

Automotive students' interest in e-commerce entrepreneurship: An exploration through a quantitative descriptive approach

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Abstract: This study explored the entrepreneurial interest in e-commerce among vocational high school students in the Motorcycle Engineering and Business program, with a focus on motorcycle spare parts sales. A descriptive quantitative approach was applied through a survey method involving 80 students. A questionnaire was employed to assess the level of entrepreneurial interest as well as the influencing factors, both intrinsic and extrinsic. The findings indicated that students' interest in e-commerce entrepreneurship was at a moderate level, with intrinsic factors accounting for 56.98% and extrinsic factors for 43.02%. Motivation emerged as the most dominant intrinsic factor (14.51%), followed by perception, enjoyment, experience, and character. On the extrinsic side, the family environment exerted the strongest influence, followed by school and community. These results underscored the need to strengthen students' digital entrepreneurial interest through contextual learning, hands-on activities, and supportive environments. The study also reinforced the relevance of Self-Determination Theory in explaining how intrinsic motivation influenced students' entrepreneurial intentions in the digital economy.

Keywords: entrepreneurial interest; intrinsic motivation; extrinsic motivation; self-determination theory

1. Introduction

Vocational High Schools (Bahasa: *Sekolah Menengah Kejuruan/SMK*) are a level of education aimed at preparing students with specialized skills relevant to the needs of the workforce. SMKs are designed to produce graduates who are work-ready, independent, and competitive in specific fields. According to Government Regulation No. 20 of 2003, the primary goal of SMKs is to prepare competent human resources to enter the world of work, but the existence of vocational schools also supports students to become entrepreneurs, which is demonstrated through the current curriculum in vocational schools. In the Motorcycle Engineering and Business (TBSM) department, graduates are directed to have competencies in motorcycle maintenance, repair, and spare parts sales. The number of graduates continues to increase year after year, but this increase is not accompanied by an increase in the number of jobs. According to BPS data, the number of unemployed people in August 2024 was 7,466,000. Of the total workforce of 152,108,000 people, approximately 95.09% are employed ([Simanjuntak, 2024](#)). The majority of vocational high school graduates work as employees, and very few become job creators. Most graduates feel unprepared to create jobs for themselves or become entrepreneurs.

This fact reflects that although vocational schools provide technical skills, alumni interest and courage in entrepreneurship are still relatively low. Yet, the role of entrepreneurs in a developing country cannot be ignored, especially in implementing development ([Julindrastuti & Karyadi, 2022](#)). A nation will progress more rapidly if its people have the intention to become entrepreneurs and are able to create and innovate optimally, which will indirectly help the nation's economy ([Nuraeni, 2022](#)). Interest in entrepreneurship includes interest and desire to manage a business independently and can be influenced by intrinsic and extrinsic motivation depending on the individual himself ([Ghafika et al., 2024](#)). Intrinsic interest stems from an individual's internal motivation, such as the personal satisfaction of overcoming challenges or creating something new ([Deci & Ryan, 1985](#)). In this context, students who are interested in innovation in the automotive world tend to be highly motivated to start a business based on their creativity and expertise. Conversely, extrinsic interest is influenced by external factors, such as encouragement from family, social environment, or attractive economic opportunities ([Santrock, 2008](#)). Both complement each other in building strong entrepreneurial motivation in students. Furthermore, extrinsic interest can be strengthened by promising business opportunities, such as utilizing e-commerce as a modern platform for marketing spare parts.

In today's digital era, e-commerce presents a strategic opportunity for students to start and grow their businesses. E-commerce enables entrepreneurs to expand their markets, increasing sales by reaching more customers online, facilitating transactions with digital payments, and reducing operational costs. E-commerce also enables entrepreneurs to collect customer data for more effective marketing and increase brand credibility and trust through an online presence. ([Kartini et al., 2024](#)). This platform is highly relevant for vocational high school students, particularly those in the motorcycle parts sales sector, as it provides direct access to consumers without geographical boundaries.

This study aims to explore the entrepreneurial interests of TBSM students in the motorcycle parts business through e-commerce and the factors influencing them. Through this research, it is hoped that effective ways to encourage TBSM students' entrepreneurial interests and optimize the use of digital technology in the automotive sector can be identified. Previous research relevant to this study was conducted by ([Suparmi et al., 2025](#)), who explored the factors influencing entrepreneurial interest in vocational high school students. This study found that the dominant factor was extrinsic factors, namely the family environment, which was then strengthened by intrinsic factors. Then, a study conducted by ([Fadiyah et al., 2023](#)) who also explored the factors influencing student interest, especially in the field of culinary arts, concluded that extrinsic factors were the biggest factor influencing this intention, while intrinsic factors did not influence student interest. Then, a similar study was also conducted by ([A. M. Putri et al., 2023](#)) who identified the biggest factors influencing entrepreneurial interest in vocational high school students. This study concluded that internal and external factors were equally high, where internal factors were influenced by passion while external factors were influenced by the school environment.

