COLOMBO SCIENTIFIC PUBLISHING

INTERNATIONAL JOURNAL OF MULTIVARIATE DATA ANALYSIS THEORY & PRACTICE
E-ISSN: 2536-7935
P-ISSN: 2536-7927
PAGE NO: 18-22

A Comparative Analytical Framework for Assessing Gender-Based Entrepreneurial Intentions Among Engineering Graduates in Malaysia

Muhammad Farid Iskandar
Faculty of Information Systems, Malaysian Institute of Digital Sciences, Johor Bahru, Malaysia

ARTICLE INFO

Article history:
Published: August 01, 2017
VOLUME: Vol.02 Issue 01 2017

Keywords:
Entrepreneurial Intention, Gender Differences, Engineering Graduates, Malaysia, Theory of Planned Behavior, Analytical Framework, Entrepreneurship Education, Behavioral Modeling, Innovation Systems.

ABSTRACT

Entrepreneurial intention has emerged as a critical determinant of venture creation, particularly among engineering graduates who possess technical competencies essential for innovation-driven economies. However, gender disparities in entrepreneurial intentions remain a persistent concern, especially in developing and transitional economies such as Malaysia. This study develops a comparative analytical framework to examine gender-based differences in entrepreneurial intentions among Malaysian engineering graduates. Grounded in the Theory of Planned Behavior (TPB), the study integrates psychological, educational, and socio-cultural variables to construct a multidimensional analytical model. The methodology adopts a structured conceptual and analytical approach, synthesizing insights from existing empirical literature to identify determinants influencing male and female entrepreneurial intentions. Findings indicate that while both genders exhibit positive attitudes toward entrepreneurship, female graduates face structural and perceptual barriers that weaken intention formation. The study contributes by proposing a gender-sensitive analytical framework that highlights interaction effects among education, perceived behavioral control, and socio-cultural norms. Implications for policy design, curriculum development, and entrepreneurship training are discussed, along with limitations and directions for future research.

1. INTRODUCTION

Entrepreneurship plays a pivotal role in economic development, innovation, and employment generation. In knowledge-driven economies, engineering graduates represent a strategic group due to their technical expertise and problem-solving capabilities. Despite this potential, the transition from engineering education to entrepreneurial activity remains uneven, particularly when examined through a gender lens.

The Malaysian government has actively promoted entrepreneurship as part of its higher education agenda, recognizing its importance in fostering economic resilience (Malaysian Ministry of Higher Education, 2011). However, empirical observations suggest that male graduates demonstrate higher entrepreneurial intention compared to female counterparts. This disparity raises fundamental questions regarding the underlying determinants of entrepreneurial behavior.

The problem becomes more pronounced when considering socio-cultural and institutional barriers that disproportionately affect women. Studies indicate that female graduates often encounter structural challenges, including limited access to resources, social expectations, and perceived risk factors (Arayesh, 2011). These constraints influence both psychological readiness and behavioral intention, ultimately shaping entrepreneurial outcomes.

The relevance of this research lies in its attempt to systematically analyze gender-based differences within a structured theoretical framework. While prior studies have explored entrepreneurial intention, limited attention has been given to integrating gender dynamics within engineering education contexts in Malaysia.

The primary objectives of this study are threefold. First, to develop a comparative analytical framework that captures gender-based differences in entrepreneurial intentions. Second, to identify key determinants influencing intention formation among male and female engineering graduates. Third, to evaluate the role of education, socio-cultural factors, and psychological constructs in shaping entrepreneurial outcomes.

The scope of this study is confined to engineering graduates in Malaysia, with a focus on intention rather than actual entrepreneurial behavior. The significance lies in its potential to inform policy interventions, curriculum design, and gender-inclusive entrepreneurship programs.

2. LITERATURE REVIEW

Entrepreneurial intention has been extensively studied as a precursor to venture creation. Theoretical foundations largely derive from the Theory of Planned Behavior, which posits that intention is influenced by attitudes, subjective norms, and perceived behavioral control (Azjen, 2005). This framework has been widely applied in entrepreneurship research to predict behavioral outcomes.

Research on engineering students indicates that awareness and exposure to entrepreneurship significantly influence intention formation (Ab. Rahman et al., 2010). However, these effects are not uniform across genders. Female students often exhibit lower confidence levels and higher risk aversion, which negatively impacts entrepreneurial intention (Pushkarskaya, 2008).

Educational interventions play a crucial role in shaping entrepreneurial competencies. Entrepreneurship education enhances skills, knowledge, and attitudes necessary for venture creation (Henry et al., 2003). Empirical findings suggest that structured programs can positively influence intention, although the magnitude of impact varies across gender groups (Ismail, 2010).

Gender differences in entrepreneurial intention have been consistently documented. Studies highlight that cultural expectations and societal norms influence women's participation in entrepreneurship (Shinnar et al., 2012). These factors create psychological barriers that reduce perceived feasibility and desirability of entrepreneurial careers.

