FBA | Future of Business Administration

ISSN: 2783-5936
Volume **3**, Issue **2**

Comparatives of Entrepreneurial Intentions Between Mandatory and Voluntary Entrepreneurship Education in Japan

Atsushi Kobayashi[1*], and Lakshman Hazra[2]

[1] DBA Candidate, University of Information Technology and Management in Rzeszów, Poland
[2] PhD, Visiting Professor, ExeJapan Business School, Tokyo, Japan
kobayashi.atsushi.lect@gmail.com

ABSTRACT

Entrepreneurship plays a vital role in fostering employment and economic growth, with entrepreneurship education (EE) witnessing global expansion. This research investigates the impact of EE on CrowdWorks freelancers in Japan using the Theory of Planned Behaviour (TPB), a socio-psychological model. While EE is growing worldwide, there is limited evidence of its effectiveness in Japan. This study employed a survey using a 7-point Likert scale to gather responses from 522 participants. Statistical reliability was confirmed by Cronbach's alpha test and confirmatory factor analysis. Quantitative methods were then used to analyse the data, including descriptive statistics for TPB factors and ANOVA for inter-group comparisons. The results demonstrated that the entrepreneurial intention (EI) of respondents who had taken an EE course (Group Y) was significantly higher than that of those who had not (Group N). Specifically, Group Y had an EI value of 4.569, compared to Group N's 2.766. The effect size was η^2 = .08, indicating a moderate effect. Furthermore, respondents who took the voluntary course (Group V) exhibited significantly higher EI than those who took the mandatory course (Group M), with an effect size of η^2 = .39, confirming a fairly large effect. Within Group Y, Group V had a significantly higher EI value of 5.326, while Group M's EI was 3.181. These results offer insights for enhancing EE in Japan. Future research should focus on the target group and investigate the specifics of the EE courses taken by participants in more detail.

Keywords: ANOVA, entrepreneurial intention, entrepreneurship education, mandatory course, voluntary course

Cite this article as: Kobayashi, A., & Hazra, L. (2024). Comparatives of Entrepreneurial Intentions Between Mandatory and Voluntary Entrepreneurship Education in Japan. *Future of Business Administration*, *3*(2), 17-32. https://doi.org/10.33422/fba.v3i2.693

1. Introduction

Entrepreneurship significantly contributes to economic growth by creating employment, value, and fostering wealth (Selvan & Vivek, 2020). Entrepreneurship education (EE) programmes are widely adopted because entrepreneurship has a substantial impact on both economic growth and employment (McGuigan, 2016). Although the Japanese government is actively promoting policies and support for EE, the challenge lies in the low number of university students participating in such programmes. This is particularly concerning as there is a demand to nurture individuals who can adapt to the fast-paced changes in the highly uncertain global environment (MEXT, 2021a). The aim of this research is to elucidate the impact of EE on entrepreneurial intentions (EI) in Japan. Specifically, the research involves inter-group comparisons of EI between those who have undergone EE and those who have not. Furthermore, the research explores which types of courses yield more significant effects. The

theoretical framework employed in this research is the Theory of Planned Behaviour (TPB), a social psychological model used to predict complex human behaviour (Ajzen, 1991). Based on the TPB theory, this research conducts a quantitative and comparative analysis of factors associated with EI, offering statistical evidence to support the progress of EE.

2. Literature Review

2.1. Theory of Planned Behaviour, and Application to the Entrepreneurship Research

According to TPB, human behaviour is founded on three beliefs, each of which manifests as attitude toward the behaviour, subjective norm, and perceived behavioural control (PBC) or self-efficacy. Attitude toward the behaviour and subjective norm influence behavioural intentions, further regulated by PBC (Ajzen, 2019). Individuals deliberately engage in actions (Ajzen, 1991) such as initiating a business (Tsordia & Papadimitriou, 2015). Recent research has applied TPB to predict the intention to utilise privacy settings on Twitter (currently X) and demonstrated its utility in designing interventions to promote privacy behaviours (Schmidt, 2022). In addition, Liñán and Chen (2009) applied TPB to entrepreneurship research, creating an Entrepreneurial Intention Questionnaire (EIQ). It is an EI measurement scale developed based on previous empirical research in psychology and entrepreneurship (Liñán & Chen, 2009). They analysed data from 519 individuals in Spain and Taiwan using structural equation modelling, demonstrating the effectiveness of the entrepreneurial intention model. Furthermore, in North Macedonia, Apasieva et al. (2020) applied TPB and EIQ to explain the EI of 317 students in economics and business. They discovered a significant positive relationship between students' attitudes toward entrepreneurship and their perceived control beliefs, indicating a meaningful impact on their EI. According to Romero-Galisteo et al. (2022), TPB stands out as one of the popular models in entrepreneurship assessment, with EI being identified as the most predictive factor for entrepreneurial behaviour. This research also measures EI based on the TPB model and conducts a quantitative comparative analysis.