One possible contributing factor to the low participation of vocational high school students in automotive entrepreneurship on e-commerce platforms is their low entrepreneurial interest. Previous research found that only a small proportion of students are interested in becoming entrepreneurs. Factors such as lack of self-confidence, limited capital, and minimal entrepreneurship practices in schools contribute to this low interest ([Abdul & Purnamawati, 2023](#)). Previous research has not addressed the entrepreneurial interest of vocational high school students specifically on e-commerce platforms. Therefore, further research is needed to examine the e-commerce entrepreneurial interest of TBSM vocational high school students in the motorcycle spare parts sales sector.

Currently, the automotive business sector, such as the spare parts business on e-commerce platforms, shows significant potential. However, the available stores are still dominated by large wholesalers, rather than Small, Micro, and Medium Enterprises (UMKM). However, vocational high school students, especially those majoring in motorcycle spare parts sales, can compete as UMKM in the automotive market through e-commerce. Therefore, this research will focus on exploring students' interest in entrepreneurship, especially in selling vehicle spare parts through e-commerce platforms, following current developments.

2. Methods

2.1 Research design

The method used in this study is descriptive with a quantitative approach. The quantitative descriptive method is used in this study to create an objective picture or description of a situation using numbers, starting from data collection, interpretation, to presentation and results without the intention of making general conclusions or generalizations (Arikunto, 2019). This method was chosen because it can summarize and organize data in an orderly manner, making it easier to understand and interpret, especially in terms of exploring interests (Sudirman et al., 2020). This research will involve vocational high school students in exploring their interest in e-commerce entrepreneurship. The population in this study is all TBSM students at SMK Negeri 7 Bandung in the 2024/2025 academic year, with a total of 100 students across three classes of grade XI.

The sampling method used is non-probability sampling with a purposive sampling technique, which is a deliberate sampling technique based on the characteristics of a population (Arikunto, 2019). Therefore, using Slovin equation, from a population of 100, 80 students will be selected as samples in this study. The sample size required for each class was 27 students in grade XI TBSM 1, 26 students in grade XI TBSM 2, and 27 students in grade XI TBSM 3. The flowchart of the research procedures carried out in this study is presented in Figure 1.

