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The Factors Impact To Students' Intention To Adopt Techno-Preneurship In The Future Business

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ABSTRACT:- This study aims to determine factors that affect students to adopt technology in their future business. Previous studies show factors that affect a students' intention to open a business. However, factors that affect their intention to adopt technology have not been explored. We conducted a study to reveal factors that affect the decision of students in adopting technology in their future business. Data from 145 students in Bali Province (Indonesia) were collected and analyze. There are three independent variables used: academic major, gender, and family support. The Fisher Exact Test and Cramer's V-Test shown that the academic major and the family support affects to students' intention to adopt technology for their future business. Gender does not have a direct impact on students' intention to adopt the technology, but it has a relationship with the academic major.

Keywords: techno-preneurship, education, business, Bali

I. INTRODUCTION

Miller and Acs [43] states in their research that students starting a business from a US college have made an impact on the world. The Forbes magazine (issue March 2016) wrote that the richest person on earth was Bill Gates (the Microsoft founder), while Mark Zuckerberg of Facebook was in position 6 and the founders of Google (Larry Page and Sergey Brin) were in places 12 and 13, respectively. These billionaires started their business when they were studying in college. Thus, encouraging students to start their business while they are in college is critical.

In September 2020, Wardana et al., [65] founded that entrepreneurship education succeeded in influencing attitudes, self-efficacy, and the entrepreneurial mindset. The research also states that the University providing education about entrepreneurship can make students competent and business experts. Also, education is one factor that influences economic development [64], [18], [28] mentioned that education had a positive effect on aspiring entrepreneurs and students. Another factor that can influence students to open a business is gender. For example, gender significantly affects a person's career choice in Malaysia [54]. The results of research by Lerchundi et al. [51] stated that students with entrepreneurial parents also tend to want to become entrepreneurs. Students with parents who work as government employees are less interested in entrepreneurship. Parents influence children's professional career preferences in the future. This study used 851 engineering and architecture students from the Technical University of Madrid, Spain. Although studies above found factors that influence students in opening a business, their intention to use technology remains unexplored.

Gagnon and Toulouse [25] wrote in their paper that adopting technology for business is not just an option but becomes mandatory. Barnett et al. [9] revealed that the internet has a positive impact on entrepreneurship. Using social media can help businesses to promote their business or optimizing marketing campaign. In the same year, Adonsou [21] state that economic development is supported by the internet, technology, and education [64]. Habibi and Zabardast [27] stated that technology has a positive relationship with economic growth in both developed and developing countries.

Since technology is shown to be effective in increasing businesses' performance, this study aims to reveal factors that affect the intentions of students in adopting technology for their future business. We use variables that influence students in opening their businesses, such as academic major, family support, and gender.

The contribution of this research is a model that describes the influence of academic major, family support, and gender on the intention of students to use technology for their future business. This model is important not only for students but also for universities to redefine their strategy in teaching entrepreneurship and technology.

The rest of the paper is organized as follows. Section 2 presents related work. Section 3 provides the methodology. Our results and analysis are provided in Section 4 and Section5 provides a discussion of the results obtained. Section6 gives a conclusion of the results.

II. LITERATURE REVIEW

A study conducted by Elliott et al. [23] discusses students' experiences in entrepreneurship and self-efficacy. The results obtained from this study are that gender sensitivity can increase awareness of gender diversity and problems which increase perceptions of entrepreneurial self-efficacy. There are changes in perspective on life in general and ways of solving problems. In line with these studies, Sowmya et al. [63] stated that female students have a greater intention to start a new business. Entrepreneurship is considered to have contributed to job creation. This study shows that the new generation has a positive mindset about alternative ways of creating new jobs. The effect of the experience of entrepreneurial education supported by technology on students' intentions and entrepreneurial attitudes towards risk was researched by Bandera et al. [8]. There is a difference between a student's entrepreneurial intentions when analysed with courses in the broader environment and student's different characteristics. The emerging patterns show inconsistent results from research into entrepreneurship education and student's entrepreneurial intentions. This study also found that the entrepreneurial attributes of students positively influenced risk-taking. Students tend to adopt the technology for entrepreneurship with a greater affinity.

