

A GENDER COMPARATIVE STUDY AMONG COLLEGE STUDENTS' ENTREPRENEURIAL INTENTION FOCUSING ON INDIVIDUALS' KNOWLEDGE EXPLORATION AND EXPLOITATION ACTIVITIES



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Abstract

This study aims to compare entrepreneurial intentions between male and female students, focusing on their learning activities and knowledge exploration. The research population includes all registered Andalas University students who have completed the compulsory entrepreneurship course. The sample, chosen through convenience sampling, consists of 412 respondents selected based on their availability and ease of access. The usable questionnaires were processed using SmartPLS 4.1.0.6. Multigroup analysis is utilized to know the difference between male and female respondents. The findings show that increasing innovativeness and self-efficacy is key to enhancing students' knowledge exploration and exploitation. Innovativeness benefits all students, while self-efficacy boosts confidence and involvement. Agreeableness helps female students with exploration and both genders with exploitation. There are no significant gender differences in how innovativeness affects these activities, but self-efficacy and agreeableness show notable gender differences. This research emphasizes the need for customized entrepreneurship programs that address gender-specific needs, such as mentorship and access to resources, to boost entrepreneurial intentions for both male and female students. It also highlights the importance of promoting gender equality in these programs. It offers practical insights institutions, educators, and policymakers to focusing on entrepreneurial education and intention among students based on gender.

Keyword:

Entrepreneurial Intention, Exploration, Exploitation, Gender, Student

Abstract

Background – The contributions of young entrepreneurs are essential to navigate the challenges of a rapidly changing industry. To encourage more young people to start businesses, it's important to understand what drives entrepreneurial intention. Gender might also play a role in this motivation.

Aim – This study aims to compare entrepreneurial intentions between male and female students, focusing on their learning activities and knowledge exploration.

Design / methodology / approach – The research population includes all registered Andalas University students who have completed the compulsory entrepreneurship course. The sample, chosen through convenience sampling, consists of 412 respondents selected based on their availability and ease of access.



The usable questionnaires were processed using SmartPLS 4.1.0.6. Multigroup analysis is utilized to know the difference between male and female respondents.

Findings – The findings show that increasing innovativeness and self-efficacy is key to enhancing students' knowledge exploration and exploitation. Innovativeness benefits all students, while self-efficacy boosts confidence and involvement. Agreeableness helps female students with exploration and both genders with exploitation. There are no significant gender differences in how innovativeness affects these activities, but self-efficacy and agreeableness show notable gender differences.

Research Implication – This research emphasizes the need for customized entrepreneurship programs that address gender-specific needs, such as mentorship and access to resources, to boost entrepreneurial intentions for both male and female students. It also highlights the importance of promoting gender equality in these programs. It offers practical insights for educational institutions, educators, and policymakers to focusing on entrepreneurial education and intention among students based on gender.

Limitations – The study's reliance on self-reported data, a specific major and faculty sample, and the omission of cultural and experiential factors limit its generalizability.

INTRODUCTION

Entrepreneurship encompasses a wide range of fields beyond traditional business, including media, social causes, education, and more (Frederick et al., 2019). It involves generating, developing, and validating ideas (Prince et al., 2021). Entrepreneurship boosts economic growth by creating jobs and driving innovation ((Gaba & Gaba, 2022; Stoica et al., 2020). Supporting small and medium-sized enterprises (SMEs) is crucial for this growth(Surya et al., 2021). According to the International Labour Organization (ILO) and recent data from Indonesia, unemployment rates are expected to remain stable but slightly increase, with Indonesia's rate at 5.32%(Hartono & Said, 2023; ILO, 2024). In West Sumatra, unemployment rates have decreased slightly, but the rates vary significantly by region (Langgam, 2024).