2.2. The Impact of Entrepreneurship Education

Benli and Cerev (2018) emphasise how important it is for students to develop entrepreneurship through the education, both socially and economically. They also researched the extent to which EE is effective for university students. They compared individuals who had received EE with those who had not, revealing that those who underwent EE demonstrated higher levels of entrepreneurship. Similarly, Henderson and Robertson (1999) advocated for well-designed EE programmes, asserting that such programmes serve as catalysts for students to recognise their latent entrepreneurial capabilities. They argued that appropriately structured EE provides a stimulus for students to embark on a career path as entrepreneurs. In addition, Karimi et al. (2016) tested the effects of EE based on TPB. They found that the EI of students who took elective courses improved significantly, while those of students in mandatory courses did not.

In Japan, EE includes both mandatory and voluntary courses (MEXT, 2021b), and the benefits of extracurricular activities that foster connections across various fields are being recognised (Kumano, 2016). In EE extracurricular activities, students can create businesses that utilise their own expertise through collaboration with multiple faculties (Kumano, 2016). On the other hand, Kumano (2019) points out that regular EE courses attract not only students who wish to

start their own businesses but also those who are taking the courses simply to earn credits. It is crucial to provide aspiring business founders with the right opportunities and environment to effectively cultivate entrepreneurs (Kumano, 2019). However, it is still unclear whether there is a difference in EI between students taking mandatory courses and those taking voluntary courses in Japan. Furthermore, while many reports indicate an improvement in EI due to EE, some previous studies have not confirmed the effectiveness of the improvement, and empirical research remains limited (Matsumoto et al., 2024).

In the global context, there is a certain accumulation of prior research; however, in Japan, there is a scarcity of research reports on the subject (Kanama, 2018). Additionally, although the implementation of EE is increasing in Japan, the percentage of university students who have undergone EE remains low (Kawana, 2014). Therefore, the following research question (RQ) and null hypotheses (NH) were formulated to investigate the effectiveness of EE in Japan and to determine what types of courses are most effective.

- ***RQ***: Is entrepreneurship education effective in Japan? If so, what types of courses are considered beneficial?
- ***NH01***: There is no difference in entrepreneurial intentions between those who have taken entrepreneurship education and those who have not.
- ***NH02***: There is no difference in course effectiveness based on whether the course is mandatory or voluntary.

3. Research Method

3.1. Overview

A quantitative research approach is employed to analyse the collected questionnaire data in this investigation. Data analysis is carried out using EZR (Easy R), a statistical software program utilising the R language. EZR is a user-friendly statistical software built on R and R Commander, which performs common statistical analyses in medical research (Kanda, 2013). The analysis methods include descriptive statistics, inter-group comparison of means of EI by analysis of variance (ANOVA).

3.2. Data Collection

The population of this research consists of registered workers (freelancers) on CrowdWorks, one of the largest crowdsourcing services in Japan. As of the end of June 2023, the number of registered workers exceeds 5.7 million (CrowdWorks, 2023). The platform was chosen because it is easy for individual researchers to use, and it makes it simple to gather opinions from people of different ages and professions. The survey includes questions designed on the Likert scale with demographic inquiries, along with questions based on TPB and EIQ. Additionally, questions inquire about participants' experiences with EE and whether it was mandatory or voluntary. These questions facilitate inter-group comparisons of EI.

3.3. Ethical Consideration

This investigation employed an anonymous survey using Google Forms. The survey's purpose, estimated completion time, voluntary participation, and the statement that the survey results will be solely used for research purposes were explicitly stated at the beginning of the Form.

According to Ajemba and Arena (2022), researchers must be mindful of ethical principles and strive to minimise potential harm to research participants. The survey is designed to include the above considerations to ensure the fulfilment of research ethics objectives.

3.4. Questionnaire

The questions in the questionnaire are designed to test the hypotheses. First, the demographic queries ask for gender, age-group, and employment status. Next, the respondents are asked about their experience with EE and whether it was a mandatory or voluntary course. The EIQ is then used within the TPB framework to measure the three elements of TPB, including EI (Liñán & Chen, 2009). The measurement index is on a scale of 1 to 7, with 1 indicating strongly disagree and 7 indicating strongly agree. Appendix A shows the questionnaire items taken from Liñán and Chen (2009), which were used in this research. The author has attached variables for data analysis, enabling comparative research on the effects of EE.

3.5. Sample

The required sample size for this research was calculated to be 384 individuals with a 95% confidence interval and a 5% margin of error. Following the survey, data were obtained from 522 respondents.

4. Results and Discussion

4.1. Demographic Queries

Descriptive statistics were conducted using EZR. The following Table 1 shows the demographics of the respondents.