Millman et al. [44] surveyed the factors that can improve student behaviour and perceptions of entrepreneurial intentions, showing that some students prefer to be technology entrepreneurs than others. This survey was conducted at three universities in China. The factors that influence them are student status, gender, and family income.

Envolving technology, new emerging theories and technologies support the entrepreneurial process. Entrepreneurs and academics need to study and adoption the technology well. Nambisan [46] examined how the entrepreneurial process is influenced by digital technology. Entrepreneurial processes and outcomes such as product processes, industrial services, entrepreneurial opportunities, and entrepreneurial outcomes can be affected by digital technology. The study conducted by Shih and Huang [61] regarding technology-based entrepreneurship education in Taiwan is based on how technology can increase economic growth and innovation. The problem that will be discussed in their research is how technology affects educational programs and entrepreneurial intentions. The results showed that students' inexperience, short courses, and immaturity of technology made it difficult to achieve maximum results. Lim et al. [36] analysed the IoT startup ecosystem to see how it was built. IoT startups have created new technologies as investors play a role in transferring knowledge in an entrepreneurial environment. Under these conditions, technology knowledge is considered essential to prospective entrepreneur who are still learning. Experience of technology in developing entrepreneurship is necessary to know.

In 2020, Youssef et al. [11] conducted research on economic digitization and entrepreneurial intentions. This study's findings indicate that personal behaviour's attitude and content are the main determinants of entrepreneurial intentions. The authors argue that more attention should be paid to encouraging graduates to implement new business ideas independently. Higher education benefits greatly from digital technology in developing innovative tools that can strengthen the academic entrepreneurial process. Digital technology also has significance in changing the cycle of academic entrepreneurship. Startups can benefit from digital technology that enables coordination and communication at lower costs.

Since the studies above show that education affects the intention of the student in opening their business, the following hypothesis is used to see the influence of students in adopting technology in their future business:

H1a: Academic majors affect students' intention to adopt technology for their future business.

Research from Varamäki et al. [52], examined entrepreneurial intentions based on gender. This study revealed that based on the model developed, students' entrepreneurial intentions decreased by 19% for female students and 28% for male students. Gender is a factor in fostering and developing the entrepreneurial potential of students. Research by Sandhu et al. [59] stated that gender is an essential factor in influencing entrepreneur-

ship. There were more entrepreneurial tendencies in male students than female students. Statistically, the increase in self-efficacy in entrepreneurship only occurs in male students Shinnar et al. [62]. Sowmya et al. [63] assessed that entrepreneurship has contributed to job creation. The study stated that female students had a greater intention to start a new business. Also, the new generation has a positive mindset about alternative ways of creating new jobs. Research from Powell and Eddleston [55] stated that women entrepreneurs receive positive support, such as funding from their families, while male entrepreneurs do not receive positive support To see whether gender also affects the intention of students in adopting technology for their business, the following hypothesis is generated:

H1b: Gender affects students' intention to adopt technology for future business

Jodl et al., [32] once stated that the family has a significant influence on children's interest in work. A study by Aldrich and Cliff [4] indicated that family and business are near related. This study emphasizes this research, which underlines the characteristics of the entrepreneurial family system, such as transitions, resources, norms/attitudes, and values [1], which influence new businesses. Researchers suggest to other researchers in entrepreneurship that the "family" category is included in the conceptual model for research into new business opportunities. In the research conducted by Lindquist et al. [37] founded that children's interest in entrepreneurship increased by 60% due to parents who were entrepreneurs.

Lerchundi et al. [51] discuss the work of parents that can affect children's career choices. The results showed that students with entrepreneurial parents also tended to want to be entrepreneurs, while students with parents who were government employees were less interested in entrepreneurship. Parental influence can determine a child's future professional career preferences. This study is supported by previous research conducted by Carrand Sequeira [15], Chlosta et al. [16], Mungai and Velamuri [45], and Laspita et al. [35], which states that children who want to become entrepreneurs learn indirectly from their parents or grandparents. However, Laspitaetal.[35] also emphasize how parents or grandparents differ in each family and country, especially with the existing cultural differences. Research with the same theme was conducted by Hundley [30]. The difference is the research focuses more on boys and their fathers as a measure.