SMEs are essential to economic health, providing jobs and fostering innovation. However, Indonesia's entrepreneurship ratio is low compared to other ASEAN countries, highlighting the need for a more robust entrepreneurial culture (Supianto, 2022). With many MSMEs at a subsistence level, Indonesia aims to increase its entrepreneurship ratio to 3.95% by 2024(Kurmala, 2023). Understanding factors that influence entrepreneurial intention among university students is crucial, as it can boost their motivation and enthusiasm for entrepreneurship (Cao, 2022). Universities play a key role in supporting students' career starts, but with many graduates struggling to find jobs, fostering entrepreneurship is vital(Rivai et al., 2018). In Indonesia, there is a significant mismatch between the number of graduates and available jobs, leaving many at risk of unemployment (Hakim & Pamungkas, 2023; Putra, 2022).

Generation Z, which includes today's university students, is highly entrepreneurial, often favoring independence and flexibility over traditional jobs (Dzulfikar, 2022). Universities are expected to support this entrepreneurial spirit through education and resources(Ierapetritis, 2019). Interviews with Andalas University students reveal motivations for entrepreneurship include independence, financial freedom, and family support, but also concerns about capital, experience, and income (Alseptia, 2020).

Entrepreneurship education enhances students' attitudes and intentions by fostering creativity, improving skills, and encouraging collaboration (Fan et al., 2024). Universities like Andalas University offer entrepreneurship courses and public lectures to motivate and prepare students for business challenges(Nursalikhah, 2021; Salisu, 2020). Research indicates

that entrepreneurial traits significantly influence students' intentions, and understanding these traits can help tailor educational programs (Awwad & Al-Aseer, 2021; Saerom et al., 2022).

Gender disparities in entrepreneurship, highlighted by the COVID-19 pandemic, show that women are less likely to start and manage businesses compared to men (OECD, 2023). In Indonesia, a significant portion of MSMEs are run by women, especially in West Sumatra (Rel, 2019). This research focuses on comparing male and female students' entrepreneurial intentions at Andalas University, examining factors like knowledge exploration and exploitation to understand gender differences and improve support for all students.

LITERATURE REVIEW

Entrepreneurial Intention

Entrepreneurship involves combining inventive ideas with the necessary managerial and organizational skills to gather people, finances, and resources to meet market demands and generate wealth (Pearce & Robinson, 2011). Economics, as a social science, focuses on the production, distribution, and consumption of goods and services, studying how various entities allocate resources to maximize output. Entrepreneurs leverage opportunities to create new products, employ innovative production methods, and utilize resources to generate profit, contributing to economic growth (Babu, 2020).

Research on entrepreneurial intention (EI) examines both external and internal factors influencing individuals' decisions to start new ventures. Studies indicate that self-confidence, social capital, and policy support significantly shape EI (Farrukh et al., 2019; Xianyue et al., 2019). Gender disparities persist in entrepreneurial participation, with men often showing higher confidence and interest in starting businesses compared to women (Costa & Miragaia, 2024; GEM, 2024). Education enhances women's entrepreneurial self-efficacy, while men generally exhibit greater entrepreneurial passion and risk-taking tendencies. Understanding these gender differences is vital for promoting gender equality and economic empowerment in entrepreneurship (Bretones & Radrigán, 2018).

Learning Activities

Organizational learning theory suggests firms gain market knowledge by balancing exploitation (using existing knowledge to improve strategies) and exploration (finding new opportunities). Combining these approaches helps firms adapt to market changes, outpace competitors, and achieve long-term success (Gordon et al., 2024).

A systematic literature review indicates little evidence for strictly separating exploration and exploitation, as they are closely linked in innovation management. Recognizing their interconnection can help develop a comprehensive framework for managing innovation processes (Zhou et al., 2023). Research has shown that both organizational and individual learning activities significantly influence entrepreneurial intentions and innovation performance (Saerom et al., 2022; Shah et al., 2021).

Innovativeness

Innovation is crucial in entrepreneurial ventures, fostering fresh perspectives and revitalizing existing concepts through new technologies. It translates ideas into tangible outcomes, enhancing market competitiveness, creating sustainable advantages, and supporting continuous growth (Khan et al., 2020). Innovativeness involves exploring novel

concepts, participating in experiments, and adopting creative approaches, reflecting a company's embrace of new technologies and ideas (Al-Momani et al., 2023).