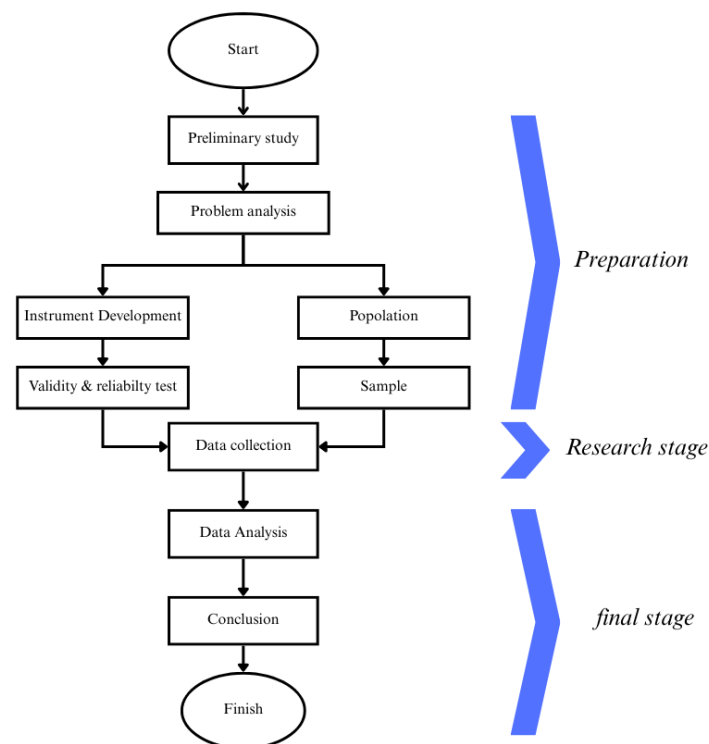


Figure 1. Research procedure flowchart

2.2 Instrument

This study used a questionnaire as an instrument. A questionnaire is a data collection method that involves providing a series of closed-ended and open-ended questions or statements to respondents (Sugiyono, 2018). The questionnaire in this study was designed to measure students' interest in e-commerce entrepreneurship in the Motorcycle Business Engineering (TBSM) program at SMK Negeri 7 Baleendah, using a Likert scale. The instrument in this study was adapted from a previously used measuring instrument, which the author then developed and conducted validation and reliability tests on, which was the (Azzahra, 2023) research instrument. To test the validity of the instrument, it was validated through content validity by requesting an assessment from an expert, namely a lecturer with expertise in psychology and student interests. The results of the expert assessment were then analyzed descriptively and qualitatively, and input from the expert lecturer was used to revise items deemed inappropriate or inappropriate. The instrument assessment was then based on three criteria: item suitability to variable indicators, clarity of wording or language, and appropriateness and relevance of content to the research objectives. The results of the 45 questions created revealed that 30 were deemed valid for use. Although statistical reliability is typically tested using the Cronbach's Alpha test on quantitative data collected from respondents, conceptual reliability can be ensured through expert review, which assesses whether each indicator and questionnaire item consistently and unambiguously represents the construct. Sugiyono (2018) argues that instrument reliability can be assessed internally and externally, one of which is using equivalence techniques. An equivalent instrument is a statement that is linguistically different but conveys the same meaning. The results of the reliability test in this study indicate that the instrument items are reliable according to expert lecturers with expertise in psychology and student e-commerce interests. The instrument in this study was adapted from a previously used measuring instrument with reliability measures appropriate to the new target subjects, namely the Azzahra (2023) research instrument in 2023, with a reliability value of $r_{11} = 0.92$, which is categorized as very high and is considered reliable.

2.3 Data analysis technique

Statistical analysis in this study was conducted using a t-score test to determine the level of interest in e-commerce entrepreneurship among TSM Vocational High School students. The analysis procedure began by calculating a z-score for each respondent based on the interest scores obtained. The z-score reflects the extent to which an individual's score deviates from the group mean in standard deviation units (McKim, 2022). The z-score was then converted to a t-score using a formula. This conversion aims to alter the distribution of scores so that they have a mean of 50 and a standard deviation of 10, making it easier to interpret respondents' interest levels because they are always positive (Iverson, 2011). Descriptive statistics consist of techniques for presenting data in tables or graphs, in addition to calculations such as average (mean), modus, median, and frequency distribution. After obtaining the average (mean) and standard deviation values, the class category is then determined. Data analysis of interest in entrepreneurship and its influencing factors was then conducted by comparing frequencies using a percentage formula. This method was used to measure the achievement of each indicator in the research instrument. The percentage was calculated using the formula presented in Eq. 1.

$$Dp = \frac{n}{N} \times 100\% \quad (1)$$

After analyzing the data, the percentage of answers obtained was interpreted according to the respondents' achievement level (Riduwan, 2012).



3. Results

3.1 Description of E-Commerce Entrepreneurial Interest of TSM Students of SMKN 7 Baleendah

Based on the information collected from respondents, the data was analyzed and specific things were obtained as shown in Table 1.

Table 1. Descriptive statistic calculation

No.	Formula	Result
1	Number of Interval Classes: $K = 1 + 3,3 \text{ Log } n$ note: K : Number of interval classes n : Respondents	$K = 1 + 3,3 \text{ Log } n$ $K = 1 + 3,3 \text{ Log } 80$ $K = 1 + 3,3 (1,903)$ $K = 1 + 6,28$ $K = 7,28$ The K value is rounded to 7.
2	Data Range: $R = X \text{ max} - X \text{ min}$ note: R : data range X max : maximum standard t-score X min : minimum standard t-score	$R = X \text{ max} - X \text{ min}$ $R = 71,65 - 20,33$ $R = 51,32$ The R value is rounded to 52
3	Class Length: $P = \frac{R}{K}$ note: P: class length R: data range K: number of interval classes	$P = \frac{R}{K}$ $P = \frac{51,32}{7}$ $P = 7,332$ The P value is rounded to 8
4	Average value: $\bar{x} = \frac{\sum x}{n}$ note: \bar{x} : mean x : standard t-score of each respondent n : number of respondents	$\bar{x} = \frac{\sum x}{n}$ $\bar{x} = \frac{4015}{80}$ $\bar{x} = 50,19$
5	Standard Deviation Value: $\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{n}}$ note: σ : standart deviation x : standard t-score of each respondent \bar{x} : mean n : number of respondents	$\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{n}}$ $\sigma = \sqrt{\frac{8061,24285}{80}}$ $\sigma = \sqrt{100,765}$ $\sigma = 10,102$

Based on the processing of questionnaire data on the description of e-commerce entrepreneurial interest, it was found that the largest score was 71.65 and the smallest score was 20.33. Then through the calculation, the Number of Interval Classes was 7, meaning that there were 7 interval



classes that formed the frequency distribution table. Then, the Data Range was 52, meaning that the distribution of data from the smallest to the largest data in the frequency distribution table was 52. Because the class length of each interval was rounded to 8, the difference in the distribution of the frequency distribution data was $75-20 = 55$. and the Interval Class Length was 8, meaning that each interval class had a class length of 8. After grouping the data, the next step was to group the entrepreneurial interest data into five categories. Using a mean value of 50.1 and a standard deviation (Sdi) of 10.102, the data were then entered into a formula to form five distinct groups using this equation:

- 1) $Mi + 1,5 Sdi = 65,343$
- 2) $Mi + 0,5 Sdi = 55,241$
- 3) $Mi - 0,5 Sdi = 45,139$
- 4) $Mi - 1,5 Sdi = 35,037$

Table 2. Distribution of e-commerce entrepreneurial interest categories

Class	Class Interval	Category	Frequency	Percentage
1	$X > 65,343$	Very Good	3	4%
2	$55,241 < X \leq 65,343$	Good	24	30%
3	$45,139 < X \leq 55,241$	Sufficient	32	40%
4	$35,037 < X \leq 45,139$	Less	15	19%
5	$X \leq 35,037$	Very Less	6	8%

Based on the Table 2, 3 students (4%) are in the very good category, 24 students (30%) are in the good category, 32 students (40%) are in the adequate category, 15 students (19%) are in the less category, and 6 students (8%) are in the very less category.