Table 1.
Demographics queries

		n	**%**
Gender	Male	244	46.7
	Female	273	52.3
	Other	0	0
	No answer	5	1.0
	Total	522	100
Age-Group	18-25 years	26	5.0
	26-35 years	123	23.6
	36-45 years	194	37.2
	46-55 years	124	23.8
	56-65 years	43	8.2
	More than 66 years	11	2.1
	No answer	1	0.2
	Total	522	100
Employment Status	Full-time employee	180	34.5
	Contract employee	30	5.7
	Part-time	73	14.0
	Self-employed, Entrepreneur, Freelance	115	22.0
	Student	8	1.5
	Unemployed	94	18.0
	Other	22	4.2
	Total	522	100

Source: Author's research

The total number of respondents was 522, including 273 females (52.3%), 244 males (46.7%), and 5 respondents who selected "No answer." In terms of age groups, the most common group was 36-45 years, comprising 194 people (37.2%). The 46-55 years and 26-35 years groups were the second and third, both accounting for around 23.8% and 23.6%, respectively. Notably, respondents aged 26-55 years constituted 84.6% of the total. Concerning employment status, full-time employees were the most common, with 180 respondents (34.5%). It is noteworthy that among these full-time employees, 180 also engaged in freelance work. The second-highest category was "self-employed, entrepreneur, freelance," with 115 respondents (22.0%). Additionally, there were 94 unemployed individuals, constituting 18% of the total. Students were relatively fewer in the overall sample, totalling 8 respondents (1.5%). These findings align with the results presented by Kobayashi and Hazra (2024), demonstrating that the 36-45 age group was the most prominent, respondents aged 26-55 surpassed 80%, and the most common employment status was full-time employment, with the second-highest being "self-employed, entrepreneur, freelance."

4.2. Experience of Attending Entrepreneurship Education Courses

Table 2 shows the experience of attending EE and whether the course was mandatory or voluntary. The respondents in Group Y, who have taken EE, constituted 34 individuals (Yes: 6.5%). In contrast, 488 respondents have not taken these courses (Group N). Within Group Y, 22 respondents attended voluntary courses, while 12 took mandatory ones. A larger number of respondents reported taking voluntary courses. According to a report from MEXT (2021a), the participation rate of university students in EE is acknowledged as a challenge due to its low prevalence, standing at 1%. In the case of CrowdWorks freelancers, the overall participation rate in EE was higher than that of university students mentioned earlier; however, it still remained below 10%.

Table 2.
Entrepreneurship education

			n		**%**	
4. Have you taken an entrepreneurship education course?	Yes (Group Y)	Mandatory course (Group M)	34	12	6.5	2.3
		Voluntary course (Group V)		22		4.2
5. If you answered "Yes," was it mandatory or voluntary course?	No (Group N)		488		93.5	
	Total		522		100	

Source: Author's research

4.3. Analysis of TPB Factors

4.3.1. Reliabilities

The Cronbach's alpha test was carried out as a reliability check for the questionnaire items using EZR. This test aimed to assess the internal consistency of the questionnaire items' scales (Tavakol & Dennick, 2011). As per De Vaus (2007), reliability coefficients higher than .70 are generally considered acceptable. The standard alpha coefficients for the questionnaire used in this research ranged from .957 to .963, demonstrating satisfactory reliability (see Appendix B).

Additionally, confirmatory factor analysis (CFA) was conducted to confirm the fit between the data and the applied model. The results of CFA indicated GFI=.812, AGFI=.759, and Bentler CFI=.918 (see Appendix C). Generally, the closer these indicators are to 1, the better (Oshio, 2023), and a relationship was confirmed where mathematically, GFI is larger than AGFI (Hishino et al., 2005). Furthermore, CFI exceeded the acceptable criterion of .90 (Hu & Bentler, 1999), confirming the suitability of the model used and the fit with the research data.

4.3.2. Descriptive Statistics

Descriptive statistics were conducted, and the mean values and standard deviations of TPB factors were calculated. The results, integrating variables, are presented in Table 3.

Table 3.
Descriptive statistics integrating variables

	M	***SD***	***N***
ATT (Attitude toward entrepreneurship)	4.164	1.571	522
PBC (Perceived behavioural control)	2.405	1.234	522
SN (Subjective norm)	3.971	1.306	522
EI (Entrepreneurial intention)	2.884	1.619	522

Source: Author's research

ATT and SN were moderate, with values of 4.164 and 3.971, respectively. PBC and EI had slightly lower values, with 2.405 and 2.884. In a study by Kobayashi and Hazra (2024) on EI of 476 CrowdWorks freelancers (Valid *N*=459), ATT was 4.423, SN was 3.585, and PBC was relatively low at 2.213. The overall trends of the three elements were similar to the research findings. However, their study reported EI as 3.844, while in this research, the data showed it to be approximately 1 point lower.

4.4. Comparative Research

4.4.1. Differences in EI With and Without EE

Descriptive statistics for the entire sample were conducted in the previous chapters to examine the overall mean. Subsequently, ANOVA was employed to compare the means of EI across different groups. Tables 4 and 5 show the results calculated with EZR, as well as the eta squared (η^2) values, which were computed using the "effectsize" package (Ben-Shachar et al., 2020) in R 4.4.1 to indicate the statistical effect size. The η^2 statistic (or R^2) is the ratio of variability due to an effect to the total variability in an analysis, and it is most commonly used as an effect size in ANOVA (Levine & Hullett, 2002).