Self Efficacy

Self-efficacy is an individual's belief in their ability to perform tasks effectively (Hsu et al., 2017; Uysal et al., 2022). It involves personal predictions and emotional evaluations about achieving objectives (Ouyang et al., 2020). Self-efficacy has three dimensions: magnitude (task complexity), strength (belief intensity), and generality (applicability across different activities) (Hapuk et al., 2019).

Agreeableness

Agreeableness emphasizes trust and cooperation in relationships, with high agreeableness involving traits like courtesy, cooperation, and flexibility (Awwad & Al-Aseer, 2021). People low in agreeableness can be manipulative, self-centered, and suspicious, prioritizing their own interests without considering others (Zhao & Seibert, 2006). Business owners often score lower on agreeableness, focusing more on their goals than on harmony (Zhao & Seibert, 2006).

Hypothesis Development

Individuals' attitudes towards innovation play a crucial role in shaping their entrepreneurial behaviors. Those who have a positive and proactive stance towards innovation are more likely to engage in entrepreneurial activities and seek out opportunities for growth and development (Santos et al., 2020). There is a correlation between innovativeness and students' entrepreneurial intention (Costa et al., 2023) and also has a direct effect on exploration and exploitation activities (Saerom et al., 2022). Previous research has primarily concentrated on firm-level outcomes, such as innovation activities influenced by top managers' innovation behaviors, there remains a dearth of investigation into how individuals' innovative behavior directly affects exploration and exploitation activities (Strobl et al., 2020).

H1a: Entrepreneurs' innovativeness positively influences knowledge exploration activities

H1b: Entrepreneurs' innovativeness positively influences knowledge exploitation activities

A study found that the link between entrepreneurial self-efficacy and entrepreneurial intention is stronger for graduates with prior entrepreneurial experience (Nowiński & Haddoud, 2019). Self-efficacy influences an individual's learning and retention capabilities as well as their engagement in exploration and exploitation activities (Seo et al., 2015). Research has demonstrated a significant correlation between self-efficacy and entrepreneurial intention (Oulhou & Ibourk, 2023; Sahid et al., 2024). Individuals who exhibit higher levels of self-efficacy are more likely to pursue entrepreneurial ventures (Bachmann et al., 2024). Self-efficacy not only influences entrepreneurial intention but also has a direct impact on learning activities, particularly in exploration and exploitation activities. Individuals with strong self-efficacy are more inclined to engage in exploration activities, seeking out new knowledge and opportunities, as well as exploitation activities, where they refine and utilize existing skills and information (Saerom et al., 2022).

H2a: Entrepreneurs' self efficacy positively influences knowledge exploration activities

H2b: Entrepreneurs' self efficacy positively influences knowledge exploitation activities

High agreeableness has also been identified as a crucial factor in fostering entrepreneurial intentions among students (Laouiti et al., 2022). On the other hand, research found the negative effect between agreeableness and entrepreneurial intention (Salameh et al., 2022). Agreeableness and emotional stability are sufficient conditions to lead students to develop a high level of entrepreneurial intention (Şahin et al., 2019). Agreeable individuals are

kind to others, exhibit a strong sense of teamwork, and are willing to work collaboratively with other members of the organization to achieve its goals in a coordinated and cooperative manner. Agreeableness can result in both exploration and exploitation activities (Liang et al., 2018).

H3a: Entrepreneurs' agreeableness positively influences knowledge exploration activities

H3b: Entrepreneurs' agreeableness positively influences knowledge exploitation activities

Exploration and exploitation activities were key factors in shaping entrepreneurial intention from an individual traits. Both types of learning activities strengthen entrepreneurial intention, requiring complex decision-making and ongoing effort (Saerom et al., 2022). In marketing field, exploration has a stronger positive influence on pioneering orientation than exploitation (Gordon et al., 2024).

