

Analysis of the Influence of E-Commerce Adoption on Entrepreneurial Skills in Malang Regency Vocational Students through Self-Efficacy and Entrepreneurial Mind-set

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ABSTRACT

This study aims to analyze the impact of e-commerce adoption on business performance and address the role of self-efficacy and emotion as a mediator. This study uses various methods and research through emotional assessment. The sample of this study includes 234 students studying in Malang district. Data analysis was conducted using structural equation-partial least squares (SEM-PLS) method. The results show that e-commerce applications have a significant and positive impact on entrepreneurial self-efficacy, entrepreneurial mindset and entrepreneurial skills. Likewise, entrepreneurial self-efficacy and entrepreneurial mindset are also quite effective and beneficial for entrepreneurship. This study also conducted an interactive task on entrepreneurship and entrepreneurial thinking in the relationship between e-commerce adoption and entrepreneurial skills of university students in Malang district. The significance of this study can help universities working in higher education institutions develop e-commerce adoption plans and ensure that these plans increase the needs of the business and digital marketing goals.

INTRODUCTION

Business skills are resources that university students have to start a business (Ripollés and Blesa, 2024). The skills that university students have include leadership, creativity, communication, risk-taking ability, and entrepreneurial ability (Bernardus et al., 2022). All of these skills are needed to respond to changes in the business world, new technologies, changes in government regulations, and changes in consumer behavior (Rachinger et al., 2019). Many consumers now only want products and services that are suitable for the changing environment. Especially changes in the economy and new technologies are important changes that students need to understand (Akhtar et al., 2022). Students need to be equipped with entrepreneurial skills to adapt to new digital technologies to support the development of products and services and the broader economy (Imjai et al., 2024). Since 2011, China has experienced strong economic growth, from RMB 53 billion (US\$ 7.7 billion) to RMB 625 billion (US\$ 90.9 billion) today (F. Wang and Chen, 2019). The growth of the US economy in 2019 was also as high as 36% (Jiménez-Rodríguez et al., 2022). According to statistics, as of March, 215.6 million people use the Internet, and Indonesia's digital economy is expected to reach US\$ 77 billion in 2022, a 22% increase from the previous year (Statistics Indonesia, 2023). However, by mid-2023, Indonesia, with a population of 278.69 million, will have lower economic growth than developing countries such as China, Spain, and the United States (Central Bureau of Statistics, 2020). This is because people in Indonesia do not have the ability to start a business through e-commerce platforms.

Aidil Amin Efendy (2020) explained that one of the reasons why Indonesia's digital economy is decreasing due to e-commerce is the lack of facilities to support the business (Effendy and Sunarsi, 2020). University students are still using basic technology, which makes it difficult to compete with well-developed and valuable countries (Effendy & Sunarsi, 2020). According to the research conducted by the Central Bureau of Statistics (BPS) from CEIC data, 58.4% 2022, Papua Higher Education is not working well (Ashin, 2024). According to Ahmad Yahya Alchilma (2023), institutions such as buildings, laboratories, libraries, technological equipment and other educational facilities have decreased in Indonesian universities. Inadequate facilities will hinder the learning process and affect students' academic development and entrepreneurship (Maziriri et al., 2023). Even MSMEs (micro, small and medium enterprises) still use static websites (32.5%), interactive websites (25%) and are not yet digitized (7.2%) (Central Bureau of Statistics, 2023). University students are not yet in a position to compete with the global economy outside the centers. According to the research conducted by Efendy and Denok (2020) on students in southern Tangerang, it was found that 80% of the students do not have business skills. Students do not have good business skills because they cannot adapt to changes over time. This is evidenced by the findings of Skeldon (2019) who found that more than 90% of online business ventures fail in the first 120 days due to poor business knowledge and intelligence (Tseng et al., 2022). The lack of skills among students will have a negative impact on the future development of Indonesia. Indonesia will face

failure in e-commerce with developing countries. According to Arasti (2023), the importance of the body is one of the characteristics that can support the development of the business. Internal factors are factors that originate from within in the form of abilities, interests, confidence, thoughts, and behaviors that students already have (Adeel et al., 2023). The addition of internal materials can help students have a good understanding of the business environment and be able to use good ideas (George et al., 2021). The authors use two important factors when evaluating the entrepreneurship of high-performing students; these are the personal entrepreneurship and entrepreneurship of the students.