Table 4.
Summary of results by ANOVA

		***M* of EI**	***SD***	***p***
4. Have you taken an entrepreneurship education course?	Yes (Group Y)	4.569	1.659	< .001
	No (Group N)	2.766	1.551	
5. If you answered "Yes," was it mandatory or voluntary course?	Mandatory course (Group M)	3.181	1.731	< .001
	Voluntary course (Group V)	5.326	1.025	

Source: Author's research

Table 5.
The effect size of EI comparisons between Groups Y and N, and Groups M and V

	df	***SS***	***MS***	***F***	**η²**	***p***
Factor (Have you taken an entrepreneurship education course?)	1	103.3	103.28	42.54	.08	< .001
Residuals	520	1262.5	2.43			
Factor (Was it mandatory or voluntary course?)	1	35.73	35.73	20.77	.39	< .001
Residuals	32	55.05	1.72			

Source: Author's research

Group Y had an EI value of 4.569. In comparison, Group N had an EI value of 2.766. The *F* value was 42.54, indicating $p < .001$, and the difference between Groups Y and N was statistically significant. The η^2 value was .08, confirming a moderate effect (between .06 and .14) according to Cohen's (1988) standard. Consequently, NH01 was rejected.

4.4.2. Mandatory Course and Voluntary Course

Table 4 indicates that Group M had an EI value of 3.181, while Group V had an EI value of 5.326 in Group Y. The EI value for Group M was similar to the overall mean. The *F* value was 20.77, and the η^2 value of .39 indicated a large effect (greater than .14), with $p < .001$. ANOVA results showed that the EI of Group V was significantly higher than that of Group M. Therefore, NH02 was also rejected. Table 6 shows a summary of the hypothesis testing results.

Table 6.
Summary of the hypothesis testing results

Null hypothesis	**Decision**
NH01: There is no difference in entrepreneurial intentions between those who have taken entrepreneurship education and those who have not.	Rejected
NH02: There is no difference in course effectiveness based on whether the course is mandatory or voluntary.	Rejected

Source: Author's research

4.5. Findings

The authors found, using ANOVA, that the EI value of Group Y was significantly higher than Group N. Additionally, among Group Y, the authors found that the EI of Group V was significantly higher than that of Group M.

4.6. Implications

4.6.1. Theoretical Implications

This research implies that TPB and EIQ can be used as a theoretical framework to test the effectiveness of EE in Japan, allowing for comparative studies using the TPB factors. Furthermore, statistical reliability is ensured by the alpha test and CFA, and the constructs' values are similar to those presented by Kobayashi and Hazra (2024). This research supports the statistical reliability and validity of EIQ. It also provides a stable basis for future studies and could contribute to the development of TPB research.

4.6.2. Practical Implications

This research supports the findings of Karimi et al. (2016), who discovered that optional EE courses have a significant positive impact. It suggests that participants' EI can be approached more effectively through voluntary EE courses rather than mandatory EE programmes. However, the low value of 2.405 for PBC shown in the results of this research may influence other factors and prevent actions (Ajzen, 2002; Kobayashi & Hazra, 2024). Teaching methods and course content to enhance PBC are needed (Karimi et al., 2016).

The findings of this research provide statistical evidence for Kumano's (2016) recommendation of extracurricular courses, in other words, voluntary courses in entrepreneurship. This research found that EE was indeed effective, though there were significant differences depending on whether it was mandatory or voluntary. It is also possible that EI of participants in regular EE courses, as reported in Kumano's (2019) study, may align with the results of this research. Additionally, EI of participants in extracurricular courses may be higher.

Furthermore, possible reasons why the EI of mandatory course participants was not high include: participants may have decided that they do not want to become entrepreneurs (Karimi et al., 2016), and they might not have felt the need to start their own business due to stable employment opportunities in Japan (Uchida & Kwak, 2019). While they may have held a positive view of entrepreneurial activity, they could have considered it more socially beneficial to be part of an organisation (Kamekawa, 2015). The most common employment status in the survey results of this research was full-time employee, accounting for 34.5%. Additionally, they also worked as registered workers on the CrowdWorks platform while belonging to an organisation. This may indicate that the relative attractiveness of working for an organisation remains high in Japan. Utilising this organisational attractiveness could be beneficial for entrepreneurial activities (Kamekawa, 2015). Moreover, individuals may be reluctant to pursue independent entrepreneurial actions in Japan if they already have stable employment opportunities in established companies (Uchida & Kwak, 2019). It is also reported that the Japanese corporate culture is deeply rooted and that starting a business independently does not increase happiness and life satisfaction, and may even lead to negative aspects such as long-term anxiety (Sannabe, 2023). Therefore, exploring strategies for starting a business while maintaining affiliation with an organisation is recommended.

