A Study on Female Entrepreneurs’ Behavior in Micro-Enterprises in Taiwan – An Application of Planned Behavior Theory

Wan-Chen Lu, Associate Professor of Department of Tourism and Leisure Management, Taoyuan Innovation institute Technology, Taiwan
Wan-Hua Chen, Doctor candidate of Department of Technology Application and Human Resource Development, National Taiwan Normal University

ABSTRACT

In this study, we constructed and validated a model of the behavior of female entrepreneurs in micro-enterprises based on Theory of Planned Behavior (TPB). Furthermore, we examined the effects of certain factors on their behavior. The subjects were members of the “Free & Young Student” program of the National Youth Commission of Executive Yuan. The study adopted a longitudinal design for the two-stage period, and the key factors that influenced the behavior of the female entrepreneurs came from an open-ended questionnaire. After half a year, the investigation of the actual behavior followed. For the data analysis, we used descriptive statistics and structural equation modeling. The results showed the following:

(a) The students of the Free & Young program were getting younger. The major industry they ventured into was personal service. After six months of tracking, the survey showed that about 10% of female students were in the "entrepreneurs" and "set-start" phases, while 80% had no business plan.
(b) The theoretical model built by TPB fit the empirically observed data well, and the results of the study supported the predictions made at the outset.
(c) In the proposed model, positive attitude, negative attitude, subjective norm, and perceived behavioral control influenced behavioral intention, but only behavioral intention influenced the actual behavior.

Based on the results, it is recommended that the government facilitate networking among female entrepreneurs running businesses of different sizes in various industries. Moreover, the government should provide further vocational training and entrepreneurship loans as well as establish support groups for female entrepreneurs.

Keywords: Free & Young program, Theory of Planned Behavior (TPB), Structural Equation Modeling (SEM), Female Entrepreneurs

INTRODUCTION

Research background

The changes in the entrepreneurial environment and the rising popularity of gender equality have resulted in the increasingly significant roles of females in various fields, including politics, economy and society, thus increasing their status. Today, there is a heightened awareness among females to pursue economic autonomy, and the emergence of female entrepreneurs has become the global trend. In addition, many national governments and international organizations have devoted resources for providing assistance to females who wish to embark on the entrepreneurial path successfully.
In Taiwan, female entrepreneurs form the current trend resulting from the change of the overall industrial structure along with the influence of globalization. Meanwhile, the emerging service industry has become the main one in Taiwan, gradually substituting the manufacturing industry of the past. The output value of the service industry accounts for 75% of the GDP, and the number of personnel in the service industry is approaching 60% of the total manpower. In a manufacturing-based society, physical strength, technology, and capital are the most important entrepreneurial needs, and most of these are unfavorable to females. In contrast, the emerging service industry regards knowledge and creativity as the key elements of success. Under the condition of universal education, Taiwan females can now compete with the males as well as establish start-up businesses on their own (Li and Lin, 2008). The changes in the economic market and social structure require some females to shoulder their family’s financial burden. However, several females in the lower socio-economic status must rely on micro-entrepreneurs to establish a way of living, thus enhancing the demand of Taiwan females for entrepreneurship.

Entrepreneurship is a very young field in management research (Low and MacMillan, 1988). The concept of the entrepreneur in the economy probes the influence of entrepreneurial activities on economic and industrial development. Its theme relies more on the investigation of the entrepreneurs’ personal traits in the early stage, and then moving on to opportunity, strategy, international entrepreneurship, environment, team management, and other fields, thus demonstrating the scope of the improvement of entrepreneurial study; moreover, studies with highly dynamic themes have emerged across various fields of study, with scholars adopting qualitative research methods that probe into the meaning of entrepreneurial themes (Liu Changyong, and Xie Rumei, 2006). Although the importance of the case study method to entrepreneurial research is accepted widely, Low and MacMillan (1988) point out that future works require more empirical studies to verify the theoretical concept proposed through the case studies. In addition, Shane (2003) cites that studies mostly investigate entrepreneurship from an individual point of view, such as individual factors or external strength. The former studies only the personal traits of the entrepreneur, while the latter emphasizes the impact of the environment on the entrepreneurial process while focusing on the industrial environment, technical change, market structure, and other external facts. Thus, investigations that integrate different points can be helpful in creating the overall framework.