H4a: Knowledge exploration activities positively influence entrepreneurial intention

H4b: Knowledge exploitation activities positively influence entrepreneurial intention

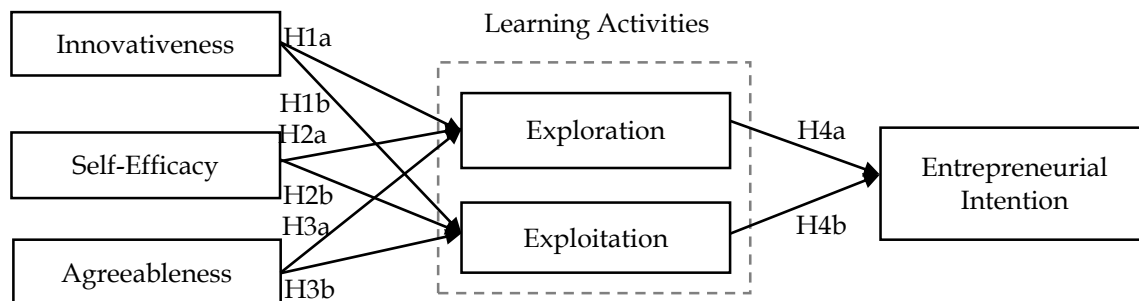


Figure 1. Research Framework

Source: conception's author, 2024

METHODOLOGY

This research uses a quantitative explanatory approach to analyze factors influencing students' entrepreneurial intention and to explore gender-based differences in characteristics. Andalas University aims to produce globally competitive graduates with entrepreneurial spirit. The University holds public lectures and compulsory entrepreneurship courses to motivate students. The research population includes all registered Andalas University students who have completed the compulsory entrepreneurship course. A total of 443 questionnaires were distributed, while 31 were rejected because respondents had not taken the required entrepreneurship course, 412 completed and usable, consist of 201 males and 211 females. The questionnaire was distributed online through Google Forms, as well as directly on campus and via social media or messaging apps. It used a Likert Scale with five response categories, from "Strongly Disagree" to "Strongly Agree," to measure respondents' attitudes, opinions, and perceptions.

Table 1.
Descriptive Analysis

Variables	Items	Frequency
Gender	Male	201
	Female	211
Faculty	Agricultural Technology	3
	Agriculture	9

Variables	Items	Frequency
	Economics and Business	161
	Engineering	175
	Public Health	5
	Social and Political Sciences	59
Family Background	Entrepreneurs	192
	Non Entrepreneurs	220
Social Circle	Entrepreneurs	305
	Non Entrepreneurs	107
Business Experience	Yes, and still do now	37
	Yes, in the past	93
	Never	281
	Etc	1

(Source: primary data, 2024)

The respondents' characteristics show a varied profile across several dimensions. There are 201 males and 211 females, indicating a near-equal gender distribution. In terms of faculty, respondents are spread across several areas: 3 are from Agricultural Technology, 9 from Agriculture, 161 from Economics and Business, 175 from Engineering, 5 from Public Health, and 59 from Social and Political Sciences, with a notable concentration in Economics and Business and Engineering. Family background data reveals that 192 respondents come from families with entrepreneurial backgrounds, while 220 do not, highlighting a majority without such familial connections. Social circle data shows that 305 respondents have connections to entrepreneurs, compared to 107 who do not, suggesting a strong presence of entrepreneurial influence in their networks. Regarding business experience, 37 respondents are currently involved in business, 93 have had previous business experience, 281 have never engaged in business, and 1 fall into an unspecified category, reflecting a broad range of business involvement among the respondents.

Innovativeness was evaluated with a four-item scale, self-efficacy with a five-item scale, and agreeableness with a four-item scale. Exploration and exploitation were measured using a three-item scale. Entrepreneurial intention was assessed with a seven-item scale. Total of the indicators are 26 items.