3.2 Students' interest in e-commerce entrepreneurship reviewed from student interest

3.2.1 Intrinsic factors

Personal interest factors

The personal interest factor for e-commerce entrepreneurship consists of two statements given to respondents and then analyzed using percentage calculations. The purpose of this analysis is to determine the influence of students' personal interest factors on e-commerce entrepreneurship. Table 3 shows that the description of entrepreneurial interest based on each statement filled out by respondents tends to approach the ideal score, which is in the good to very good category, with a percentage range of 76% to 84%.

Table 3. Percentage description of E-commerce entrepreneurial interest

No.	Statement	Total Score	Ideal Score	%	Category
1.	Feeling interested in starting your own e-commerce business	337	400	84	Very Good
2.	Looking for information or knowledge about the world of e-commerce entrepreneurship	304	400	76	Good

Personality factors

This analysis aims to identify the extent to which students' personal characteristics influence their interest in entrepreneurship in the e-commerce sector.

Table 4. Percentage of Personality Factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	0	0
2.	21 – 40	Less	7	9
3.	41 – 60	Sufficient	7	9
4.	61 – 80	Good	43	54
5.	81– 100	Very Good	23	29

Table 4 shows that when viewed from the self-character factor, the level of interest in e-commerce entrepreneurship based on each statement answered by respondents in the very good category was achieved by 23 students (29%), the good category was achieved by 43 students (54%), the sufficient category was achieved by 7 students (9%), the less achieved category was achieved by 7 students (9%), and the very less achieved category was achieved by 0 students (0%). This analysis aims to identify the extent to which students' personal characteristics influence their interest in entrepreneurship in the e-commerce sector. However, 18% still fall into the sufficient and insufficient categories. This indicates that some students' entrepreneurial traits have not yet developed optimally. This could be due to a lack of experience, a lack of exposure to the digital business world, or even a lack of support from their environment, such as school and family.

Motivation factors

Table 5 shows that based on motivational factors, the level of interest in e-commerce entrepreneurship obtained from respondents' answers is divided into several categories, namely: very good for 44 students (55%), good for 34 students (43%), sufficient for 0 students (0%), less for 0 students (0%), and very less for 2 students (3%). These findings indicate that most students have a strong internal drive to pursue digital entrepreneurship. This is a positive indicator that students' intrinsic motivation has developed and become a key driving factor in fostering interest in modern entrepreneurial activities.

Table 5. Percentage of motivation factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	2	3
2.	21 – 40	Less	0	0
3.	41 – 60	Sufficient	0	0
4.	61 – 80	Good	34	43
5.	81– 100	Very Good	44	55

Perception factors

Furthermore, table 6 shows that based on the perception factor, the level of interest in e-commerce entrepreneurship obtained from respondents' answers is divided into several categories, namely: very good for 30 students (38%), good for 47 students (59%), sufficient for 3 students (4%), less for 0 students (0%), and very less for 0 students (0%). These results reflect that most students view e-commerce entrepreneurship as a promising and worthwhile opportunity to pursue, both in terms of prospects, relevance to current developments, and the potential for success that can be achieved.

Table 6. Percentage of perception factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	0	0
2.	21 – 40	Less	0	0
3.	41 – 60	Sufficient	3	4
4.	61 – 80	Good	47	59
5.	81– 100	Very Good	30	38

Passionate factors

Table 7 shows that based on the student's enjoyment factor, the level of interest in e-commerce entrepreneurship obtained from the responses to each statement is divided into several categories, namely: very good with 35 students (44%), good with 42 students (53%), sufficient with 3 students (4%), and less and very less with no respondents (0%) respectively. These findings indicate that e-commerce entrepreneurship is not only seen as a business opportunity, but also as a fun and interesting activity for students. The following is a description of the data from the passion factor.

Table 7. Percentage of passionate factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	0	0
2.	21 – 40	Less	0	0
3.	41 – 60	Sufficient	3	4
4.	61 – 80	Good	42	53
5.	81– 100	Very Good	35	44

Experience factors

Table 8 shows that based on the experience factor, the level of interest in e-commerce entrepreneurship as measured by respondents' answers is divided into five categories, namely: very good for 31 students (39%), good for 35 students (44%), sufficient for 13 students (16%), less for 1 student (1%), and very less for 0 students (0%). These results indicate that most students have had experience, either directly or indirectly, that fuelled their interest in running a digital-based business. This experience could come from industrial work experience, entrepreneurial project assignments, or involvement in a family business.