Entrepreneurial self-efficacy is the confidence and ability of students to promote entrepreneurship and independence (Junaidi et al., 2023). Students with better self-efficacy are more likely to study and work to develop business skills (Welsh et al., 2016). In addition, students with self-efficacy are able to manage themselves and develop entrepreneurial skills (Pacher and Glinik, 2024). Therefore, self-efficacy is associated with the success of business students. Student confidence can face risks and changes from year to year in a dynamic business environment (Avelar et al., 2024). De Noble identified 6 personal qualities that entrepreneurs possess, such as creating new products, innovation, relationships with investors, having goals, the ability to solve problems, and creating important human resources (Bernardus et al., 2022). According to behavioral knowledge, self-efficacy is essential for students to sustain entrepreneurial behavior (Mozahem, 2022) (Memon et al., 2019). Self-efficacy will increase students' self-efficacy and enable them to be more experienced in business life. This happens to students because they know that actions and skills produce good results based on desire and desire (Elnadi and Gheith, 2021). Social-cognitive-behavioral theory suggests that students' success through entrepreneurship is the result of the relationship between the student's social, behavioral, and environmental factors (Alvarez-Risco et al., 2022; Govindaraju, 2021). Mohit Taneja, Ravi Kiran, and S. C. Bose (2024) believe that the social environment has a significant impact on the development of students' entrepreneurial self-efficacy (Mensah et al., 2023). Working students supported by the social environment are motivated to develop their entrepreneurial skills.

This study provides a new perspective by examining the relationship between e-commerce, self-efficacy, entrepreneurial mindset, and entrepreneurial skills. Previous studies have examined each of these variables separately, but none of them have linked them to a general research model. Self-efficacy and entrepreneurial intention as a moderator affecting business in the e-commerce sector is a new phenomenon. It includes the psychological and cognitive factors underlying the impact of e-commerce adoption on the development of entrepreneurship among university students. In this period, researchers have incorporated the theory of planned behavior (TPB) into the research model. TPB is relevant to this study because self-efficacy and entrepreneurial perception are factors that affect the impact of e-commerce adoption on entrepreneurship. The concept of TPB helps understand that internal resources such as self-efficacy and entrepreneurial intentions act as

mediators that affect the impact of entrepreneurial e-commerce on university students' businesses. Business skills are needed in the increasingly digital economy. Students should understand how e-commerce adoption affects business to help them adapt to digital business models. E-commerce adoption can enhance students' careers in self-employment and entrepreneurial thinking, allowing them to run their businesses more efficiently and more effectively with competitors. By understanding the factors that affect entrepreneurship in universities offering digital business, researchers can provide important insights into developing educational strategies to better prepare young people to enter the competitive and digital world.

LITERATURE REVIEW

E-Commerce Adoption

E-commerce is an electronic device used to perform transactions between sellers and buyers using the Internet (Martini et al., 2023). Remote sellers and buyers can perform their commercial transactions quickly, efficiently and easily (C. Wang and Kim, 2023). This undoubtedly brings convenience to the problems of traditional business (Huang et al., 2023). Buyers do not need to come directly to the store to purchase products. The exchange process between sellers and buyers also does not need to meet in person (Ballesteros-Sola and Magomedova, 2023). The adoption of e-commerce has led to the emergence of a new, collaborative, cooperative and collaborative business model supported by the internet and digital media (Gast and Allwood, 2023). Finance, logistics and other business services can be done through technology (Nguyen et al., 2024).

Entrepreneurial Self-Efficacy

Bandura (1977) first defined self-efficacy as the self-assessment of accomplishing certain behaviors (Xu et al., 2023). Meanwhile, self-employment is defined as a person who is confident in his/her ability to perform various tasks and responsibilities related to entrepreneurship (Alvarez-huerta et al., 2022). Many studies have shown that people with high self-efficacy are more likely to be successful in business than those with low self-efficacy (Kromah et al., 2023; Taneja et al., 2024; Yun et al., 2024). According to psychological theory, people with high self-efficacy are more likely to be successful because they are always involved in business (Junaidi et al., 2023). Working students need to start participating in business activities in school and have a good sense of self.