This study provides results showing how sons whose fathers are entrepreneurs are more likely to become entrepreneurs themselves. Entrepreneurship shows a tendency to increase assets and inheritance from parents [22]. The following hypothesis is used to see the relationship between family support and students' intention in adopting technology for their future business:
H1c: Family support affects students' intention in adopting technology for their future business
The three hypotheses can be illustrated as follows:

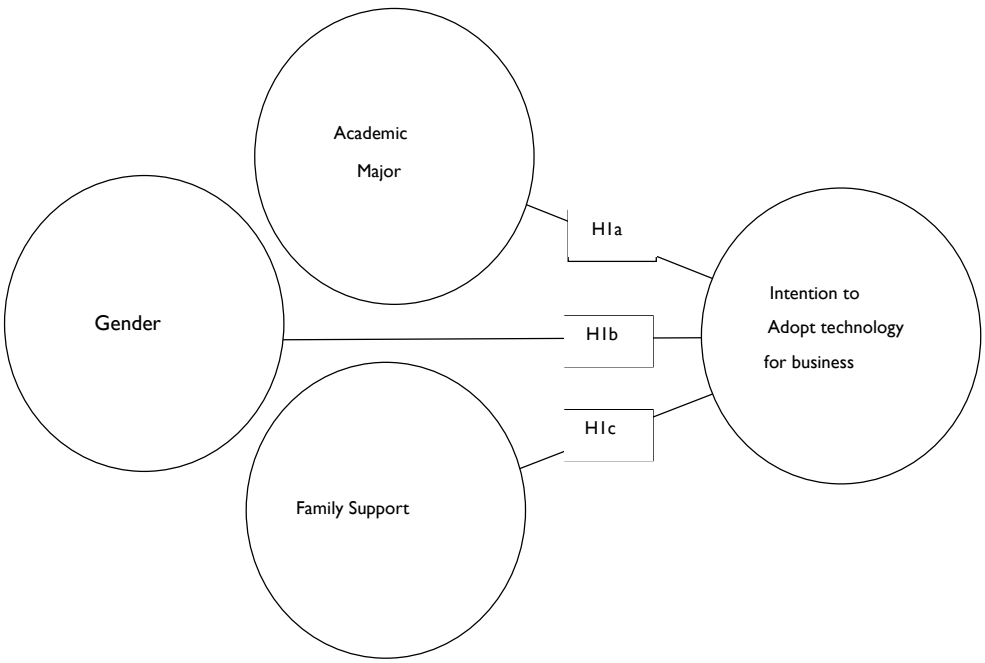

Figure 1: Proposed model

III. METHODOLOGY

a. Data collection

3.1.1. Variables

The following independent variables are used in this research:

1. Academic Major (v1)

Respondents are categorized into Economic students, Engineering Students, and Others. These categories are chosen because the majority of businesses are started by students studying Engineering or majoring in economic Maresch et al. [40].

2. Gender (v2)

Respondents were required to choose between male or female.

3. Family Support (v3)

Respondents were asked to give a value between 1 to 10 (Likert Scale) with regarding to the support of their family in opening a business. The advantage of using the Likert scale is that the answers given by respondents are in the form of a linear assessment, for example, from strongly disagreeing to strongly agreeing or having a numerical value used to measure respondent behaviour [29], [67], [48], [47], [20].

A dependent variable of this study is the intention of students on adopting technology for their future work. First of all, respondents were given four types of technology:

Website and Apps [58], Internet of Things (IoT) [6], Block Chain [17], and Artificial Intelligence [49]. Then, the respondents were asked whether they want to adopt these types of technology for their future business.

A total of 145 students, who studied in Bali Province (Indonesia) were asked to fill the questionnaire through Google Forms [1]. The students were not required to give their names (*anonymous*). A total of 55 students who filled the form were studying economics while 60 students majoring in Engineering, and 30 students studied other majors. The other majors are pharmacy, law, teacher training, math and science, tourism, agriculture, and linguistics. Table 1 shows the demography of the respondents.