Table 8. Percentage of experience factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	0	0
2.	21 – 40	Less	1	1
3.	41 – 60	Sufficient	13	16
4.	61 – 80	Good	35	44
5.	81– 100	Very Good	31	39

3.2.2 Extrinsic factors

Family environmental factors

Furthermore, reviewing the extrinsic interest in table 9 shows that based on the students' family environment factors, the level of interest in e-commerce entrepreneurship as measured by each statement answered by respondents is in several categories, namely: very good for 42 students (53%), good for 31 students (39%), sufficient for 5 students (6%), less for 2 students (3%), and very less for 0 students (0%). This distribution reflects that most students receive support or positive influence from their family environment in developing their interest in digital entrepreneurial activities.

Table 9. Percentage of family environmental factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	0	0
2.	21 – 40	Less	2	3
3.	41 – 60	Sufficient	5	6
4.	61 – 80	Good	31	39
5.	81– 100	Very Good	42	53

School environmental factors

Table 10 shows that based on the students' school environment factors, the level of interest in e-commerce entrepreneurship as measured by each statement answered by respondents is in several categories, namely: very good for 31 students (39%), good for 43 students (54%), sufficient for 3 students (4%), less for 3 students (4%), and very less for 0 students (0%). These findings indicate that most students feel that the school has provided an environment that supports the growth of entrepreneurial interest, especially in the digital field.

Table 10. Percentage of school environmental factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	0	0
2.	21 – 40	Less	3	4
3.	41 – 60	Sufficient	3	4
4.	61 – 80	Good	43	54
5.	81– 100	Very Good	31	39

Community environmental factors

Table 11 shows that based on the environmental factors of the students' community, the level of interest in e-commerce entrepreneurship as measured by each statement answered by respondents is in several categories, namely: very good for 34 students (43%), good for 37 students (46%), sufficient for 6 students (8%), less for 3 students (4%), and very less for 0 students (0%). This data shows that most students feel that the community around them has a positive and supportive influence on the digital entrepreneurship activities they are interested in. The following data is presented in chart form.

Table 11. Percentage of community environmental factors

No.	Interval (%)	Criteria	Total	%
1.	0 – 20	Very less	0	0
2.	21 – 40	Less	3	4
3.	41 – 60	Sufficient	6	8
4.	61 – 80	Good	37	46
5.	81– 100	Very Good	34	43

3.2.3 The most dominant factors influencing interest in e-commerce entrepreneurship

Based on the data analysis, there are two factors influencing students' entrepreneurial interest: intrinsic interest and extrinsic interest. Intrinsic interest comprises five aspects: character, motivation, perception, enjoyment, and experience. Extrinsic interest comprises three aspects: family environment, school environment, and community environment. The percentage of factors influencing e-commerce entrepreneurial interest is presented in Table 12.

Table 12. Percentage of e-commerce entrepreneurial interest factors

No.	E-commerce entrepreneurial interest factors	Total score	Ideal score	Percentage
1.	Intrinsic Interest	5.233	6.400	56.98
2.	Extrinsic Interest	3.951	4.800	43.02

The analysis results from Table 12 show that intrinsic interest has a greater dominance than extrinsic interest in influencing students' e-commerce interest. Specifically, intrinsic interest recorded a percentage of 56.98%, while extrinsic interest recorded 43.02%. This indicates that students' internal motivation is stronger in developing their interest in the digital business world. Intrinsic interest emerges naturally, without external incentives, and is typically shaped by interest, personal satisfaction, and a desire for independent development.

Table 13. Percentage of student's intrinsic interest in e-commerce entrepreneurship

Intrinsic interest factors	Total score	Percentage
Personality	642	6.99
Motivation	1333	14.51
Perception	1312	14.29
Passion	990	10.78
Experience	956	10.41

Based on Table 13, the most dominant intrinsic interest factor is motivation, at 14.51%. Perception accounts for 14.29%, enjoyment 10.78%, experience 10.41%, and character 6.99%. The following is a percentage analysis of external factors influencing students' interest in e-commerce entrepreneurship.

Table 14. Percentage of extrinsic interest factors

Aspects	Total score	Percentage
Family Environmental	1346	14.66
School Environmental	1304	14.20
Community Environmental	1301	14.17
Total	3951	43.02

Based on table 14, it was found that each extrinsic interest factor had almost the same distribution, namely the family environment factor with the highest percentage of 14.66%, the school environment factor 14.20%, and the community environment factor 14.17%.