Entrepreneurial Mindset

An entrepreneur is someone who knows how to overcome difficulties to achieve business opportunities (Cui and Bell, 2022a). Business strategy will help students find ideas, identify business opportunities, and run businesses according to the determined results (Wardana et al., 2020). Students with a strong entrepreneurial spirit do not complain about not being able to succeed easily, they always work hard to find solutions and opportunities. The research results conducted by Ludi Wishnu Wardana et al. (2020) show that people with entrepreneurial spirit tend to be more successful than those who are not in business. People who have a desire to do business receive responsibility

knowledge while doing business (Wardana et al., 2020). Knowledge has a positive impact on the enterprise's ability to adapt to the business environment and support itself in starting a business (Jiatong et al., 2021).

Entrepreneurial Skill

Business skills are the ability of working students to identify business opportunities, develop business strategies, and manage the business efficiently and effectively (Edokpolor, 2020; van Lunenburg, 2024). According to Marion van Lunenburg (2024), students with good business skills can achieve five benefits as follows: (a) Students with good business skills to support stakeholders, (b) Focus on business management. Students with business skills have the ability to influence stakeholders because students have good opportunities or skills in negotiation. Students participate socially and exhibit entrepreneurship through innovation and creative ideas (Akhmetshin et al., 2019). At the same time, the goal of staying in a good job is to ensure that students work for the benefit of the economy (Tecilaziä et al., 2024).

METHODOLOGY

This study uses quantitative research using SEM-PLS analysis to investigate the impact of e-commerce (X) on entrepreneurial skills (Y) through entrepreneurial personal (Z1) and business intentions (X2). The advantage of SEM-PLS is that it can differentiate between related data and estimate data according to the length of the measurement model (Hair et al., 2019).

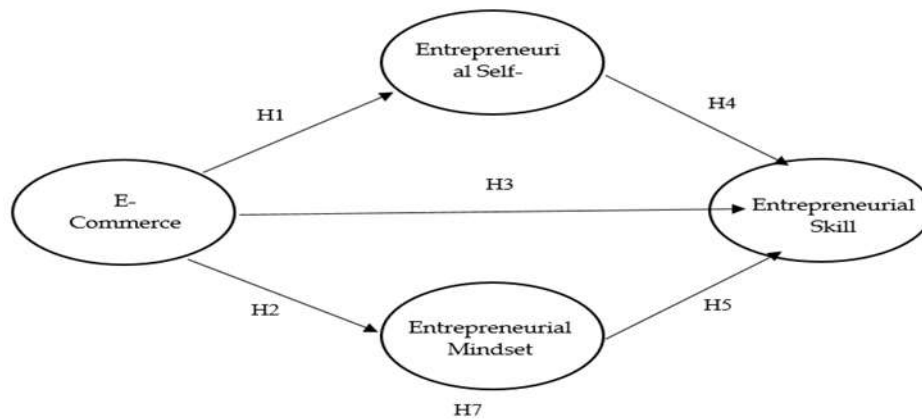


Figure 1. Research Framework Design

Respondents and Data Collection Techniques

This study involved students from public schools in Malang district. This study uses twenty universities as research objects. A total of 234 participants were surveyed using 30 Google Form questions sent via WhatsApp. The sample participants of this study were students who completed e-commerce training such as shopee (students who received business theory and practice). The study was conducted from September to November 2024. The variables in this study are e-commerce adoption rate (X), entrepreneurial personality (Z1), entrepreneurial intention (Z2) and entrepreneurial skills (Y).

Table 1. Respondent Characteristics

No.	Student Parents' Occupation	Total	Percentage
1	Entrepreneur	54	25,6%
2	Civil Servant/Police/Military	2	0,7%
3	Private Employee	67	28,5%
4	Other	110	45,2%
	Total	234	100%

Source: processed by researcher 2024

As seen in Table 1 above, other occupations of parents of working students include entrepreneur, entrepreneur, officer/police/military national forces, private workers, etc. There are 110 respondents (45.2%) as students' parents. Number of people. Respondents were 2 respondents (0.7%). From this research, it is seen that parents of students in universities are engaged in business or third-party business in Malang District.