Table 2.
Research Indicators

Variable	Indicator	Source
Innovativeness (IN)	<ol style="list-style-type: none"> 1. I enjoy trying new and unique ways or doing new things 2. I like new ideas and new things 3. While others see nothing unusual in the environment, I can identify business opportunities 4. I believe I can think creatively and innovatively in business 	(Saerom et al., 2022) & (Costa et al., 2023)
Self-efficacy (SE)	<ol style="list-style-type: none"> 1. I can start a business with the knowledge I have 2. I have confidence in every aspect of starting a business 3. My knowledge is mainly related to entrepreneurship 4. I am confident that my skills and abilities are not left behind 5. I am confident in my ability to successfully identify new business opportunities 	(Saerom et al., 2022) & (Bachmann et al., 2024)
Agreeableness (AG)	<ol style="list-style-type: none"> 1. I generally try to be thoughtful and considerate 2. I never get into arguments with my family and co-workers 3. Most people think that I am not selfish and egotistic 4. Some people think of me as cold and calculating (R) 	(Salameh et al., 2022)
Exploration (EPR)	<ol style="list-style-type: none"> 1. I try to fix problems that I feel are unsatisfactory 2. I try to solve unsatisfactory problems well 	(Saerom et al., 2022)

Variable	Indicator	Source
	3. I try to introduce new knowledge or methods to solve unsatisfactory problems	
Exploitation (EPI)	1. I apply (identify, connect, and combine) valuable knowledge I have to start a business or to perform tasks during entrepreneurship education 2. I started a business using my existing competencies or performed a task during entrepreneurship education 3. I used my experience accumulated in the past to start a business or solve problems that occur when performing tasks during entrepreneurship education	(Saerom et al., 2022)
Entrepreneurial Intention (EI)	1. I will do anything to start a business now 2. I will start a business and put all my efforts into running the business 3. I decided to start a business in the future 4. My professional goal is to become an entrepreneur 5. I was like that in the past, and I still have high intentions to start a business 6. I wish to create jobs for others 7. I intend to be my own boss (be independent)	(Saerom et al., 2022); & (Costa et al., 2023)

(Source: primary data, 2024)

RESULTS

This research utilized a in Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the gathered data. Building upon this rationale, our study employed PLS-SEM through the utilization of SmartPLS 4.1.0.6. The analysis consisted of two main steps: firstly, evaluating the measurement model, and secondly, assessing the structural model. Multigroup analysis is utilized to know the difference between male and female respondents.

Measurement Test

To check if the indicators accurately measure each variable, convergent validity is used. This involves examining the correlation between item scores and component scores. Indicators are considered valid if their outer loading value is 0.5 or higher, based on the SmartPLS algorithm. After processing, one indicator was found to be invalid because its AVE and outer loading values were below this threshold. Indicator AG4 does not reliably measure the Agreeableness construct and should be removed from the model to improve validity.

Table 3.
Outer Loading

	Male	Female
IN1 <- IN	0.842	0.883
IN2 <- IN	0.879	0.881
IN3 <- IN	0.854	0.864
IN4 <- IN	0.760	0.821
SE1 <- SE	0.787	0.808
SE2 <- SE	0.827	0.816
SE3 <- SE	0.857	0.791
SE4 <- SE	0.828	0.740
SE5 <- SE	0.862	0.756

	Male	Female
AG1 <- AG	0.903	0.798
AG2 <- AG	0.813	0.767
AG3 <- AG	0.780	0.724
EPR1 <- EPR	0.858	0.827
EPR2 <- EPR	0.847	0.846
EPR3 <- EPR	0.807	0.816
EPI1 <- EPI	0.848	0.793
EPI2 <- EPI	0.863	0.858
EPI3 <- EPI	0.839	0.748
EI1 <- EI	0.749	0.761
EI2 <- EI	0.825	0.704
EI3 <- EI	0.770	0.797
EI4 <- EI	0.806	0.862
EI5 <- EI	0.869	0.796
EI6 <- EI	0.744	0.858
EI7 <- EI	0.782	0.838

(Source: processed primary data, 2024)

The second run of outer loading suggests that the indicators reliably measure their intended constructs. The high outer loadings demonstrate that the model has improved in terms of validity and reliability, ensuring that the constructs are being accurately represented by their indicators. Therefore, the second run of the outer loading model is both good and accepted, confirming the robustness of the measurement model.