4.7. Limitations and Future Perspectives

The sample size for this research was 522 in total; however, when comparative studies were conducted, the number of EE participants was small, and the results may not be fully representative of the population. Nevertheless, the ANOVA analysis reported the effect sizes, in addition to F and p values, to examine substantial differences (Mizumoto & Takeuchi, 2011). The effect sizes from this research can be compared with those of other studies (Mizumoto & Takeuchi, 2008). In addition, Davis and Love (2019) note that data obtained from social media platforms often exhibit high respondent bias and are not easily generalisable across populations. Consequently, the use of formal theory to test hypotheses is recommended (Davis & Love, 2019). To avoid unintended sampling bias, differences between target groups should be considered (Xie et al., 2023). It is advised that future research focuses on specific target groups and continues hypothesis testing on EE. This approach will enable new studies to leverage the competitive and broad social aspects inherent in crowdsourcing platforms (Bakici, 2020).

Besides, this paper provides a broad overview of the EI of participants in mandatory and voluntary EE courses in Japan. However, details of those courses, such as curriculum, learning level, and duration, are not yet clear. This research also measured static effects during the period in which the questionnaire was conducted, but the dynamic effects before and after EE are not yet determined. Future research should explore the structural categorisation and comparative study of EE curricula and learning contents, and how EI values change before and after the implementation of mandatory or voluntary courses, as well as other TPB factors such as PBC.

5. Conclusion

In this research, the impact of EE on EI among CrowdWorks freelancers in Japan has been demonstrated. Specifically, it was found that (i) in comparative studies, individuals who have taken EE (Group Y) had significantly higher values of EI compared to those who have not taken the education (Group N), and (ii) among Group Y, individuals who took voluntary courses (Group V) had significantly higher EI than those who took mandatory courses (Group M). In a context where there is limited statistical evidence on the effectiveness of EE in Japan, this research provides valuable insights as a case study in entrepreneurial research. However, it is important to note that the term "entrepreneurship education" encompasses various curriculum styles, learning levels, and course durations. This research does not delve into the detailed aspects of the programmes. Future research should focus on specific EE programmes, expanding the analysis to include details such as the course contents, total hours, and specific subjects taken, thus providing a comprehensive understanding based on diverse learning data. This, in turn, is expected to contribute to the further development of EE in Japan and an increase in EI among the Japanese population.

Acknowledgment

I extend my sincere gratitude to the faculty and staff members of ExeJapan Business School, Tokyo, Japan, and to all the CrowdWorks freelancers who participated in the survey, contributing their valuable and thoughtful responses.

Declaration of No Conflict of Interest

I affirm that there are no conflicts of interest associated with this research.

References

Ajemba, M. N., & Arene, E. C. (2022). Ensuring ethical approach to research. *Magna Scientia Advanced Research and Reviews*, *6*(1), 46-50. https://doi.org/10.30574/msarr.2022.6.1.0065

Ajzen, I. (1991) *The theory of planned behaviour.* Organizational behaviour and human decision processes, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioural control, self-efficacy, locus of control, and the theory of planned behaviour 1. *Journal of applied social psychology, 32*(4), 665-683. https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

Apasieva, T. J., Cabuleva, K., & Mitreva, M. (2020). Theory of Planned Behaviour: Personal Attitude and Perceived Behavioural Control as Key Determinants in Creation of

Entrepreneurial Societies and Social Inclusion of Young People. *Balkan Social Science Review*, *15*, 275-297. https://doi.org/10.46763/BSSR20150276ja

Bakici, T. (2020). Comparison of crowdsourcing platforms from social-psychological and motivational perspectives. *International Journal of Information Management, 54*, 102121. https://doi.org/10.1016/j.ijinfomgt.2020.102121

Benli, A., & Cerev, G. (2018). The impact of entrepreneurship training on the entrepreneurial tendency of university students: A research on Fırat university faculty of economics and administrative sciences students. *Girişimcilik ve Kalkınma Dergisi*, *13*(1), 13-23. https://dergipark.org.tr/en/download/article-file/631845

Ben-Shachar, M. S., Lüdecke, D., & Makowski, D. (2020). effectsize: Estimation of effect size indices and standardized parameters. *Journal of Open Source Software*, *5*(56), 2815. https://doi.org/10.21105/joss.02815

Cohen, J. (1988). *Statistical Power Analysis for the Behavioural Sciences.* Routledge Academic.

CrowdWorks, Inc. (2023). *Summary of Financial Results for the Third Quarter of the Fiscal Year Ending September 30, 2023 [Japan Standards] (Consolidated).* https://contents.xj-storage.jp/xcontents/AS80447/64315f43/b755/47be/8306/9899cc675799/140120230808537728.pdf

Davis, J. L., & Love, T. P. (2019). Generalizing from social media data: A formal theory approach. *Information, Communication & Society, 22*(5), 637-647. https://doi.org/10.1080/1369118X.2018.1555610

De Vaus, D.A. (2007). *Analysing social science data*. SAGE Publications.