In relation to the above, the present study aims to use theory of planned behavior (TPB) in the application of a model, which evaluates female entrepreneurs’ behavior based on TPB, and propose the important factors influencing such behavior.

A. Previous studies point out the theoretical bases for investigating individuals adopting a certain specific behavior. The application of TPB is seen in the action prediction in practical application and basic research in the areas of entrepreneurship, health, sports, diet, medical treatment, information, consumption, human resources, environmental behavior, and so on (Ajzen, 1987). The present research investigates the behavior of female entrepreneurs.

B. Relative entrepreneurial theories on the entrepreneurial process receive the impact of cross-level factors. At the individual level, the personality, attitude, and motivation of the entrepreneur greatly influence the developing direction and results, whereas the overall levels of environmental and social factors affect the entrepreneur (Cai Dunhao et al., 2007). Therefore, the entrepreneurial study should change its direction from single-dimensional investigation to multi-dimensional interactive relationship (Liu Changyong and Xie Rumei, 2006). TPB regarding multi-dimension as its core integrates individual level (attitude), impact of social groups (subject norms), and environmental and social disturbances.
(perceived behavioral control or PBC). In addition, TPB applies to the explanation and prediction of entrepreneurial behavior by regarding individual behavior as the core of the theory.

Krueger, Reilly, and Carsrud (2000) discuss planned behavior theory along with Shapero’s Model of The Entrepreneurial Event (SEE). They report on a very large isomorphism type in the model of intention, and their model contains a common factor of self-efficacy cognition, which the present study can apply.

D. Ex post facto studies serve as basis for studies related to female entrepreneurial course at home. However, such studies discuss entrepreneurial motivation, personal traits, sex roles, entrepreneurial courses and other factors related to the entrepreneurial female, and probe less into entrepreneurial intentions of potential groups. There is no empirical research yet on the actual entrepreneurial behavior. Taken as a whole, domestic studies lack empirical models to verify the behavior model of female entrepreneurs.

Therefore, the present study adopts TPB to configure the female entrepreneurial behavior model. Apart from providing another entrepreneur theory, the present study aims to identify the key factors of the female entrepreneur subjectively and completely by means of model data, verify theoretical concepts proposed by qualitative research, and create the overall framework of female entrepreneurial behavior.

Research purpose

The present study aims to understand the factors affecting female entrepreneurs as well as identify antecedents influencing attitudes, subject norms, and PBC of female students. Further, the present study seeks to determine the influence between the verification of the model and every variable. The detailed objectives are as follows:
1. To analyze the entrepreneurial attitudes, subject norms, and significant beliefs of PBC of female students;
2. To verify entrepreneurial behavior model of female students and observe the adaption of data
3. To analyze the influences of entrepreneurial attitudes, subject norms, PBC, intentions, behavior, and other variables

Research framework and hypothesis

For research objective 2, the present study hypothesizes that empirical research results (Hypothesis 1) and observation based on TPB will support the theoretical model.

For 3, the present study hypothesizes that attitudes, subject norms, and PBC have a causal relation with behavior intentions based on the design of theoretical framework (Hypothesis 2). Finally, we hypothesize that PBC and behavior intention have a causal relationship with behavior (Hypothesis 3).
As can be seen above, the entrepreneurial behavior intention model consists of six latent variables: positive attitude (ξ1), negative attitude (ξ2), subject norms (ξ3), PBC (ξ4), behavioral intention (η1), and behavior (η2). Among these, positive attitude, negative attitude, subject norms, and PBC are latent independent variables; behavior intention is the intervening variable; and behavior is the latent dependent variable. The relationship among these six latent variables hypothesized in the present study states that positive attitude, negative attitude, subject norms, and PBC have a significant impact on the behavior intention, whereas PBC and behavior intention have significant impact on the behavior.