Table 4.
Reliability and Validity Test

	Cronbach’s Alpha		CR		AVE	
	Male	Female	Male	Female	Male	Female
Innovativeness	0.855	0.885	0.902	0.921	0.697	0.744
Self Efficacy	0.889	0.842	0.919	0.888	0.694	0.613
Agreeableness	0.778	0.646	0.872	0.807	0.695	0.583
Exploration	0.788	0.774	0.876	0.869	0.702	0.689
Exploitation	0.808	0.719	0.887	0.842	0.723	0.641
Entrepreneurial Intention	0.902	0.908	0.922	0.927	0.629	0.647

(Source: processed primary data, 2024)

The reliability test shows high consistency and dependability of the measurement instruments across male and female groups for most constructs. Innovativeness, self-efficacy, exploration, exploitation, and entrepreneurial intention all exhibit strong reliability, with Cronbach’s Alpha and Composite Reliability values generally above 0.80. Overall, the instruments demonstrate reliable measurement across genders. The improved AVE scores suggest that the model's validity and reliability have been enhanced, making the measurement of constructs more robust across both male and female groups.

Structural Model Assessment

To determine a model's goodness of fit, the R-Square values for each latent dependent variable are evaluated. These values show how much a latent independent variable influences a latent dependent variable. An R-Square value of 0.67 indicates a strong fit with high explanatory power, 0.33 indicates a moderate fit, and 0.19 indicates a weak fit (Urbach & Ahlemann, 2010).

Table 5.
R-Square

	Male	Female
Exploration	0.466	0.422
Exploitation	0.480	0.394
Entrepreneurial Intention	0.470	0.395

(Source: processed primary data, 2024)

The R-Square values indicate the model's explanatory power for male and female participants. For the Exploration construct, males have a slightly higher R-Square value of 0.466 compared to 0.422 for females. In Exploitation, males again show higher explanatory power with a value of 0.480, while females have 0.394. For Entrepreneurial Intention, the R-Square is 0.470 for males and 0.395 for females. Overall, the model fits moderately well for both genders (R-Square between 0.33 and 0.67), with better explanatory power for males across all constructs.

The path coefficient, representing standardized estimates, is used to determine the hypothesis's significance through its value and the inner model value. The key measure is the t-statistic, which should exceed 1.96. The p-value ranges from 0 to 1, with 0.05 as the standard. If the p-value is less than 0.05, H0 is rejected, and Ha is accepted (Hair et al., 2019).

Table 6. Results of the Hypothesis Test

	Original		t statistic		p value		Hypothesis	
	Male	Female	Male	Female	Male	Female	Male	Female
Innovativeness - Exploration	0.200	0.206	2.733	2.975	0.003	0.001	Supported	Supported
Innovativeness - Exploitation	0.153	0.171	2.141	2.188	0.016	0.014	Supported	Supported
Self Efficacy - Exploration	0.501	0.260	6.901	3.935	0.000	0.000	Supported	Supported
Self Efficacy - Exploitation	0.342	0.230	4.317	2.378	0.000	0.009	Supported	Supported
Agreeableness - Exploration	0.052	0.351	0.827	5.373	0.204	0.000	Not Supported	Supported
Agreeableness - Exploitation	0.332	0.384	4.420	4.841	0.000	0.000	Supported	Supported
Exploration - Entrepreneurial Intention	0.389	0.477	5.492	7.294	0.000	0.000	Supported	Supported
Exploitation - Entrepreneurial Intention	0.377	0.224	4.642	3.086	0.000	0.001	Supported	Supported

(Source: processed primary data, 2024)

Table 6. shows that Innovativeness and Self-Efficacy are important traits for both male and female students, as they positively influence their involvement in both Exploration (seeking new opportunities) and Exploitation (utilizing existing opportunities). These relationships are significant for both genders, though females show slightly stronger connections between Innovativeness and Exploration.