Henderson, R., & Robertson, M. (1999). Who wants to be an entrepreneur? Young adult attitudes to entrepreneurship as a career. *Education+ Training*, *41*(5), 236-245. https://doi.org/10.1108/13620430010373755

Hoshino, T., Okada, K., & Maeda, T. (2005). Fit Indices and Model Modification in Structural Equation Modelling: A review and new findings. *koudoukeiryougaku*, *32*(2), 209-235. https://doi.org/10.2333/jbhmk.32.209

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modelling*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Kamekawa, M. (2015). Kigyouka-kosuto no dougakuteki-apuroochi: Kigyouka no kikai-hiyou to torihiki-kosuto no kankei [A dynamic approach to understanding entrepreneurship costs: The relationship between opportunity costs and transaction costs]. *Rikkyo DBA Journal, 5*, 3-20. https://rikkyo.repo.nii.ac.jp/record/11308/files/AA12512231_05_01.pdf

Kanama, D. (2018). Wakate-jinzai no antrepurenaashippu, mochibeeshon [Entrepreneurial Motivation of Young Human Resources]. *Kenkyuu Gijutsu Keikaku*, *33*(2), 134-143. https://www.jstage.jst.go.jp/article/jsrpim/33/2/33_134/_pdf

Kanda, Y. (2013). Investigation of the freely available easy-to-use software 'EZR' for medical statistics. *Bone marrow transplantation*, *48*(3), 452-458. https://doi.org/10.1038/bmt.2012.244

Karimi, S., Biemans, H. J., Lans, T., Chizari, M., & Mulder, M. (2016). The impact of entrepreneurship education: A study of Iranian students' entrepreneurial intentions and opportunity identification. *Journal of small business management*, *54*(1), 187-209. https://doi.org/10.1111/jsbm.12137

Kawana, K. (2014). Wagakuni no kigyouka-kyouiku no igi to kadai: kigyou-kyouiku to kigyouka-gakushuu no tame no chiiki tunagari zukuri. *Nihon seisaku kinyuu kouko sougoukenkyuujo, Nihon seisaku kinyuu kouko ronshuu, 25*, 59-80. https://www.jfc.go.jp/n/findings/pdf/ronbun1411_04.pdf

Kobayashi, A., & Hazra, L. (2024). Analysis of the Current Status on Entrepreneurial Intentions among CrowdWorks Freelancers in Japan. *International Journal of Applied Research in Management and Economics, 7*(1), 31-46. https://doi.org/10.33422/ijarme.v7i1.1194

Kumano, M. (2016). Benchaa-kigyou no soushutsu to kigyouka-kyouiku -Soujou daigaku kigyouka ikusei puroguramu-. *Nihon seisaku kinyuu kouko, 30*, 63-82. https://www.jfc.go.jp/n/findings/pdf/ronbun1602_04.pdf

Kumano, M. (2019). Kigyouka-kyouiku to kigyouka no haishutsu -Kyuushuu daigaku kigyou-bu no jirei-. *Doushisha shougaku, 70*(6), 1009-1023. https://doshisha.repo.nii.ac.jp/record/26502/files/017070060020.pdf

Levine, T. R., & Hullett, C. R. (2002). Eta squared, partial eta squared, and misreporting of effect size in communication research. *Human Communication Research*, *28*(4), 612-625. https://doi.org/10.1111/j.1468-2958.2002.tb00828.x

Liñán, F., & Chen, Y. W. (2009). Development and cross–cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship theory and practice*, *33*(3), 593-617. https://doi.org/10.1111/j.1540-6520.2009.00318.x

Matsumoto, S., Yanagi, J., & Yamada, J. (2024). Kinshiganka suru antorepurenaashippu-kyouiku kenkyuu -Mondaika rebyuu ni yoru kenkyuu, jissen no saikou-. *Soshiki kagaku*, *57*(4), 21-36. https://www.jstage.jst.go.jp/article/soshikikagaku/57/4/57_20240702-2/_pdf

McGuigan, P. J. (2016). Practicing what we preach: Entrepreneurship in entrepreneurship education. *Journal of Entrepreneurship Education*, *19*(1), 38-50. https://adu-int.wexl.in/server/api/core/bitstreams/2605fd24-dfec-4848-8840-92a12b4aa891/content#page=43

Ministry of Education, Culture, Sports, Science and Technology (MEXT). (2021a). *Antorepurenaashippu-kyouiku no genjou ni tsuite.* https://www.mext.go.jp/content/20210728-mxt_sanchi01-000017123_1.pdf

Ministry of Education, Culture, Sports, Science and Technology (MEXT). (2021b). *Reiwa 2 nendo daigaku ni okeru antrepurenaashippu-kyouiku ni kansuru chousa-houkokusho, 3 shou ikou.* https://www.mext.go.jp/content/20211115-mxt_sanchi01-000018853_03.pdf

Mizumoto, A., & Takeuchi, O. (2008). Kenkyuu-ronbun ni okeru koukaryou no houkoku no tame ni -Kisotekigainen to chuuiten- [Basics and Considerations for Reporting Effect Sizes in Research Papers]. *Eigo kyouiku kenkyuu*, *31*, 57-66. https://www.mizumot.com/files/EffectSize_KELES31.pdf

Mizumoto, A., & Takeuchi, O. (2011). Koukaryou to kenteiryoku-bunseki nyuumon:

Toukeiteki-kentei wo tadashiku tsukau tame ni. *2010 nendo bukai houkoku ronshuu "Yori yoi gaikokugo-kyouiku no tame no houhou,"* 47-73. https://kansai-u.repo.nii.ac.jp/record/10020/files/KU-1100-20110606-05.pdf

Oshio, A. (2023). *Psychological Research Data Analysis by SPSS and Amos* (4th ed.). Tokyo-Tosho.