Table 1
The Respondent's demography

	Variables	Frequency	Percent (%)
Gender	Male	64	44.8
	Female	81	55.2
	< 20	45	30.1
Age	21 - 25	93	65.0
	> 25	7	4.9
Marital	Single	139	95.9
Status	Married	6	4.1
Education	Diploma	34	23.4
Level	Undergraduates	111	76.6
	Engineering	60	42.0
Major	Economy and Business	55	38.5
	Other	30	19.6

1.1.Data Analysis

This study used a purposive sampling technique, where the main criterion is he or she is willing to open a business. For the questions that use the Likert scale, the Sturges rule [60] was applied by dividing the scale into 3: (0-3), (47), and (8-10). Fisher's exact test with alpha (α) 0.05 was used to measure the significance of the relationship between variables. We chose Fisher's exact test because it is effective for analysing small amounts of data/samples in nominal and ordinal forms [5], [34], [39]. To measure the strength of the relationship between variables, Cramer's V test was used [12], [10], [2]. Table 2 shows the interpretation rule that we use in this research, where a value is bigger than 0.25 is considered very strong and a value close to 0 means no relation.

[1] www.google.com/forms

Table 2. Cramer's V interpretation [2]

Cramer-V	Interpretation
>0.25	very strong
>0.15	strong
>0.10	moderate
>0.05	weak
> 0	no relation

IV. Result and Analysis

a. Result

Table 3 shows the results of Fisher's Exact Test. These results show that academic major and family support have an influence on the intention of students adopting technology in their future business with p-values $1x10^{-2}$ and $5x10^{-4}$, respectively (H1a and H1c are accepted). Gender does not have an influence on the intention of students adopting technology in their future business (H1b is rejected). Instead, gender does affect the students' choice of their academic major.

Table 3. Results of Fisher's Exact Test

	Academic	**Gender**	**Family**
	Major		Support
Academic Major	-		
Gender	$5x10^{-4}$	-	
Family Support	$6.4x10^{-2}$	$6.6x10^{-1}$	-
the intention of students adopting technology in their future business	$1.0x10^{-2}$	$2.0x10^{-1}$	$5.0x10^{-4}$
Table 4 Result of Cramer's V Test			
	Academic	Gender	Family
	Major		Support
Academic Major	1		
Gender	$3.9x10^{-1}$	1	
the intention of students adopting technology in their future business	$2.3x10^{-1}$	$1.6x10^{-1}$	$3.0x10^{-1}$

From *Cramer's V* test results, it can be seen that the intention of students adopting technology in their future business has a very strong relationship with the family support with the value of 0.3. Figure 2 below shows that the majority of students who intend to adopt technology for their future business come from families that are very supportive.

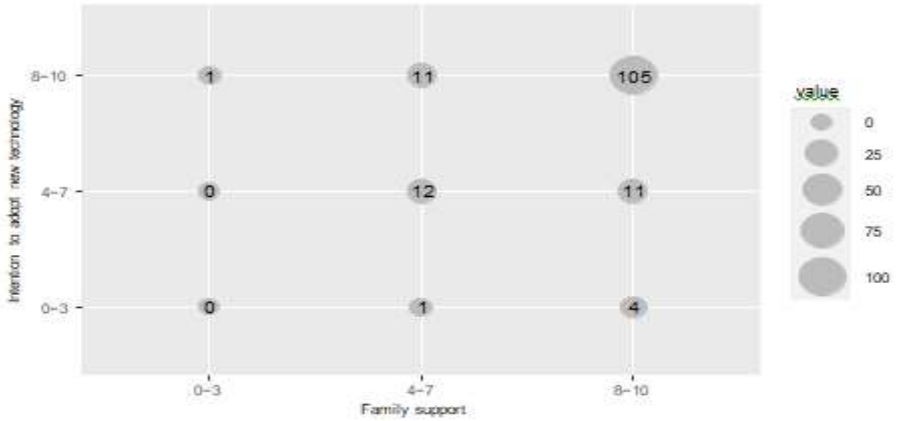

Figure 2: Clusters based on family support and the intention of students adopting technology in their future business

Also, gender has a very strong relationship with the choice of academic major with a value of 0.4. Figure3shows the relationship between academic major and gender. The economic major tends to be chosen by female students as much as 50.6%, while 62.5% of male students choose the engineering department.