Arayesh (2011) provides critical insights into the challenges faced by female graduates, emphasizing structural and institutional barriers. The study identifies lack of support systems, limited access to capital, and societal expectations as key obstacles. These findings are particularly relevant in understanding gender disparities in entrepreneurial intention among engineering graduates.

Comparative studies further reveal that male students tend to exhibit stronger entrepreneurial intentions due to higher perceived self-efficacy and social support (Leroy et al., 2009). Conversely, female students often rely more on external validation and support mechanisms, which may not always be readily available.

The role of skill perception and value orientation has also been examined. Linan (2008) argues that perceived competence significantly influences intention formation. Engineering graduates, despite possessing technical skills, may lack entrepreneurial competencies, thereby affecting their intention to start ventures.

Institutional and policy frameworks also shape entrepreneurial ecosystems. Government initiatives aimed at promoting entrepreneurship have shown mixed results, particularly in addressing gender disparities (Malaysian Ministry of Higher Education, 2011). This indicates a gap between policy design and practical implementation.

Despite extensive research, several gaps remain. First, there is limited integration of gender perspectives within analytical frameworks. Second, existing studies often treat gender differences descriptively rather than analytically. Third, there is a lack of focus on engineering graduates as a distinct group.

This study addresses these gaps by developing a comprehensive analytical framework that incorporates gender as a central variable, while integrating psychological, educational, and socio-cultural dimensions.

3. METHODOLOGY

This study adopts a conceptual and analytical research design, focusing on the development of a comparative framework rather than empirical data collection. The methodology is structured around three core components: theoretical modeling, variable identification, and analytical framework construction.

3.1 Theoretical Framework

The study is grounded in the Theory of Planned Behavior (TPB), which provides a robust foundation for analyzing entrepreneurial intention (Azjen, 2005). The TPB framework is extended to incorporate gender-specific variables, enabling a comparative analysis.

The model includes three primary constructs:

- Attitude toward entrepreneurship
- Subjective norms
- Perceived behavioral control

These constructs are further expanded to include moderating variables such as gender, education, and socio-cultural influences.

3.2 Variable Identification

Independent variables include educational exposure, skill perception, and socio-cultural factors. Dependent variable is entrepreneurial intention. Gender is treated as a moderating variable influencing the relationship between independent and dependent variables.

Educational exposure is operationalized through entrepreneurship programs and training initiatives (Henry et al., 2003). Skill perception relates to self-assessed entrepreneurial competencies (Linan, 2008). Socio-cultural factors include family support, societal expectations, and cultural norms (Shinnar et al., 2012).

3.3 Analytical Framework Design

The proposed framework integrates multiple dimensions to capture gender-based differences. It consists of three layers:

1. Psychological Layer – Attitudes, motivation, and self-efficacy
2. Educational Layer – Training, curriculum, and skill development
3. Socio-Cultural Layer – Norms, expectations, and institutional support

Gender acts as a cross-cutting variable influencing all three layers.

3.4 Comparative Analysis Approach

The framework employs a comparative approach to analyze differences between male and female graduates. This involves examining how each variable influences entrepreneurial intention across gender groups.

For instance, perceived behavioral control may have a stronger impact on male students due to higher confidence levels, while subjective norms may play a more significant role for female students due to societal expectations.

3.5 Hypothetical Model Application

A hypothetical scenario can illustrate the framework. Consider two engineering graduates with similar educational backgrounds. The male graduate may exhibit higher entrepreneurial intention due to stronger perceived control and social support. In contrast, the female graduate may experience hesitation due to perceived barriers and societal constraints, consistent with findings by Arayesh (2011).

3.6 Model Validation Logic

Although empirical validation is beyond the scope of this study, the framework is designed to be testable through quantitative methods such as structural equation modeling. This enhances its applicability for future research.

4. RESULTS

The analytical framework reveals several key patterns. First, gender significantly moderates the relationship between psychological factors and entrepreneurial intention. Male graduates exhibit stronger intention due to higher self-efficacy and perceived feasibility.

Second, educational interventions positively influence both genders, but the impact is more pronounced among male students. This suggests that existing programs may not fully address the specific needs of female students.

Third, socio-cultural factors emerge as a critical determinant for female graduates. Constraints such as societal expectations and limited support systems reduce entrepreneurial intention, aligning with observations by Arayesh (2011).

Fourth, skill perception plays a pivotal role across both groups. However, female students tend to underestimate their competencies, which negatively affects intention formation.

Overall, the findings highlight a structural imbalance in entrepreneurial ecosystems, where gender-specific barriers limit the potential of female engineering graduates.

5. DISCUSSION

The findings underscore the importance of integrating gender perspectives into entrepreneurial intention models. While TPB provides a strong theoretical foundation, it does not fully capture the complexities of gender dynamics. This study extends the framework by incorporating socio-cultural variables, offering a more comprehensive analysis.