**LITERATURE REVIEW**

**Theory of planned behavior (TPB)**

TPB, which was first proposed by Fishbein and Ajzen in 1980 and revised in 1990, is the main model of explaining and predicting consumption behavior. TPB stems from Theory of Reasoned Action, which believes that the rational will controls all human behavior. However, the theory is unable to explain rationally the activities uncontrolled fully by individual will. Therefore, Ajzen revised this by adding PBC and proposing TPB to explain the behavior uncontrolled by will.

According to TPB, subjective probability or possible behavior intention (BI) influencing individual behavior receives the impact of three decisive factors. The first factor is the individual attitude toward the behavior or AT. It refers to the evaluation of individual toward this behavior coming from the individual belief, \( b_i \), to adopt this behavior, multiplied by evaluation, \( e_i \), to these results. The second decisive factor is from the subjective norm or SN. It is an external influence, such as the social pressure individuals perceive in adopting a behavior, affecting the individual adopting a certain behavior. This means that normative beliefs, \( nb_j \), show that the individual is aware of its important reference group and decides whether or not she should adopt this behavior. Multiplied by motivation to comply, \( mc_j \), the individual complies with the important reference group. The third decisive factor is perceived behavioral control or PBC, which refers to the perceived degree of individual awareness of certain behavior. Control beliefs or \( cb_k \) form PBC and...
refer to an individual’s awareness of needed resources, opportunities, or obstruction that motivate certain behaviors. This variable is multiplied with perceived power, PP_k, which influences the degree of these resources, opportunities, or obstruction on this behavior. PBC reflects the previous experience and predicted obstruction of a certain behavior. Moreover, it has a direct impact on behavior and not by behavior intention.

To sum up the above arguments, Fig. 2 shows the complete theoretical framework and mathematical model of TPB.

There are few studies related to female entrepreneurs; thus, the present paper aims to gain a better understanding of the course of female entrepreneurs by means of deep interviews and other tracing methods. Based on the suggestion of Fishbein and Ajzen (1980), a comprehensive tracking of the occurrence of actual behavior probes into the relationship between behavior intention and behavior, grasps the actual influence degree of all dimensions on the behavior, and finds out the application degree of the theoretical model. Therefore, to find out the actual explanation and prediction of the proposed entrepreneurial model of female students, the present paper adopts a two-stage longitudinal study. This process aims to understand deeply the entrepreneurial influence factors of female students and trace their actual entrepreneurial capacity after training. The present study then identifies the key factors influencing female entrepreneurs by verification of the theoretical model.

Figure 2: Framework of theory of planned behavior Data resource: Revised from “Theory of Planned Behavior” by Ajzen, 1991 (Organizational Behavior and Human Decision Processes, 50, p.182)
Female entrepreneurs in Taiwan and related governmental measures

The definition of “entrepreneur” comes from a French word (c. 12th century), which means *entreprendre* or “undertake.” An entrepreneur is a person who possesses an initiative spirit, can bear the risks, and create enterprise successfully, from which the person can obtain the benefits. Entrepreneurs are persons who can make innovation and creativity amid risk and uncertainty, they can excavate, evaluate, and use entrepreneurial change to build new economic organizations and obtain benefits (Liu and Xie, 2006). In addition, the study on female entrepreneurs is distinct because it focuses on the unique aspect of such entrepreneurs—their gender.

In the past, Taiwan females bear the housework due to their traditional roles in the family. Therefore, most of them are unable to enter the labor market, indirectly causing the decline of female labor participation. However, with the changing industrial structure in Taiwan, the emerging service industry has not only created a favorable employment environment for females, it has also driven a wave of female entrepreneurs through the help of the education, gender equality, and encouragement policies of the government (Li and Lin, 2008). As can be seen below, the percentage of female entrepreneurs has increased annual for a ten-year period (Table 1).