Instrument Development and Data Analysis

The research instrument was adapted from previous research and literature review. The questionnaire was translated from English to Indonesian and adapted to the Indonesian context. The questionnaire was translated from English to Indonesian and adapted to the local context. Measured by three items from e-commerce (Salah and Ayyash, 2024). Measured by three items from self-employment (Saptono et al., 2021). Entrepreneurship (Cui et al., 2021) and (Bernardus et al., 2022) were measured with four factors. Business skills (Akhmetshin et al., 2019) were measured with three items. The questionnaire used asked participants to rate each statement from 1 (strongly disagree) to 5 (strongly agree). Smart PLS 3.0 was used for least squares structural equation modeling (PLS-SEM) in this study.

RESEARCH RESULT

External Model Evaluation

To ensure that reliable instruments were available, the PLS external model was considered. A model with a decision criterion is considered reliable when it has high reliability (CR) and Cronbach's Alpha > 0.05 (Hair et al., 2019). The results of the study showed that the CR value of each design ranged from 0.883 to 0.935. The average variance extracted (AVE) > 0.50 indicates good validity (Hair et al., 2019). This study achieved good validity with all items being greater than 0.50 and the AVEs for each construct ranging from 0.502 to 0.615. Cross-loading factors were used to assess discriminant and convergent validity. The cross-loading values for total e-commerce adoption (X), entrepreneurial self-efficacy (Z1), entrepreneurial mindset (Z2) and entrepreneurial skills ranged from 0.841 to 0.921 > 0.70, indicating discrimination.

Hypothesis Testing

This model uses structural equation modeling (SEM-PLS) to test hypotheses. The researchers used 234 bootstrap samples to display all t-statistics. As shown in Table 2, all seven hypotheses of this study met the criteria and exceeded 1.96, with the t-value ranging from 2.458 to 31.369.

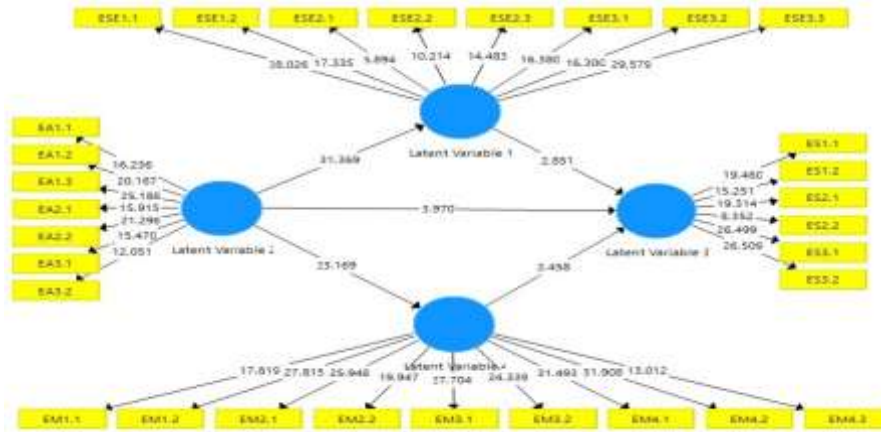


Figure 2. SEM-PLS Calculation Results

This study uses the R-Square (R2) model to show the accuracy of the prediction model. The coefficient of determination is used to determine the accuracy of the prediction and to show the effect of external variables on internal variables. If the model corresponds to the data 100% and the obtained value is close to 1, it can be said that the model describes internal changes (Fisher et al., 1995). The results based on the coefficient of determination using SmartPLS for data processing are as follows.

Table 2. R-Square Analysis Results

Variable	R-Square
Entrepreneurial Self-Efficacy	0.672
Entrepreneurial Mindset	0.621
Entrepreneurial Skill	0.660

Source: processed by researcher 2024

The R-squared value of the entrepreneur's self-efficacy variable (Z1) is 0.672, which means that 67.2% can be affected by the e-commerce variable (X), while the remaining 32.8% can be affected by other variables that are not affected. . The adoption of e-commerce will change (X). The R-squared value of the buyer's opinion change (Z2) is 0.621, which means that 62.1% can be affected by the e-commerce change (X), while the remaining 37.9% can be affected by other variables outside the study. The R-squared value of the entrepreneurial skill variable (Y) is 0.660, which shows that 66% is affected by e-commerce, personal entrepreneurship and entrepreneurial intention, while the remaining 34% is affected by non-scientific changes. Therefore, the higher the R-squared value, the greater the ability of the independent variables to explain the variance and therefore the better the model equation.