The role of education emerges as both an enabler and a limitation. While entrepreneurship programs enhance skills and awareness, they often lack gender-sensitive approaches. This results in uneven outcomes, with male students benefiting more significantly.

The influence of socio-cultural factors is particularly noteworthy. Female graduates face constraints that are not adequately addressed by existing policies. These include societal expectations, limited access to resources, and lack of mentorship opportunities (Arayesh, 2011). Addressing these barriers requires a multi-level approach involving policy reform, institutional support, and cultural change.

Comparative analysis with existing literature reveals consistency in findings. Studies by Shinnar et al. (2012) and Leroy et al. (2009) similarly highlight gender disparities in entrepreneurial intention. However, this study contributes by integrating these insights into a unified analytical framework.

The implications are both theoretical and practical. Theoretically, the study advances entrepreneurship research by incorporating gender as a central variable. Practically, it provides a foundation for designing targeted interventions aimed at reducing gender disparities.

However, the study has limitations. The absence of empirical validation restricts the generalizability of findings. Additionally, the focus on Malaysia limits cross-cultural applicability. Future research should incorporate empirical data and comparative studies across different regions.

6. CONCLUSION

This study develops a comparative analytical framework to assess gender-based entrepreneurial intentions among engineering graduates in Malaysia. By integrating psychological, educational, and socio-cultural dimensions, the framework provides a comprehensive understanding of factors influencing entrepreneurial intention.

The findings highlight significant gender disparities, with female graduates facing structural and perceptual barriers. These challenges reduce their entrepreneurial potential, despite possessing comparable technical competencies.

The study contributes to existing literature by offering a gender-sensitive analytical model that can be used for future empirical research. It also provides practical insights for policymakers and educators, emphasizing the need for inclusive and targeted interventions.

Future research should focus on empirical validation of the proposed framework and explore cross-cultural comparisons to enhance generalizability.

7. REFERENCES

1. Ab. Rahman, M.N, A. Ghani, J., Ismail, A.R., & Mohd Zain, R. (2010). Engineering students towards entrepreneurship awareness. Research Journal of Internatıonal Studıes, 18, 48-58.
2. Almobaireek, W.N. & Manolova, T.S. (2012). Who wants to be an entrepreneur? entrepreneurial intentions among Saudi university students. African Journal of Business Management, 6(11), 4029-4040.
3. Arayesh, B. (2011). Examine some of the problems and obstacles women university graduates in the field of business. Australian Journal of Basic and Applied Sciences, 5(7), 692-695.
4. Athayde, R. (2009, March). Measuring enterprise potential in young people. Entrepreneurship Theory & Practices, 481-500.
5. Azjen, I. (2005). Attitudes, Personality and Behavior. 2nd edition. New York: McGraw Hills.
6. Henry, C., Hill, F. & Leitch, C. (2003). Entrepreneurship education and training. Great Britain: Ashgate.
7. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2010). Entrepreneurship (8th ed.). New York, NY: McGraw-Hill Irwin.
8. Ismail, M. Z. (2010). Developing entrepreneurship education: Empirical findings from Malaysian Polytechnics. Unpublished PhD thesis, University of Hull.
9. Kuratko, D. F. (2007). Entrepreneurial leadership in the 21st century. Journal of Leadership and Organizational Studies, 13(4), 1-11.
10. Leroy, H., Maes, J., Sels, L., Debrulle, J., Meuleman, M. (2009, August). Gender effects on entrepreneurial intentions: A tpb multi-group analysis at factor and indicator level. Paper presented at the Academy of Management Annual Meeting, Chicago, Illinois, USA.
11. Linan, F. (2008). Skill and value perceptions: how do they effect entrepreneurial intentions?. International Entrepreneurship Management, 4, 257-272.
12. Malaysian Ministry of Higher Education. (2011). Indikator pengajian tinggi 2009-2010 [Higher learning indicator 2009-2010]. Retrieved from http://www.mohe.gov.my/web_statistik/indikator_pengajian_tinggi_2009-2010.pdf
13. Mueller, S. (2008). Encouraging future entrepreneurs: The effect of entrepreneurship course characteristics on entrepreneurial intention. Doctor of Economic Dissertation, St. Gallen University.
14. Pushkarskaya, H. (2008). Gender differences in determinants of entrepreneurial intentions in a rural setting. Innovative Marketing, 4(1), 103-113.
15. Shinnar, R. S., Giecomin, O., & Janssen, F. (2012). Entrepreneurial perceptions and intentions: The role of gender and culture. Entrepreneurship Theory & Practice, May 2012, 465-493.
16. Soleimanpour, M.R., Tohidlu, S. & Bakhtiari, R. (2012). Identification educational barriers to the development of entrepreneurial spirit in Zanjan University Students. Journal of American Science, 8(8), 507-51