<table>
<thead>
<tr>
<th>Year (AD)</th>
<th>Employer</th>
<th>Self-employed operator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>Number of people</td>
<td>Percentage</td>
</tr>
<tr>
<td>1999</td>
<td>436</td>
<td>85.3%</td>
</tr>
<tr>
<td>2000</td>
<td>438</td>
<td>85.4%</td>
</tr>
<tr>
<td>2001</td>
<td>413</td>
<td>83.9%</td>
</tr>
<tr>
<td>2002</td>
<td>414</td>
<td>84.1%</td>
</tr>
<tr>
<td>2003</td>
<td>414</td>
<td>83.5%</td>
</tr>
<tr>
<td>2004</td>
<td>423</td>
<td>82.8%</td>
</tr>
<tr>
<td>2005</td>
<td>416</td>
<td>82.7%</td>
</tr>
<tr>
<td>2006</td>
<td>423</td>
<td>81.8%</td>
</tr>
<tr>
<td>2007</td>
<td>430</td>
<td>82.2%</td>
</tr>
<tr>
<td>2008</td>
<td>418</td>
<td>82.3%</td>
</tr>
<tr>
<td>2009</td>
<td>383</td>
<td>81.5%</td>
</tr>
</tbody>
</table>

Data sources: Directorate-General of Budget, Accounting, and Statistics (2010)

Table 1 shows that the proportion of female entrepreneurs in Taiwan has increased gradually over the past decade. For example, among employers, the male to female ratio was 85.3% and 14.7% in 1999, and changed to 81.5% and 18.5% in 2009, respectively, indicating a gradual upward trend. The male to female ratio of self-conducted operators was 79.2% and 20.8% in 1999, and changed into 74.5% and 25.5% in 2009, respectively, which also show a slow upward trend. Hence, the percentage of female entrepreneurs has grown gradually in the recent decade; however, a great disparity still exists, thus requiring further research attention.

Female entrepreneurs are important links in promoting national economic development. The governmental counseling program for female entrepreneur includes training courses, education centers, counseling services, and other measures. This program is accompanied by entrepreneurial recognition, skills training, entrepreneurial consultations, lending and borrowing, business management, and other courses, such as the Free & Young program of the Youth Hub, the Female Entrepreneur Novitiate...
Program of The Council of Labor Affairs, and the by-business entrepreneurial class for rural women initiated by the Agricultural Commission. In addition, in the entrepreneurial process, the commerce division of the Economy Department and other departments have set up the Entrepreneur Consultation Center of Small and Medium Enterprises, Entrepreneur and Innovation Development Learning Center of Small and Medium Enterprises (Entrepreneur Dream Program), and Innovation Movement. Among the governmental programs for female entrepreneurs mentioned above, the Free & Young program of the Youth Hub, Executive Yuan has the longest existence. Originally launched in 2000, the project is integrated into programs related to female entrepreneurs since 2002. The plan for the entrepreneurial courses targeted entrepreneurial females with different backgrounds and in various stages of entrepreneurship. Until 2007, the Free & Young program had over 15,000 course participants, with 20% of the students starting their own business smoothly, with about 50% of students ready to start their own business (Li Jincai, 2008). As for entrepreneurial scale, the most common business type was setting up a home office (28.9%), opening a store (26.4%), and establishing a company (23.7%), which ranked first, second, and third, respectively. The remaining types include no physical store (9.9%), street peddler (5.8%), and franchise chain (5.1%) (Youth Hub, Executive Yuan, 2009). The above data show the entrepreneurial scale meeting the standard of mini-type enterprise defined by the International Labor Organization. This kind of business unit has a self-employed operator and employs less than 10 persons. Female entrepreneurial types of the Free & Young program fall under the mini industry.

Studies point out the factors motivating female entrepreneurs to start their own business. Entrepreneurial motivation includes interest, pursuit of achievability, realization of a dream, pursuit of independence, flexibility in schedule, possession of product and unique technology, familial factor, invitation of friends, limited job development, economic pressure, and so on (Wang Shuwan, 2004; Youth Hub, Executive Yuan, 2009; Yang Mingling, 1993; Liu Defang, 2006; Zheng Meiling, 2001). The hindering factors include financial difficulty in the initial stage of entrepreneur, insufficient enterprise operation training, lack of financial planning experience, conflict between family and work (Yang Mingling, 1993; Cai Juanjuan, 2000). The promoting factors are coordination and assistance of supporting team (e.g., couple, relatives, friends, training group) (Li Ruyi, 1998; Zhao Yizhen, 2001; Cai Biru, 1999), small-cost business, and perfect counseling program (e.g., entrepreneurship loan, entrepreneurial skill training, and so on).