Romero-Galisteo, R. P., González-Sánchez, M., Gálvez-Ruiz, P., Palomo-Carrión, R., Casuso-Holgado, M. J., & Pinero-Pinto, E. (2022). Entrepreneurial intention, expectations of success and self-efficacy in undergraduate students of health sciences. *BMC Medical Education*, *22*(1), 1-7. https://doi.org/10.1186/s12909-022-03731-x

Sannabe, A. (2023). Dokuritsu, kigyou niwa donoyouna meritto ga arunoka: Zenkoku shuugyou-jittai paneru chousa [Japanese Panel Study of Employment Dynamics] (JPSED) wo mochiita jisshouteki-kenkyuu. *Works Discussion Paper*, *65*, 1-18. https://doi.org/10.34391/works.65.0_1

Schmidt, P., Gordoni, G., Ajzen, I., Beuthner, C., Davidov, E., Silber, H., ... & Weiß, B. (2022). Twitter users' privacy behaviour: A reasoned action approach. *Social Media + Society*, *8*(3), 20563051221126085. https://doi.org/10.1177/20563051221126085

Selvan, S. S. A., & Vivek, N. (2020). Importance and Role of Entrepreneurship in Economic Development. *NIJMAH, 1*(1), 1-4. https://www.researchgate.net/profile/Samuel-Selvan-Scb/publication/351224386_Importance_and_Role_of_Entrepreneurship_in_Economic_Development/links/61a469ca6b9a6f09670da681/Importance-and-Role-of-Entrepreneurship-in-Economic-Development.pdf

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, *2*, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

Tsordia, C., & Papadimitriou, D. (2015). The role of theory of planned behaviour on entrepreneurial intention of Greek business students. *International Journal of Synergy and Research*, *4*(1). http://dx.doi.org/10.17951/ijsr.2015.4.1.23

Uchida, H., & Kwak, C. (2019). "Nihon no kigyoukaseishin ni kansuru ichi-kousatsu: Intaanetto-chousa-deeta wo mochiita bunseki [A study of entrepreneurship in Japan: Analysis using internet survey data]," *Journal of economics and business administration, 220*(3), 31-48. https://www.b.kobe-u.ac.jp/~uchida/CRSF/PDF/018_UchidaKwakGEM.pdf

Xie, H., Maddalena, E., Qarout, R., & Checco, A. (2023). The Dark Side of Recruitment in Crowdsourcing: Ethics and Transparency in Micro-Task Marketplaces. *Computer Supported Cooperative Work (CSCW)*, *32*(3), 439-474. https://doi.org/10.1007/s10606-023-09464-9

Appendix A

TPB (Ajzen, 1991) and EIQ (Liñán & Chen, 2009)

- Personal Attitude (towards Entrepreneurship [Apasieva et al., 2020])

ATT1: Being an entrepreneur implies more advantages than disadvantages to me.
ATT2: A career as entrepreneur is attractive for me.
ATT3: If I had the opportunity and resources, I'd like to start a firm.
ATT4: Being an entrepreneur would entail great satisfactions for me.
ATT5: Among various options, I would rather be an entrepreneur.

- Perceived Behavioural Control

PBC1: To start a firm and keep it working would be easy for me.
PBC2: I am prepared to start a viable firm.
PBC3: I can control the creation process of a new firm.
PBC4: I know the necessary practical details to start a firm.
PBC5: I know how to develop an entrepreneurial project.
PBC6: If I tried to start a firm, I would have a high probability of succeeding.

- Social (subjective) Norm

If you decided to create a firm, would people in your close environment approve of that decision? Indicate from 1 (total disapproval) to 7 (total approval).
SN1: Your close family
SN2: Your friends
SN3: Your colleagues

- Entrepreneurial Intention

EI1: I am ready to do anything to be an entrepreneur.
EI2: My professional goal is to become an entrepreneur.
EI3: I will make every effort to start and run my own firm.
EI4: I am determined to create a firm in the future.
EI5: I have very seriously thought of starting a firm.
EI6: I have the firm intention to start a firm some day.

Note: Variables were added by the author for the purpose of data analysis.