4. Discussion

4.1 Overview of students' entrepreneurial interests

Based on the analysis of data obtained from distributing questionnaires to students in the TBSM expertise program, it was found that most students were still in the adequate category, thus indicating that their interest in e-commerce entrepreneurship was not yet fully optimal. According to (Aghniya & Subroto, 2021) Entrepreneurial interest refers to an individual's intrinsic inclination to create, organize, and develop a self-initiated business while assuming associated risks. In this context, students in the adequate to good category indicate that they have a growing internal drive for e-commerce entrepreneurship, although it has not yet reached its maximum level. This is in line with (Sardiman, 2012) opinion, which states that interest can be influenced by factors such as experience, knowledge, and the surrounding environment. Therefore, the dominance of the adequate category may be due to a lack of direct practical experience or a lack of digital entrepreneurship stimulus received by students.

Furthermore, the proportion of students in the low and very low categories (27%) is also an important indicator that some students lack interest in the world of e-commerce entrepreneurship. Factors such as a lack of understanding of digital technology, limited access to training, and the absence of inspirational figures in their environment can contribute to this low interest. This is reinforced by the opinion of (Zimmerer et al., 2008), who stated that entrepreneurship education must be able to equip students with the skills, experience, and motivation to respond to business opportunities actively and independently.

4.2 Factors influencing interest in e-commerce entrepreneurship

4.2.1 Intrinsic factors

Personal character is a crucial aspect in shaping an individual's entrepreneurial spirit. entrepreneurial character encompasses traits such as self-confidence, task- and results-oriented Ness, risk-taking, and creativity and innovation. Therefore, the high percentage of students in the good and very good categories indicates that most students possess basic characteristics relevant to the needs of the digital business world, although they still need strengthening in several areas to increase their confidence and independence. In line with (Fabio & Budiono, 2025) research, personality was found to be a significant factor in motivating individuals to become entrepreneurs. This alignment was then incorporated into the digital entrepreneurship contest in this study, which yielded mutually reinforcing results.

However, there were still 14 students (18%) who fell into the sufficient and insufficient categories. This indicates that some students' entrepreneurial character has not yet developed optimally. This could be due to a lack of experience, a lack of exposure to the digital business world, or even a lack of support from their environment, such as school and family. As stated, (Zimmerer et al., 2008), entrepreneurial character is determined not only by individual factors, but also by the social and educational environment that can encourage individuals to recognize and develop their potential. Overall, these findings reinforce the notion that character is a key foundation for fostering an entrepreneurial spirit among vocational high school students. In the highly dynamic and competitive context of e-commerce, character traits such as adaptability to technology, resilience in the face of change, and consistency in work are essential.

The research results show that motivational factors significantly contribute to students' interest in e-commerce entrepreneurship. This finding indicates that most students possess a strong internal drive for digital entrepreneurship. This is a positive indicator that students' intrinsic motivation has developed and become a key driving factor in shaping their interest in modern entrepreneurial activities. These results certainly reinforce previous research by ([Gustmaloe et al., 2024](#)), which found that entrepreneurial motivation has a positive and significant effect on students' intention to pursue digital entrepreneurship. This research broadens the data to a broader audience, further confirming that motivation does indeed influence students' interest in entrepreneurship, particularly in the digital world. These findings emphasize the crucial role of motivation as a foundation for fostering an entrepreneurial spirit among vocational high school students. Therefore, schools need to create learning systems that support and strengthen student motivation, for example through online business simulations, digital entrepreneurship competitions, and collaborations with industry players. This way, already high motivation can be redirected toward more productive and sustainable pathways.

Student perceptions reflect that most students view e-commerce entrepreneurship as a promising and viable opportunity, considering its prospects, relevance to current developments, and potential for success. In this context, students' perceptions of e-commerce entrepreneurship are influenced by learning experiences, digital literacy, information received from social media or teachers, and observations of business actors around them. Furthermore, research by [Benediktus \(2024\)](#) shows that positive perceptions of digital business opportunities significantly increase students' entrepreneurial intentions, especially when supported by an understanding of technology and digital market trends through digital literacy. These findings have important implications: increased understanding and exposure to e-commerce entrepreneurship will further strengthen students' interest in engaging directly in it. Schools can leverage these findings by providing hands-on learning that allows students to experience the process of building a digital business, such as opening an online store or marketing on social media.

The results of the enjoyment factor questionnaire indicate that e-commerce entrepreneurship is not only viewed as a business opportunity but also as a fun and engaging activity for students. Therefore, to strengthen interest in e-commerce entrepreneurship, a learning approach that fosters a sense of enjoyment and comfort is highly recommended. Activities such as online store simulations, digital business competitions between students, and hands-on product promotion practices on social media can be effective strategies. As noted by [Andayani \(2023\)](#), enjoyable learning experiences not only increase student interest but also build emotional attachment to the business field being pursued. Therefore, the enjoyment factor is a strategic element in developing entrepreneurial interest among vocational high school students.