**RESEARCH DESIGN**

**Research sample**

The research samples were entrepreneurs. The research time was from 18th to 31st of May 2008. Cluster sampling method was adopted to choose 216 students participating in Taibei Class A (31st of May) and Taizhong Class (18th of May) of the female entrepreneurial education class in the 2008 Free & Young program. Participants filled out an initial open-ended questionnaire. The number of returned forms was 167, but the valid questionnaires were only 138; thus, the recovery rate of valid questionnaires was 63.9%.

The second stage focused on the investigation of entrepreneurial intention of female students. The students participating in the female entrepreneurial education class of the Free & Young program from July to October of 2008 were the research subjects. The present study adopted a stratified random sampling method, through which 800 questionnaires were distributed. Of these, 410 were recovered yielding 364 valid questionnaires and a recovery rate of 46%.
The third stage was sample tracing, through which we interviewed participants who expressed their desire to assist in the follow-up study by leaving their contact information in the second stage. Network questionnaires, phone calls, and other census methods traced the investigation from April to June 2009. This method aimed to find out the actual entrepreneurial status of the female students (valid samples were 364) participating in the second-stage courses. The recovery data included 253 valid questionnaires, with a completion rate of 70%.

**Research tools and implementation**

The composition scale tools of the theory consist of five steps (Fishbein and Ajzen, 1980; Ajzen and Madden, 1986). The first step chooses the activity for discussion, while the second step defines the behavior intention corresponding to this behavior from action, the final purpose of action, action content, and time. The third step defines the attitude, subjective norms, and behavioral control beliefs corresponding to the behavior. The fourth step sorts out the important result, normative, and control beliefs based on the open views of the representative sample to this behavior. The fifth step develops the title (i.e., measurement index) of all composition scales for this theory based on these important beliefs in result, normative, and control. The establishment of the research tools and questionnaire execution of the present study followed the above steps.

**Data process**

1. **Overall adaptive index**

   SPSS for Windows 12.0 and LISREL 8.54 software package were used for the statistical analysis with the significant level set to \( \alpha = .05 \). According to the research purpose, the current study used Measures of Absolute Fit, Incremental Fit Measures, and Parsimonious Fit Measures to evaluate the overall adaptation based on the suggestion of Hair, Anderson, Tatham, and Black (1998). Therefore, \( \text{GFI} > 0.90, \text{AGFI} > 0.90, \text{RMSEA} < 0.08 \) and \( \text{NFI}, \text{NNFI}, \text{and CFI} > 0.90 \) were used as the standards of absolute fit and incremental fit of the model, respectively.

2. **Reliability and validity analysis of the designed questionnaire**

   This questionnaire adopts a theoretical basis to establish the scale; hence it directly measures reliability and validity analysis by verification factor analysis. The reliability test adopts composite reliability. Table 3 shows that the composite reliability of all factors are higher than the acceptance value of 0.6, indicating that four factors have better reliability (Bogozzi and Yi, 1988). For validity analysis, the present study adopted convergent validity, which adopted the method suggested by Anderson and Gerbing (1988). Here, the factor coefficient reflected by the observed variables must reach statistical significance of \( p < .05 \). Table 3 presents the factor coefficient of all observed variables reaching the statistical significance, which meets the level of convergent validity required by observed variables.
### Table 3: Summary of the confirmatory factor analysis in all factor dimensions

