4 | 0.822 | Valid |
| X2.5 | 0.749 | Valid |
| Technology Adoption (X3) | X3.1 | 0.766 | Valid |
| X3.2 | 0.754 | Valid |
| X3.3 | 0.781 | Valid |
| X3.4 | 0.702 | Valid |
| X3.5 | 0.754 | Valid |
| Entrepreneurship interest (Y) | Y1.1 | 0.753 | Valid |
| Y1.2 | 0.799 | Valid |
| Y1.3 | 0.766 | Valid |
| Y1.4 | 0.733 | Valid |
| Y1.5 | 0.753 | Valid |
| Reliability Test | All variables; X1, X2, X3, and Y | All indicators; 20 items | Exceeds Cronbach's alpha; 0.60 (Cheung et al., 2024) | 0.930 | Valid |

Source: Data processing, 2024

The validity test assesses the extent to which the instrument can accurately capture the construct it is designed to measure. In contrast, the reliability assessment evaluates the instrument's consistency in producing similar results when calculating the same construct on different occasions. In this context, the standard for validity testing employs a correlation coefficient, whereby the correlation value of the item in question must exceed the critical value or r-table. The validity test results in this study demonstrate that all items exhibit correlation values ranging from 0.702 to 0.822, which is considerably above the minimum r-table limit of 0.1882. These results confirm that all items in this research instrument meet the requisite validity standards and can accurately measure the variables under study appropriately.

The standard reliability test is Cronbach's Alpha, which represents a coefficient used to assess the internal consistency of the items within the instrument. An instrument is deemed reliable if its Cronbach's Alpha value exceeds 0.60 (Cheung et al., 2024). The test results demonstrate a Cronbach's Alpha value of 0.930, considerably above the 0.60 threshold. The result indicates that the research instrument exhibits excellent internal consistency. In other words, the instruments employed in this study are reliable and can provide consistent results if reused in the same population. In addition, to ascertain that the regression model fulfills the necessary assumptions, it is vital to test the classical assumptions, as summarised in Table 4.

**Table 4. Summary of the classical assumption test results**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Data Tested | Variables | Type of Test | Criteria | Results | Remarks |
| Normality Test | All variables; X1, X2, X3, and Y | P-Plot | Data should be normally distributed if it spreads and follows the diagonal line. | Data spreads and follows the diagonal line | Data Accepted |
| Kolmogorov-Smirnov | Asymp. Sig. 2 tailed must > 0,05 | 0,200 | Data Accepted |
| Multicollinearity Test | X1 | Tolerance & VIF | The tolerance value must exceed 0,100, and the Variance Inflation Factor (VIF) must remain below 10.00. | Tolerance= 0,452 , VIF= 2,210 | Data Accepted |
| X2 | Tolerance= 0,551 , VIF= 1,815 | Data Accepted |
| X3 | Tolerance= 0.374 , VIF= 2,671 | Data Accepted |
| Heteroscedasticity Test | All variables; X1, X2, X3, and Y | Scatter Plot | There is no clear pattern, and the data distribution must spread above, below, or around zero. | The data are dispersed, showing no apparent pattern. | Data Accepted |
| X1 | Glejser | Sig. value must (> 0,05) | 0,324 | Data Accepted |
| X2 | 0,273 |
| X3 | 0,299 |

Source: Data processing, 2024

The tests that have been carried out demonstrate that the data are normally distributed, as indicated by the results of the Kolmogorov-Smirnov normality test (p > 0.05). Furthermore, the multicollinearity test shows tolerance values for X1, X2, and X3 of 0.452, 0.555, and 0.374, respectively (all > 0.100), as well as variance inflation factor (VIF) values below 10, indicating no high linear relationship between independent variables. Additionally, the heteroscedasticity test, employing both a scatter plot and the Glejser test, revealed an absence of any systematic pattern, with significance values for X1 (0.324), X2 (0.273), and X3 (0.299) (all > 0.05), thereby satisfying the assumption of homoscedasticity. With these three conditions fulfilled, the research data are suitable for further regression analysis to explore the relationship between the independent and dependent variables.

**Hypothesis Analysis**

The F-test and t-test are employed to conduct a multiple linear regression analysis. The objective of the F-test is to ascertain whether the independent variables, when considered collectively, exert a significant influence on the dependent variable. In contrast, the t-test is utilised to analyse the impact of entrepreneurship education, access to resources, and technology adoption on entrepreneurship interest. The outcomes of the F-test are presented in Table 5.