Based on previous research by [Zunaedy et al. \(2021\)](#) it was found that the pleasure factor is one of the reasons for students to be able to do entrepreneurship, but in that research the context concerned was conventional entrepreneurship. The data obtained in this study then became an update and alignment, where it was found that the pleasure factor also has a big role in students' decisions, especially in digital entrepreneurship, especially with the many social media platforms that support this, making it a supporting factor. Research on the experience factor indicates that most students have had experience, either directly or indirectly, that fuels their interest in running a digital-based business. This experience can come from industrial work experience, entrepreneurial project assignments, or involvement in family businesses. Students who have been involved in entrepreneurial activities will have a better understanding of business processes, the challenges faced, and strategies for managing a business.

In a recent study by [Hanafi & Pawitno \(2023\)](#), entrepreneurial experience, whether through simulations or hands-on practice, was shown to have a positive relationship with entrepreneurial interest among vocational high school students. Students who have been involved in entrepreneurial activities will have a better understanding of business processes, the challenges faced, and strategies for managing a business. Furthermore, according to a study by ([Hidayati et al., 2021](#)) prior experience provides students with a concrete picture of the business world, making it easier for them to decide to pursue independent entrepreneurship, including in digital-based e-commerce.

These findings provide a strong foundation for vocational education institutions to expand students' entrepreneurial experiences. By providing programs such as independent business practices, internships in e-commerce businesses, or collaborative project work, students will gain experience that is not only theoretical but also practical. Improving the quality of these experiences is expected to strengthen students' readiness and confidence in building and managing digital businesses.

4.2.2 Extrinsic factors

The research results show that the family environment has a significant influence on students' interest in e-commerce entrepreneurship. This reflects that most students receive support or positive influence from their family environment in developing their interest in digital entrepreneurship. The family environment, especially parents, plays a crucial role in fostering an entrepreneurial spirit from an early age. A study by [Staniewski et al. \(2025\)](#) showed that family communication and involvement in children's digital economic activities significantly influenced students' motivation and courage to start online entrepreneurship. These findings suggest that family communication plays a crucial role as a psychological factor in determining entrepreneurial success. When students feel supported and appreciated by their families, they are more confident and open to exploring business ideas. This emphasizes that families are not only a place to live, but also a source of inspiration and social validation for entrepreneurial interests. Therefore, efforts to increase interest in e-commerce entrepreneurship among students also require active family involvement. Schools can conduct entrepreneurship outreach or training programs involving parents, creating synergy between formal education and entrepreneurial character development at home. As Kurniasih (2023) noted, collaboration between schools and families in entrepreneurship education can strengthen the values of independence, courage, and innovation, which are essential in the digital business world.

Furthermore, school environmental factors play a significant role in influencing students' interest in e-commerce entrepreneurship. According to [Amalia, \(2023\)](#), a conducive school climate that encourages innovation and entrepreneurship has been shown to increase students' courage to explore new business opportunities. Teachers who actively guide students in digital business projects or e-commerce practices can build students' confidence to develop ideas and explore real-world opportunities. Role models, motivation, and providing a space for experimentation are crucial elements in shaping the character and interest in technology-based entrepreneurship. In the context of vocational education, schools are not only responsible for imparting technical skills but also for creating a learning environment that encourages creativity and the courage to innovate. As [Arma et al. \(2025\)](#) noted, the integration of project-based learning and digital technology in the school environment can strengthen students' interest in contemporary business fields. Therefore, schools need to continuously improve their capacity as entrepreneurial incubators, particularly in encouraging active student involvement in the e-commerce sector.

Data on community environmental factors shows that most students feel their surrounding community has a positive and supportive influence on their digital entrepreneurship interests. The community environment can be a source of inspiration, opportunities, and indirect learning for students who want to start a business. According to [Ahmad et al. \(2021\)](#), students who live in environments with many entrepreneurs, especially those actively using digital media, tend to have a higher interest in following in their footsteps. Community support, whether in the form of appreciation, involvement, or providing students with space to learn and apply, also plays a role in fostering interest and courage to enter the world of e-commerce. Research by [Hoai & Thanh \(2023\)](#) found that The presence of successful business figures in society who can serve as role models can foster an entrepreneurial spirit in students more effectively than theoretical learning alone. A progressive society that supports the development of digital MSMEs creates a competitive and collaborative atmosphere that stimulates the creativity of the younger generation.

4.2.3 Dominant factors

The analysis shows that intrinsic interest is the dominant factor influencing students' interest in e-commerce entrepreneurship, with a percentage of 56.98%, surpassing extrinsic interest, which only reached 43.02%. This indicates that students' internal drive is stronger in shaping their interest in the world of digital entrepreneurship. Intrinsic interest arises naturally without the influence of external incentives and is usually formed from interest, personal satisfaction, and the desire to develop independently. Research by [Ghafika et al. \(2024\)](#) that intrinsic interest plays a significant role in guiding students' decisions to start a business, especially if the business aligns with hobbies, personal values, or a strong curiosity about digital technology.