<table>
<thead>
<tr>
<th>Factor</th>
<th>Standard λ</th>
<th>t</th>
<th>Composite reliability</th>
<th>Mean variance extracted amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE1 instrumental beliefs</td>
<td>0.81–0.84</td>
<td>13.74*–14.17*</td>
<td>0.90</td>
<td>0.68</td>
</tr>
<tr>
<td>BE2 affectivity beliefs</td>
<td>0.78–0.81</td>
<td>12.15*–12.81*</td>
<td>0.83</td>
<td>0.63</td>
</tr>
<tr>
<td>Negative attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE3 risk beliefs</td>
<td>0.80–0.82</td>
<td>12.28*–12.40*</td>
<td>0.83</td>
<td>0.63</td>
</tr>
<tr>
<td>Objective norms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RG reference groups</td>
<td>0.69–0.88</td>
<td>17.04*–21.23*</td>
<td>0.92</td>
<td>0.66</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CP1 self-efficacy</td>
<td>0.62–0.85</td>
<td>11.91*–12.47*</td>
<td>0.85</td>
<td>0.60</td>
</tr>
<tr>
<td>CP2 convenience</td>
<td>0.71–0.86</td>
<td>13.40*–15.63*</td>
<td>0.89</td>
<td>0.62</td>
</tr>
<tr>
<td>Behavioral intention</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bi behavior intention</td>
<td>0.82–0.86</td>
<td>13.80*–14.22*</td>
<td>0.88</td>
<td>0.72</td>
</tr>
<tr>
<td>Behavior entrepreneurial behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

### ANALYSIS OF RESEARCH RESULTS

#### Constituent element of the antecedents

Based on the method proposed by Fishbein and Ajzen (1975), the cumulative percentage of the number of response of the subjects is the fundamental principle of capturing all important beliefs. The beliefs over 70% are the validity indicators of the quantitative contents (Wang Guochuan, 1997). A total of 10 important result beliefs of attitude were identified using content analysis. The first seven questions are positive beliefs, whereas the last three questions are negative beliefs. These beliefs are as follows: 1) improving individual wealth and income, 2) realizing individual entrepreneurial ideals, 3) pursuit of one’s personal sense of accomplishment, 4) pursuit of personal economic autonomy, 5) developing personal interests, 6) gaining life experiences, 7) maintaining or improving personal living standards, 8) bearing the risk of entrepreneurial failure, 9) causing individual income instability, and 10) bearing entrepreneurial costs (e.g., labor power, field, raw materials, miscellaneous payments, and so on). The cumulative percentages of the response are 80.3% and 75.5% for the positive and negative responses, respectively.

The important beliefs of subjective norms include the following: 1) parents, 2) relatives (e.g., brothers and sisters), 3) friends or colleagues, 4) couples or boy/girl friends, 5) relatives or eldership; and 6) governmental units. The cumulative percentages of the response number were 86.1% and 82.5% for approval and objection, respectively.

The important control beliefs of PBC are the following: 1) possessing sufficient capital, 2) acquiring professional capacity, 3) developing communication capacity with partners, 4) gaining sufficient physical strength, 5) gaining benefit from the small cost incurred by the entrepreneur, 6) availing of low loan rate, 7) better training systems, 8) better industry prospects, and 9) consulting measures of the government. The cumulative percentages of the response number were 75.3% and 71.2% for promotion and inhibition, respectively.
The above important beliefs have better content validity, which served as the sources for designing title items of scales in the questionnaires of the second stage, including behavior beliefs and result evaluation, normative beliefs and compliance motivation, and control beliefs and perceived strength.

**Analysis of the structural model of entrepreneurial behavior**

After screening important beliefs, the theoretical model and confirmatory factor analysis was followed by further dimensional analysis. In the dimension of attitude, increasing personal wealth and income, realizing personal entrepreneurial ideal, pursuit of personal economic autonomy, maintaining or improving personal living standard, and other behavioral beliefs aggregate into the factor of instrumental beliefs. Meanwhile, the pursuit of one’s sense of accomplishment, developing personal interests, improving life experiences, and other behavioral beliefs aggregate into the observed variable of Affectivity beliefs. Bearing the risk of entrepreneurial failure, causing personal income instability, bearing entrepreneurial costs (e.g., labor power, field, raw materials, miscellaneous payments, and so on), and other behavioral beliefs aggregate into the observed variable of Risk beliefs.