**Table 5. The results of the F-test**

|  |
| --- |
| **ANOVAa** |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 481,762 | 3 | 160,587 | 46,061 | ,000b |
| Residual | 369,556 | 106 | 3,486 |  |  |
| Total | 851,318 | 109 |  |  |  |
| a. Dependent Variable: Entrepreneurship interest |
| b. Predictors: (Constant), Technology adoption, Resources access, Entrepreneurship education |

Source: Data processing, 2024

The results of the F-test, as displayed in Table 5, indicate that the resulting F-value is 46.061 with a p-value of 0.000, which is below the 0.05 significance level. As the significance value is less than 0.05, the regression model is significant as a whole, indicating that the variables of entrepreneurship education, resource access, and technology adoption have a crucial collective influence on entrepreneurship interest. Additionally, the results of the test for the coefficient of determination are provided in Table 6.

**Table 6.** **The coefficient of determination**

|  |
| --- |
| **Model Summary** |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | ,752a | ,566 | ,554 | 1,86718 |
| a. Predictors: (Constant), Technology adoption, resource access, Entrepreneurship education |

Source: Data processing 2024

The coefficient of determination (R²) test determines the proportion of variability in the dependent variable that the independent variables in the regression model can explain. Table 6 indicates an R Square value of 0.566, suggesting that entrepreneurship education, resource access, and technology adoption explain 56.6% of the variation in entrepreneurship interest. Factors external to the model account for the remaining 43.4%. The adjusted R-squared value of 0.554 reflects an adjustment to the R-squared value that accounts for the number of variables and the sample utilised, thereby offering a more precise estimate of the independent variables' contribution to the dependent variable within the population. This value indicates that the regression model is sufficiently robust to explain the observed variation in students' entrepreneurship interest in plastic recycling. Furthermore, the t-test results are presented in Table 7.

**Table 7.** **The results of the t-test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | Unstandardised Coefficients | Standardised Coefficients | t | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | ,480 | 1,499 |  | ,320 | ,749 |
| Entrepreneurship education (X1) | ,265 | ,107 | ,235 | 2,471 | ,015 |
| Resource access (X2) | ,341 | ,092 | ,320 | 3,716 | ,000 |
| Technology adoption (X3) | ,327 | ,113 | ,302 | 2,891 | ,005 |

a. Dependent Variable: Entrepreneurship interest (Y)

Source: Data processing, 2024

Table 7 displays the t-test results, indicating that each variable has a t-statistic exceeding 1.96 and a p-value lower than 0.05. The criteria demonstrate that the independent variable significantly influences the dependent variable. That is supported by a t-statistic exceeding 1.96 or a P-value below 0.05. A t-statistic below 1.96 or a P-value exceeding 0.05 suggests that the independent variable does not influence the dependent variable (Cheung et al., 2024). The t-test results indicate that entrepreneurship education, resource access, and technology adoption significantly affect entrepreneurs' interest in recycled plastic products.

Following the completion of the t-test and F-test, the subsequent step is to identify the regression equation model based on the initial formula with the data that has been tested. Based on Table 7, the multiple linear regression equation model is summarised in Table 8.

**Table 8. Research the equation model**

|  |  |
| --- | --- |
| Data | Description |
| Equation model | Y=α+β1X1+β2X2+β3X3+cY=0,480+0,265X1+0,341X2+0,327X3+0 |
| Criteria | 1. Suppose all independent variables (entrepreneurship education, resource access, and technology adoption) are set to zero. In that case, the level of interest in entrepreneurship (Y) is predicted to remain at the baseline of 0.480.
 |
| 1. It can be posited that should entrepreneurship education (X1) increase by one unit, with access to resources (X2) and technology adoption (X3) remaining constant, then interest in entrepreneurship (Y) will increase by 0.265 units.
 |
| 1. It can be posited that an increase of one unit in access to resources (X2), with the assumption that entrepreneurship education (X1) and technology adoption (X3) remain constant, will result in an increase of 0.341 units in interest in entrepreneurship (Y).
 |
| 1. It can be posited that should there be an increase of one unit in the technology adoption variable (X3), assuming that the variables of entrepreneurship education (X1) and access to resources (X2) remain constant. The variable of interest in entrepreneurship (Y) will increase by 0.327 units.
 |

Source: Data processing, 2024

The research hypotheses (H1, H2, H3, and H4) are proposed based on the effect of the independent variables (X1, X2, X3) on the dependent variable (Y). The null hypothesis is accepted when the p-value is less than or equal to 0.05. The results are summarised in the hypothesis, as shown in Table 9.