Among the components of intrinsic interest, motivation is the most dominant factor, contributing 14.51%. Motivation is an internal force that drives someone to act and persist in an activity, including running an e-commerce business. Motivated students will be more persistent in learning, trying, and maintaining their digital businesses despite facing challenges. A study by [Ary et al., \(2020\)](#) found that motivation stemming from the desire to be independent, become a young entrepreneur, and channel creative ideas significantly influences students' interest in digital entrepreneurship. Other factors that also have a large influence in the intrinsic category are perception (14.29%) and pleasure (10.78%). Research by Anshori and Febrina (2023) revealed that the combination of positive perceptions and feelings of pleasure when carrying out online business activities significantly increased entrepreneurial intentions, especially among vocational school students.

Meanwhile, extrinsic interest factors such as family environment (14.66%), school environment (14.20%), and community environment (14.17%) showed almost equal contributions in supporting students' entrepreneurial interest. Although the role of these environments is not as significant as intrinsic motivation, their presence remains crucial as a source of social validation and tangible support. External support provides access to information, experience, and social capital that cannot be met by internal motivation alone.

Thus, it can be concluded that the development of e-commerce entrepreneurial interest in vocational high school students is largely determined by their own internal strengths, particularly through their motivation, perception, and enjoyment of digital business activities. However, the role of the external environment cannot be ignored, as it serves as a facilitator, mentor, and additional source of inspiration. Therefore, strategies for developing student entrepreneurship need to be designed comprehensively, intensively cultivating intrinsic aspects while simultaneously strengthening the synergy of their surrounding environment as a supporter of

digital business practices. In the context of Self-Determination Theory (SDT), intrinsic motivation is a focus because it is directly linked to three basic psychological needs: autonomy, competence, and relatedness. The results of this study indicate that motivation is the most dominant component of intrinsic interest, accounting for 14.51%, significantly higher than other factors. This indicates that students possess a strong internal drive to pursue e-commerce entrepreneurship, as they feel in control of their choices (autonomy) and confident in their ability to run a digital business (competence). This finding supports SDT's claim that when these needs are met, intrinsic motivation will increase and encourage active involvement in entrepreneurial activities.

5. Conclusion

Based on research on the e-commerce entrepreneurial interest of SMK students in the Motorcycle Engineering and Business (TBSM) expertise program, it can be concluded that students' interest in digital business activities is at a sufficient level, although there is still room for improvement. Intrinsic motivational factors, such as the drive for economic independence and a positive perception of e-commerce opportunities, are the dominant components influencing student interest. Meanwhile, extrinsic factors such as support from the family, school, and community also make significant contributions. However, intrinsic interest has a greater influence than extrinsic factors, indicating the importance of basic psychological needs in motivating students to become entrepreneurs. This finding is consistent with Self-Determination Theory (SDT), which emphasizes the importance of autonomy, competence, and relatedness in building strong intrinsic motivation among students. This conclusion highlights the potential and challenges in developing entrepreneurial interest among SMK students, as well as its relevance in the context of their education and future career development.

However, this research was conducted within the scope of SMKN 7 Baleendah, so the data obtained cannot be generalized to a larger environment. Therefore, the researcher hopes for further research is to conduct research on a large scale so that decision-making can be carried out on a wider scale. Through data on factors that influence students in entrepreneurship, especially in e-commerce, the author hopes that schools can become founders and grow interest so that students can develop their potential further, in this case entrepreneurship. The findings of this study provide valuable insights in supporting the development of the younger generation in creating jobs and advancing the nation.

Author's declaration

Author contribution

Ridwan Adam M Noor: Conceptualized the research, and wrote the original draft of the manuscript; **Indra Maulana:** Provided relevant resources, conducted the field survey, and assisted in writing the manuscript; **M Maris Al gifari:** Analyzed the data, processed the data, and concluded; **Daniel Moses Samosir:** Improved the discussion and conclusion, and revised the final version of the manuscript; **Apri Wiyono :** Conducted Literature review; **Syifa Lawakib N A:** Provided conceptual input, assisted in writing the manuscript.

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Conflict of interest

The authors declare that there are no competing interests related to the research or publication of this article.

Ethical clearance

This study was conducted in accordance with ethical standards for academic research involving human participants. Prior to data collection, ethical approval and research permit were obtained from the Indonesian University of Education through official research permit letter number T-5847/UN40.A5.1/PK.03.03/2025. All participants were informed of the purpose of the study, and their consent was given voluntarily. Participation was anonymous, and all responses were treated with strict confidentiality. No sensitive personal data was collected, and respondents were free to withdraw from the study at any time without penalty.

AI statement

This article is the original work of the author without using AI tools for writing sentences and/or creating/editing tables and figures in this manuscript.

Publisher's and Journal's note

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Nomenclature

- Dp = Descriptive percentage
n = Total score obtained
N = Total ideal score (Number of respondents x highest Likert scale score)