Appendix B

Results of the Cronbach's alpha test by EZR

Alpha reliability = 0.9618; Standardised alpha = 0.9612

Table B1.
Reliability deleting each item in turn

	Alpha	**Std. Alpha**	***r* (item, total)**
ATT1	.9603	.9597	.6980
ATT2	.9601	.9595	.7291
ATT3	.9598	.9592	.7412
ATT4	.9598	.9593	.7369
ATT5	.9588	.9582	.8132
EI1	.9593	.9584	.7895
EI2	.9582	.9577	.8535
EI3	.9584	.9578	.8425
EI4	.9578	.9572	.8856
EI5	.9580	.9575	.8686
EI6	.9581	.9576	.8630
PBC1	.9617	.9611	.5682
PBC2	.9589	.9581	.8131
PBC3	.9592	.9582	.7968
PBC4	.9601	.9592	.7145
PBC5	.9603	.9594	.7008
PBC6	.9597	.9588	.7538
SN1	.9623	.9614	.5484
SN2	.9626	.9621	.4923
SN3	.9636	.9632	.4040

Source: Author's research

Appendix C

Confirmatory factor analysis (CFA) results

Table C1.
Test for fit

χ^2	*Df*	*p*
1104	164	< .001

Table C2.
Summary of fit indices

			RMSEA 90% CI				
GFI	***AGFI***	***RMSEA***	***Lower***	***Upper***	***CFI***	***AIC***	***BIC***
.812	.759	.105	.099	.111	.918	1196.087	77.830

Table C3.
Normalised residuals

Min.	**1st Qu.**	***Mdn***	***M***	**3rd Qu.**	**Max.**
-2.498	-0.610	0.186	0.607	1.535	5.672

Table C4.
R-square for endogenous variables

EI1	**EI2**	**EI3**	**EI4**	**EI5**	**EI6**	**ATT1**	**ATT2**	**ATT3**	**ATT4**
.649	.803	.758	.927	.907	.878	.615	.796	.813	.875
ATT5	PBC1	PBC2	PBC3	PBC4	PBC5	PBC6	SN1	SN2	SN3
.838	.484	.589	.720	.862	.852	.594	.436	.803	.619

Table C5.
Parameter estimates (Iterations = 52)

	Estimate	***SE***	***z***
EI1 <--- EI	1.135***	.051	22.220
EI2 <--- EI	1.596***	.061	26.320
EI3 <--- EI	1.552***	.062	25.078
EI4 <--- EI	1.744***	.058	29.922
EI5 <--- EI	1.764***	.060	29.318
EI6 <--- EI	1.766***	.062	28.443
ATT1 <--- ATT	1.217***	.057	21.217
ATT2 <--- ATT	1.527***	.059	25.991
ATT3 <--- ATT	1.676***	.063	26.451
ATT4 <--- ATT	1.591***	.056	28.207
ATT5 <--- ATT	1.647***	.061	27.167
PBC1 <--- PBC	0.825***	.046	17.919
PBC2 <--- PBC	1.245***	.060	20.520
PBC3 <--- PBC	1.248***	.052	23.894
PBC4 <--- PBC	1.340***	.048	27.779
PBC5 <--- PBC	1.367***	.050	27.504
PBC6 <--- PBC	1.098***	.053	20.648
SN1 <--- SN	1.117***	.070	15.877
SN2 <--- SN	1.291***	.056	23.237
SN3 <--- SN	1.147***	.058	19.677
ATT <--> EI	0.738***	.022	34.295
PBC <--> EI	0.803	.017	46.284

	Estimate	***SE***	***z***
SN <--> EI	0.472***	.038	12.386
PBC <--> ATT	0.570***	.032	17.957
SN <--> ATT	0.460***	.039	11.788
SN <--> PBC	0.421***	.041	10.331
EI1 <--> EI1	0.698***	.045	15.419
EI2 <--> EI2	0.625***	.043	14.533
EI3 <--> EI3	0.770***	.052	14.913
EI4 <--> EI4	0.239***	.022	11.030
EI5 <--> EI5	0.318***	.026	12.207
EI6 <--> EI6	0.435***	.033	13.279
ATT1 <--> ATT1	0.929***	.062	15.018
ATT2 <--> ATT2	0.597***	.045	13.348
ATT3 <--> ATT3	0.648***	.050	13.028
ATT4 <--> ATT4	0.363***	.033	11.117
ATT5 <--> ATT5	0.523***	.042	12.406
PBC1 <--> PBC1	0.725***	.047	15.382
PBC2 <--> PBC2	1.082***	.072	14.978
PBC3 <--> PBC3	0.604***	.043	14.029
PBC4 <--> PBC4	0.287***	.026	10.917
PBC5 <--> PBC5	0.324***	.029	11.301
PBC6 <--> PBC6	0.825***	.055	14.953
SN1 <--> SN1	1.616***	.012	14.024
SN2 <--> SN2	0.409***	.072	5.602
SN3 <--> SN3	0.810***	.075	10.848

Note. The CFA results conducted using EZR do not include standardised estimates.
*** $p < .001$.
Source for Tables C1 to C5: Author's research