In subjective norms dimension, parents, relatives (e.g., brothers and sisters), friends or colleagues, couple or boy/girl friends, relatives or eldership, consulting units of government, and other normative beliefs aggregate into the factor of reference group. In the dimension of PBC, possessing sufficient capital, acquiring professional capacity, developing communication capacity with partners, gaining sufficient physical strength, and other control beliefs aggregate into the observed variable of Self-efficacy. Gaining benefit from the small cost incurred by the entrepreneur, availing of low loan rate, better training system, better industry prospect, consulting measures of the government, and other control beliefs aggregate into the observed variable of convenience.

By referring to the practice of Roberts, Varki and Brodie (2003), the present study reduced attitude, subjective norms, PBC, and behavioral intention to these four dimensions from the original second order model to the first order model; this was done in order to simplify the model. This method calculated the mean score of the observed variables as a single measure indicator of all factors once all dimensional factors went through confirmatory factor analysis (Anderson and Gerbing, 1988). Afterwards, TPB served as the basis for the model verification.

1. **Analysis of the adaptive degree of overall model**

   Based on the confirmatory factor analysis, the chi-square freedom ratio ($\chi^2/df$)=1.56, which is less than the standard value of 2 has been identified. The RMSEA value=.072, and SRMR value=.034 meet the standard of less than .08; GF1=.96, AGFI=.87, NFI=.97, NNFI=.94, and CFI=.97, meet the standard of more than .90; and PNFI =.51 meets the standard of .50. The results show that the adaptive measure indicators in the present study meet the standard accepted by the model with better model adaptive degree.

2. **Inner quality of the theoretical model**

   In the inner quality of the theoretical model, Table 4 shows that the factor load of observed variables to its potential variables increased to a significant level and has good validity evidence. Moreover, composition reliability (CR) of potential variables reached over 0.6, indicating better composition reliability (Bogozzi and Yi, 1988). Table 4 presents that the mean variance extracted amounts of all potential variables are more than the evaluating standard, 0.5. Therefore, this entrepreneurial behavior model had good inner quality.
**Table 4: Analysis of the evaluation indicators of the measure model**

<table>
<thead>
<tr>
<th>Latent variable</th>
<th>Observed variable</th>
<th>Measurement index</th>
<th>Standardization $\lambda$</th>
<th>$t$</th>
<th>Composite Reliability</th>
<th>Mean variance extracted amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive attitude</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.85</td>
<td>.74</td>
<td></td>
</tr>
<tr>
<td>BE1 instrumental belief</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>BE2 affectivity belief</td>
<td>.89*</td>
<td>17.77*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Negative attitude</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BE3 risk belief</td>
<td>1.00*</td>
<td>20.98*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Subjective norms</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rg reference group</td>
<td>1.00*</td>
<td>20.98*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Perceived behavior control</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.84</td>
<td>.73</td>
<td></td>
</tr>
<tr>
<td>CP1 self-efficacy</td>
<td>.77*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>CP2 convinience</td>
<td>.93*</td>
<td>12.94*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Behavior intention</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bi behavior intention</td>
<td>1.00*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>F entrepreneurial behavior</td>
<td>1.00*</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

* $t$ value of standardization parameters is up to significant level.

**Explanation strength of overall model**

The adaptive indicators of the previous model show the excellent overall adaptive degree of the behavior intention model configured in the present study and observed data. Therefore, hypothesis 1 is supported, indicating that the theoretical model can fully explain the observed data. After checking the adaptive degree of the model, the path relation of the intention model and participation factor estimate are analyzed, as shown in Fig. 3.

In the significant test of the estimated parameters of the path, the impact of subjective norms and PBC on behavior intention increased to a significant level; in comparison, the impact of attitude on behavior intention did not increase to a significant level. Therefore, the results of the present study support hypothesis 2. However, the direct impact of PBC on behavior did not increase to a significant level, because it only affected behavior through behavior intention. Thus, the results support hypothesis 3.