**Table 9. Hypothesis result**

|  |  |  |  |
| --- | --- | --- | --- |
| Hypothesis | The interrelationship between variables | p-value | Remarks |
| H1 | X1 → Y | 0,015 | Hypothesis accepted |
| H2 | X2 → Y | 0,000 | Hypothesis accepted |
| H3 | X3 → Y | 0,005 | Hypothesis accepted |
| H4 | X1 → X2→ X3 → Y | 0,000 | Hypothesis accepted |

Source: Data processing, 2024

Entrepreneurship education significantly and positively impacts students' interest in entrepreneurship activities related to using recycled plastic products, with an observed effect size of 26.5%. These findings align with previous research, indicating that entrepreneurship education fosters interest and proficiency in entrepreneurship, particularly within the context of plastic recycling. Entrepreneurship education can shift students' perspectives on plastic recycling business opportunities, enhance their interest in exploring environmentally-focused businesses, and cultivate their interest and abilities in producing environmentally-conscious products from plastic waste.

Access to resources positively and significantly influences students' entrepreneurship interest in recycled plastic products, with a 34.1% impact. This finding supports the assertion that team strength and resource availability are critical factors in the success of recycled plastic-based enterprises (Grassin & Dijkstra, 2023). The availability of financial resources, technical facilities, technology, and financial support is a significant predictor of success and sustainability for entrepreneurs in this field (Lit et al., 2024).

Conversely, adopting technology has been demonstrated to exert a beneficial and pronounced effect on student interest in entrepreneurship activities on recycling plastic materials, with an observed increase of 32.7%. This finding is consistent with the assertion that technology, particularly in the context of plastics processing, has the potential to facilitate the growth of circular economy-based businesses (Kunlere & Shah, 2023; Shi et al., 2024). The advent of mechanical recycling technology has led to a notable enhancement in the efficiency of the recycling process. Consequently, students' inclination to pursue a career in plastic recycling may be influenced by their access to and proficiency in utilising this technology (Babaremu et al., 2024).

The study’s results demonstrate that integrating entrepreneurship education variables, resource access, and technology adoption influences students' entrepreneurial inclination towards recycled plastic products. Entrepreneurship education is pivotal in influencing students' mindsets and skills, particularly in identifying environmentally focused business opportunities (Dyantyi et al., 2024). Higher education institutions must continue reinforcing entrepreneurship curricula pertinent to sustainability and circular economy concerns. Furthermore, access to resources was identified as the most significant factor in this study, emphasising the necessity for infrastructure support, funding, and technical facilities to facilitate the success of plastic recycling-based businesses. The availability of sufficient resources enhances students' interest and bolsters their confidence in their capacity to initiate and oversee business operations sustainably (Zamfirache et al., 2023).

Moreover, adopting technology is essential in enhancing students' capacity to utilise modern technology, particularly in plastic recycling. Technologies like mechanised recycling and 3D printing strengthen the development of a circular economy and sustainability-focused enterprises (Dohan et al., 2024). Integrating technology in neighbourhood-based entrepreneurship expands market opportunities, enhances manufacturing efficiency, and supports sustainability goals (Lomachynska & Fedorchenko, 2024). Consequently, educational institutions and other stakeholders must provide relevant technical training, improve access to advanced technologies, and promote collaborative networks among academia, industry, and government. By taking these steps, students are expected to acquire essential technical skills and foster innovation, sustainability, and competitiveness in entrepreneurship. Furthermore, this initiative aims to cultivate a generation of entrepreneurs focused on profit and social and environmental responsibility.

**Conclusion**

This study shows that entrepreneurship education, resource access, and technology adoption significantly influence students' interest in entrepreneurship in recycled plastic products. Entrepreneurship education plays a vital role in shaping students’ mindsets and skills in identifying environment-based business opportunities. At the same time, access to resources, such as infrastructure, funding, and technical facilities, contributes significantly to strengthening students’ confidence in starting sustainable ventures. Technological adoption of plastic recycling with modern and renewable technologies not only supports efficiency and expands market opportunities but also supports sustainability goals.

However, this study is limited by the small sample size and the quantitative approach, which did not explore the field aspects. Future research should include a larger sample and a mixed-methods approach to enrich the understanding of the factors influencing entrepreneurial interest. In addition, strengthening the entrepreneurship education curriculum, providing relevant technical training, and enhancing partnerships between universities, industry, and government are essential for supporting more effective entrepreneurship development. The findings are expected to support the development of effective strategies to strengthen the sustainable entrepreneurship ecosystem among university students.

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