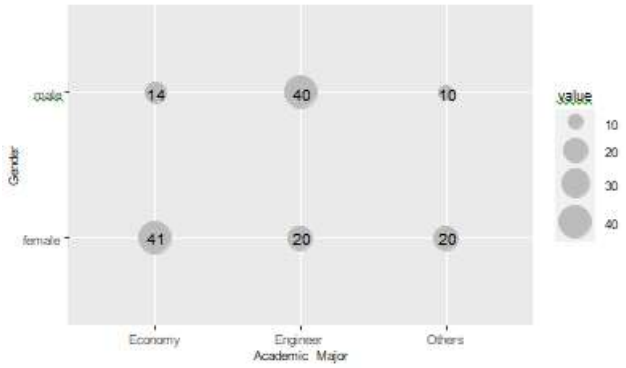

Figure 3: Clusters based on academic major and gender

Academic major has a strong relationship with the intention of students adopting technology in their future business with a value of 0.2. Figure 4 shows that 88.3% of Engineering students, 76% of EB students, and 73% of students from other majors consider technology to be the most important part of their future business. From these percentages, it can be seen that engineering students most likely to adopt technology to their future businesses.

From the Fisher Exact and Cramer's V tests above, our proposed model on figure 1 is modified into Figure 5. We found that gender does not directly affect the intention of students adopting technology in their future business, while academic major and family support do.

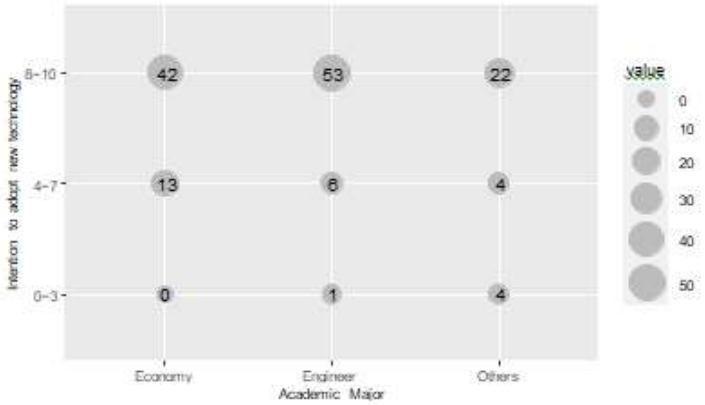

Figure 4: Cluster graph of the level of intention to adopt new technologies and academic major

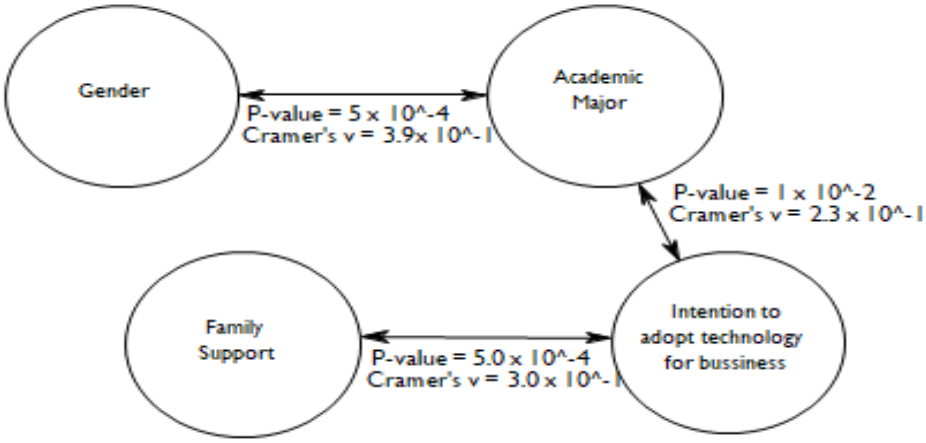

Figure 5: Relationship between variables

V. DISCUSSION

Figure 4 shows that the majority of students in engineering major intend to adopt technology in their future business. These results are also supported by research from Marvel and Lumpkin [42]. They stated that the background of an entrepreneur could influence the contribution of technological innovation to economic development. Education plays an essential role in improving the knowledge and talent in an entrepreneur's success. In terms of technology use, Margaryan et al. [41] stated that engineering students use more technology than students from non-technical disciplines. This situation is caused by Engineering majors having more intensive and broader access to technology than non-engineering majors. Pei et al. [53] stated that Engineering Department students know more about technological developments because their curriculum is designed to know and understand these new technology types.