Table 3. Outer Model Estimation

Construct	Item	Outer Loading	α	CR	AVE
E-commerce Adoption	EA1.1	0.745	0.858	0.891	0.540
	EA1.2	0.733			
	EA2.1	0.781			
	EA2.2	0.723			
	EA2.3	0.782			
	EA3.1	0.708			
	EA3.2	0.667			
Entrepreneurial Self-Efficacy	ESE1.1	0.793	0.856	0.889	0.502
	ESE1.2	0.723			
	ESE2.1	0.558			
	ESE2.2	0.668			
	ESE2.3	0.684			
	ESE3.1	0.699			
	ESE3.2	0.729			
	ESE3.3	0.785			
Entrepreneurial Mindset	EM1.1	0.731	0.921	0.935	0.615
	EM1.2	0.788			
	EM2.1	0.810			
	EM2.2	0.760			
	EM3.1	0.814			
	EM3.2	0.787			
	EM4.1	0.821			
	EM4.2	0.843			
	EM4.3	0.694			
Entrepreneurial Skill	ES1.1	0.772	0.841	0.883	0.561
	ES1.2	0.756			
	ES2.1	0.773			
	ES2.2	0.567			
	ES3.1	0.811			
	ES3.2	0.787			

Source: processed by researcher 2024

Table 4. Discriminant Validity

Variable	E-Commerce Adoption (X)	Entrepreneurial Self-Efficacy (Z ₁)	Entrepreneurial Mindset (Z ₂)	Entrepreneurial Skill (Y)
E-Commerce Adoption (X)	0.735			
Entrepreneurial Self-Efficacy (Z ₁)	0.819	0.708		

Entrepreneurial Mindset (Z_2)	0.788	0.788	0.784	
Entrepreneurial Skill (Y)	0.765	0.768	0.749	0.782

Source: processed by researcher 2024

Table 5. Direct Effect Test

Variable	Original Sample	T-Statistics	P-Values	Description
H ₁ E-commerce adoption > Entrepreneurial self-efficacy	0.819	31.369	0.000	Accepted
H ₂ E-commerce adoption > Entrepreneurial mindset	0.788	23.169	0.000	Accepted
H ₃ E-commerce adoption > Entrepreneurial skill	0.354	3.970	0.000	Accepted
H ₄ Entrepreneurial self-efficacy > entrepreneurial skill	0.273	2.851	0.005	Accepted
H ₅ Entrepreneurial mindset > entrepreneurial skill	0.238	2.458	0.014	Accepted

Source: processed by researcher 2024

Table 6. Test of Indirect Effect

Variable	Specific Indirect Effect	Description
H ₆ E-commerce Adoption > Entrepreneurial Self-Efficacy > Entrepreneurial Skill	0.223	Accepted
H ₇ E-commerce Adoption > Entrepreneurial Mindset > Entrepreneurial Skill	0.188	Accepted

Source: processed by researcher 2024

DISCUSSION

The adoption of e-commerce can improve self-employment with a threshold value of 0.819, a p-value of $0.000 < 0.05$, and a t-statistic of $31.369 > 1.96$. This study revealed that e-commerce has a positive and positive effect on the self-efficacy of entrepreneurs. The findings of this study are consistent with the findings of Aditya (2020) that the use of e-commerce can increase students' confidence in doing business online. Students gain confidence in doing business because e-commerce makes doing business easier and benefits students. Setyaningrum and Muafi (2023) explained that the adoption of e-commerce encourages students to rely on innovation based on changes in the business environment. TPB believes that student employee attitude towards e-commerce

depends on student employee entrepreneurial skills (Malhotra and Kiran, 2024). <0.005 , t number is $23.169 > 1.96$. The adoption of e-commerce allows Malang Regional Vocational High School students to find opportunities, be brave enough to face risks, and run their own businesses with confidence. The results of this study are in line with Zulkarnain et al. (2024) who explained that business thinking helps understand business, find information about business, measure personality and leadership skills, and can develop personal identity (Kharimatuz Zahro et al. *ib.*, 2023). Jack's (2024) findings indicate that e-commerce adoption plays an important role in preparing students to be successful and use e-commerce. The results of this study have implications for one of the TPB factors developed by Ajzen (1991). Ajzen said that openness encourages students to become effective employees (Amofah and Saladrigues, 2022).