Agreeableness, however, impacts genders differently. For males, Agreeableness not doesn't significantly affect their involvement in Exploration, while for females, it does. Despite this, both males and females with higher Agreeableness tend to be more involved in Exploitation activities. Finally, both Exploration and Exploitation are strongly linked to Entrepreneurial Intention in both genders, suggesting that these activities are key drivers of entrepreneurial aspirations.

Table 7.
Multigroup Analysis

	Difference	t statistic	p value	Information
IN -> EPR	-0.006	0.061	0.476	Not Significant
IN -> EPI	-0.018	0.168	0.433	Not Significant
SE -> EPR	0.241	2.459	0.007	Significant
SE -> EPI	0.112	0.894	0.186	Not Significant
AG -> EPR	-0.299	3.299	0.001	Significant
AG -> EPI	-0.052	0.480	0.316	Not Significant
EPR -> EI	-0.087	0.908	0.182	Not Significant
EPI -> EI	0.153	1.405	0.080	Not Significant

(Source: processed primary data, 2024)

The multigroup analysis shows that there are no significant gender differences in how innovativeness impacts exploration and exploitation. Self-efficacy significantly affects exploration differently between genders but not exploitation. Agreeableness shows a significant gender difference in its impact on exploration but not on exploitation. There are no significant gender differences in how exploration and exploitation influence entrepreneurial intention. Therefore, only self-efficacy and agreeableness exhibit significant gender differences in their effect on exploration.

DISCUSSIONS

Entrepreneurs’ innovativeness has positive and significant influences knowledge exploration and exploitation activities. Students who are innovative tend to actively seek out new knowledge and ideas (knowledge exploration) and effectively use and apply this knowledge to create new products, services, or processes (knowledge exploitation). This study supported by Saerom et al (2022) where they found that innovativeness has a positive effect on learning activities. Student’s creativity and willingness to try new things significantly boost both discovering new opportunities and making the most of these discoveries. In other words, their innovativeness greatly enhances their ability to both find and use new knowledge.

For both male and female students are invariant. This support a study from Costa et al (2023) Click or tap here to enter text. no gender differences were identified on innovativeness between college students. However, Lim & Envick (2013) found that men exhibited a higher interest in engaging in innovative activities compared to women. Based on Table 6, it can be concluded that H1a and H1b are supported for both male and female.

Self efficacy has positive and significant influences knowledge exploration and exploitation activities. However, it has difference with research from Click or tap here to enter text. Saerom et al (2022), self-efficacy does not significantly affect exploration activities, as the results for this hypothesis are not statistically significant. However, self-efficacy does significantly influence exploitation activities, meaning that people with high self-efficacy are more likely to effectively use and apply their knowledge.

Research study by Wu et al (2022) indicates that male’s self efficacy is significantly higher than that of female, which is consistent with those researchers’ results. Self-efficacy significantly affects an individual's ability to learn and retain information by enhancing their confidence in their own capabilities. This increased self-belief also boosts their engagement in both exploration activities, where they seek out new knowledge, and exploitation activities, where they apply existing knowledge (Seo et al., 2015).

Table 6 indicates that self-efficacy has a stronger influence on knowledge exploration and exploitation activities among males compared to females. Specifically, the relationship between self-efficacy and knowledge exploration is measured at 0.501 for males and 0.260 for females. This suggests that males who have high self-efficacy are more likely to engage in activities that involve seeking out new information and opportunities.

The influence of self-efficacy on knowledge exploitation, which involves using and applying acquired knowledge, is 0.342 for males and 0.230 for females. This indicates that males with high self-efficacy are more inclined to effectively utilize their knowledge to create new products or services. Based on Table 6, it can be concluded that H2a and H2b are supported for both male and female.