An interesting result is presented by Wright et al. [38] They suggested that universities could combine science and technology programs with business management programs to see how human capital's role influences technopreneurship. Nambisan [46] in 2016 stated that entrepreneurial processes and outcomes such as product processes, industrial services, entrepreneurial opportunities, and entrepreneurial outcomes could be influenced by digital technology. With developing technologies, new theories and technologies that emerge can support the entrepreneurial process. It is important for entrepreneurs and academics to study and adopted with the technology well. The two journals did not mention how educational background affects technology adoption for business. However, more emphasis is placed on the learning process, namely learning new technology properly by combining science and technology programs and business management.

One of the results of this study shows that gender does not directly affect the students' intention to adopt technology for their future business (hypothesis H1b is rejected). Based on our knowledge, there is not a study that shows the impact of gender to intention to adopt technology for future business. However, we found that gender also does not affect entrepreneurial intentions. Pruett et al. [56], where their research was conducted at universities in the United States, Spain, and China, found that gender does not significantly affect entrepreneurial intentions. This result is obtained from a combined study of cultural, social, and psychological factors in that region. In the same year, Gupta et al. [26] also found that there was no significant difference in entrepreneurial intentions of men and women. Entrepreneurial intention is more influenced by characteristics such as masculinity or femininity. Boissin et al. [13] stated that demographic variables such as gender, work experience, and family background, do not significantly influence entrepreneurial intentions. This result is similar to the research of Oosterbeek et al. [50], Franco et al. [24], and Aldianto et al. [3].

Although gender does not directly affect both intention to open a business and intention to adopt technology for future business, it does affect the academic major choice of students. The impact of gender in education is also shown in studies conducted by Dickson [19], Maresch et al. [40], Johnson and Muse [33], Bordón et al. [14]. Dickson [19] states that gender differences are a significant factor in majors' choice rather than racial and ethnic differences. Female students were significantly more likely to switch from engineering majors earlier than male students. In 2020, Bordón et al., [14] said that women tend to enrol in non-technology majors. This difference is caused by different preferences. In addition, differences in taste between men and women are also the cause [68]. Thus, we can say that gender indirectly affects the students' intention to adopt technology in their future business.

Figure 2 shows that the students' intention in adopting technology is influenced by family support (H1c is accepted). In fact, the family support variable does not only affect the intention of adopting technology but also the intention to open a business [7] [55] [66] [31] [37]. Au Kwan [7] found that family values can influence perceptions of entrepreneurship, while Powell Eddleston [55] and Welsh et al. [66] show that women entrepreneurs who have successfully built their businesses get positive support from their families. Jabeen et al. [31] also stated the importance of family support in a company. Lindquist et al. [37] shows that children's interest in entrepreneurship increases because they have parents who are entrepreneurs.

The weakness of using purposive sampling in this study is that the results cannot be generalized. This is a limitation of our study. Although the results cannot be generalized to all students, the results can provide an initial finding of how people think of technology adoption for their future business. A research conducted by Qian et al. [57] in the UK and California shows that entrepreneurship is widely recognized as a driver of economic growth, and areas with high-tech startup businesses will yield high returns.

VI. CONCLUSION

This research examines factors that affect students' intentions to adopt technology for their future business. There are 3 variables used in this study, namely academic major (v1), gender (v2), and family support (v3). Fisher Exact Test used because it is effective for analysing small amounts of data/samples. And to measure the strength of the relationship between variables, Cramer's V test was used.

The author found that the academic major and family support affect students' intention to adopt technology for their future business. From the results obtained, engineering students are likely to adopt technology for their future business. And most of the students who intend to adopt technology for their future business come from very supportive families. However, the gender variable does not directly have an impact on students' intention to adopt the technology. The results obtained also indicate that the Academic Major and Family Support have a strong relationship with students' intention to adopt the technology.

The results obtained in this research have a limitation which is it cannot be generalized to all students in all university students in Bali, since we use a purposive sampling technique. However, these results can be used as an additional reference as an initial description of the conditions for developing technology adoption in starting a business in Bali. Future research will expand the scope and increase the amount of data collected.

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