E-commerce can affect business skills with a t-statistic of $3.970 < 1.96$, a p-value of $0.000 > 0.000$, and a value of 0.354 for the original model. The results showed that students who received e-commerce training in Malang district felt that they had more digital knowledge. The results of this study Hossain et al. (2024) explained that the adoption of e-commerce can develop students' entrepreneurial skills that will enable them to be competitive in the online market. Students with good e-commerce skills will provide satisfaction and security to customers. According to Compans (2017), students with e-commerce skills have three competencies: (a) using e-commerce to achieve successful business results; Competitive advantage in business (Companies, 2017; Martini et al., 2023). , the sample value is 0.273 and the p-value is $0.000 < 0.005$. The results of testing the four hypotheses of this study may indicate that personal entrepreneurship has the potential to affect the entrepreneurship of students in Malang district. The findings of this study are consistent with McGee and Peterson (2019) who explained the effect of personal branding on business performance. Confidence in abilities encourages students to find opportunities, plan a business, and organize critical resources for entrepreneurship (McGee and Peterson, 2019). Kromah et al.'s (2023) study suggests that self-confidence encourages students to develop effective communication and negotiation skills to succeed in business.

Business sentiment has a positive and positive effect on business. The T number is $2.458 > 1.96$, the normal value is 0.238, and the p value is $0.000 < 0.045$. Four indicators, namely the ability to identify opportunities, problem-solving ability, the ability to adapt to change in the business world, and the ability to think well, were used to measure the level of entrepreneurship of students. These results are consistent with the findings of Cui and Bell (2022b), who found that students with high entrepreneurial spirit are flexible, creative, leaders, can use capital, have a large market, and are good leaders. Casuli et al. (2022) also found that the concept of entrepreneurship plays a supporting role in developing students' intellectual and emotional abilities to promote entrepreneurship. Research has been conducted on the impact of entrepreneurial mindset on entrepreneurial skills among high school students in Malang district, which contributes to the theory of planning behavior (TPB).

TPB explains that intelligence plays a role in developing students' entrepreneurial skills (Saoula et al., 2023). The correlation is 0.223, indicating a moderate effect. Entrepreneurial self-efficacy can mediate the impact of e-commerce on entrepreneurship of working students in Malang district. Working students have high self-efficacy and believe that they can do business through e-commerce platforms (Kromah et al., 2023). The findings are consistent with those of Arif Lubis et al. (2023) demonstrated the role of business self-efficacy in affecting e-commerce business performance. Self-employment encourages working students to constantly learn from the experiences and failures of others, thereby improving their business skills through e-commerce platforms. The adoption of e-commerce can enhance the entrepreneurship of working students by improving self-employment (Kazak et al., 2023).

Business intention can moderate the effect of e-commerce adoption on business performance with a direct effect of 0.188. E-commerce adoption encourages students to be more creative and innovative in doing business online. Working students need to learn to use social media and marketing strategies to improve their skills (George et al., 2021). At the same time, business-oriented thinking can help students solve problems and make the right decisions in doing business (Sultan Jemal, 2020). The above findings are consistent with the findings of Yan et al. (2023), who explained that entrepreneurial mindset plays a role in the development of innovation, success, investment layers, personal collaboration, and empowering students to be entrepreneurs.

CONCLUSIONS AND RECOMMENDATIONS

The result of this study shows that e-commerce has a positive effect on self-employment, entrepreneurial mindset and entrepreneurial skills. Likewise, entrepreneurial self-efficacy and entrepreneurial mindset are also beneficial to entrepreneurship. This study also conducted an interactive task on entrepreneurship and entrepreneurial thinking in the relationship between e-commerce adoption and entrepreneurial skills of high school students in Malang. Therefore, all the opinions of Malang Regional Vocational High School students show positive results. district. E-commerce adoption provides positive personal and emotional benefits and encourages students to acquire business skills. This situation shows that more efforts should be made to develop students' e-commerce skills and enable them to establish independent businesses.

ADVANCED RESEARCH

Future researchers can analyze the factors affecting online business through other specific changes such as the Lazada platform, Bukalapak, etc. These changes can be measured at the vocational high school level to understand the impact of technology on students' independent business development.

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