Agreeableness significantly impacts knowledge exploration and exploitation for female students, meaning that those who are more agreeable tend to engage more in both discovering new ideas and applying existing knowledge. For male students, however, agreeableness does not significantly influence knowledge exploration, indicating that their level of agreeableness does not affect their tendency to seek out new information. Nevertheless, agreeableness does have a positive and significant effect on knowledge exploitation for males, suggesting that agreeable male students are more likely to effectively use and apply the knowledge they already have.

This study has a slightly different result with research from Saerom et al (2022), which highlight that there is significant effect of agreeableness on learning activities, without considering gender. Agreeable people are kind, good at teamwork, and willing to collaborate to achieve goals. Liang et al. (2018) suggests that being agreeable can lead to more involvement in both exploring new ideas and applying existing ones. For male students' case that there is no significant effect of agreeableness is supported by study from Liang et al (2018). From Table 6 it concluded that H3a and H3b are supported for female, however H3a not supported but H3b supported for male students.

Based on Table 6, knowledge exploration and exploitation activities have positive and significant influences on entrepreneurial intention for both male and female students. These findings supported a study from (Saerom et al., 2022), highlighting the importance of encouraging both knowledge exploration and exploitation as strategies to foster entrepreneurial intention in higher education settings.

The summary of the data indicates that exploration has a stronger impact on entrepreneurial intention for female students (0.477) compared to male students (0.389). In contrast, exploitation has a greater effect on entrepreneurial intention for male students (0.377) than for female students (0.224). It means that while exploring new ideas is more influential for female students' entrepreneurial intentions, male students are more affected by applying existing knowledge when it comes to their entrepreneurial goals.

This suggests that engaging in activities that involve seeking out new knowledge and utilizing existing knowledge effectively can enhance the entrepreneurial aspirations of students, regardless of gender. From the findings it concluded that H4a and H4b are supported for both male and female students. The findings underscore the importance of encouraging both knowledge exploration and exploitation as strategies to enhance entrepreneurial intentions among students, with tailored approaches potentially maximizing these outcomes based on gender differences. This has significant implications for educators and policymakers aiming to design effective entrepreneurship programs in higher education.

CONCLUSION

This study explores gender differences in entrepreneurial intentions among college students, with a focus on how knowledge exploration and exploitation activities contribute to

these intentions. The results indicate that entrepreneurship programs in educational institutions should be tailored to address the different needs of male and female students. Offering gender-specific resources, such as mentorship and networking, can help create a more supportive and inclusive environment. The research also points to the importance of traits like innovativeness and self-efficacy for both genders, which enhance entrepreneurial intentions. However, since agreeableness was found to positively impact knowledge exploration mainly among female students, it may be beneficial to design programs that emphasize collaboration and interpersonal skills for this group, using team-based activities to foster entrepreneurial development.

The study further highlights the significance of experiential learning in improving students' entrepreneurial abilities. By integrating project-based learning, internships, and real-world problem-solving into the curriculum, institutions can help students develop essential entrepreneurial skills. A balanced approach that incorporates both creative problem-solving (knowledge exploration) and practical application (knowledge exploitation) is necessary for effective entrepreneurship education. Additionally, the research stresses the need for entrepreneurship programs to promote gender equality by addressing specific barriers faced by female students, such as difficulties in accessing capital and finding mentorship, which are crucial to ensuring a fair entrepreneurial environment.

Although this research provides important insights into the factors influencing entrepreneurial intentions in male and female students, it has some limitations. The study relies on self-reported data, which can be prone to bias, and its sample is limited to a specific major and faculty, reducing the ability to generalize the findings. Furthermore, the study does not consider cultural factors or other potential influences, like family background or previous entrepreneurial experiences, that could play a role in shaping entrepreneurial intentions. To address these limitations, future research should expand the sample size, include more variables, and employ qualitative methods such as interviews to better understand the motivations behind entrepreneurial intentions. Exploring the effectiveness of gender-specific programs, like tailored mentorship and support networks, could also help develop more inclusive and effective strategies for encouraging entrepreneurship among students.

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