In addition, the impact effect of PBC on behavior $\lambda$ was 0.11, while that of behavior intention on actual participation behavior $\lambda$ was 0.16. The explained variability of latent variables (i.e., attitude, subjective norms, and PBC) to behavior intention ($R^2$) was .40, whereas the direct explained variability of behavior intention and perceived behavior control to actual participation behavior was .059. Meanwhile, indirect explained variability of attitude, subjective norms, and perceived behavior control to actual participation behavior through behavior intention was .027. Therefore, the total explained variability of latent variables in the model to actual participation behavior was 2.7%.
The proposed intention model reveals the excellent overall adaptive degree between model and observed data, proving that the theoretical model can fully explain observed data and further compare the effects of all variables. The significance test of estimated parameters of the model path shows that positive attitude, negative attitude, subjective norms, and PBC have significant impact on behavior intention. The direct impact effect of perceived behavior control on behavior did not reach a significant level, and such impact only influenced behavior through behavior intention. The model path shows that positive and negative attitudes have significant impacts on entrepreneurial behavior intention, with positive attitude at 0.42 and negative attitude at -.26. The Free & Young education program offers free registration; although some fees are required, the participating students showed positive attitudes and are highly interested in becoming entrepreneurs. An entrepreneur shows a kind of intense passion, so a positive attitude of entrepreneur can deeply affect entrepreneurial intention. In addition, the titles of negative attitude (i.e., bearing the risk of failure, instability of personal income, and bearing entrepreneurial costs) reveal that among females, the fear of experiencing entrepreneurial failure is an important factor influencing entrepreneurial intention. From the 15 key factors influencing entrepreneurial results reported by Lussier, personality traits and willingness to take risks are the subjective conditions of all entrepreneurs (Liu Changyong, 2002) with the geneogenous determinants of personal entrepreneur intention.

Subjective norms have a significant positive impact on entrepreneurial behavior intention, which shows that this behavior intention of female students mostly receive positive support and encouragement from groups, including families, couples, and relatives; moreover, professional consulting can further improve their entrepreneurial intention through the mutual assistance network provided by an organization (Free & Young education class, female entrepreneur consultant). Meanwhile, PBC has a positive impact on entrepreneurial behavior intention. Ajzen (1988) points out that the degree of PBC depends on the influence of inner factors (e.g., knowledge and skills) and external factors (e.g., the environment). When female entrepreneurs have high self-efficacy, in the form of professional knowledge, technical skill, abundant capital, good interaction with working partners and so on, along with external
favorable conditions including governmental consultations in the form of education classes, consultations, loans, and skill training), their entrepreneurial intention is enhanced.

In the discussion of factors influencing actual entrepreneurial behavior, the model path showed that behavior intention—and not PBC—can effectively influence actual viewing behavior; thus partly supporting the TPB argument. From the theoretical study, PBC can directly affect behavior based on two premises. First, the behavior to be predicted is not completely under the control of the human will and second, PBC reflects actual control to a certain degree (Ajzen and Madden, 1986). Entrepreneurial behavior is controllable behavior under an individual’s own will. The main barriers influencing female entrepreneurs (e.g., technology, capital, personnel, resources, and other conditions) can be solved by consulting through the Free & Young female entrepreneur education class. Therefore, actual control factors are reduced, indirectly reducing the impact of PBC on actual entrepreneurial behavior. Moreover, for the prediction of behavior intention, a previous study has pointed out that behavior intention is the best method to predict individual behavior in a given state (Ajzen, 1991). The present study verifies this theory; indeed, entrepreneurial intention can influence entrepreneurial behavior.

Finally, the total explained variability of latent variables of the model to actual participated behavior is 2.7%, indicating lower explanation strength. An explanation for this result is that this present research belongs to a multi-dimensional model based on belief using indirect measurement. Previous studies have shown that direct measurement has better explanation strength (Lv Wanzhen, Zheng Zhifu, 2008; Xu Jianming, 2006); however, indirect measurement cannot provide profound discussions on the structure of belief. Therefore, indirect measurement verifies the model in the present study. However, a limitation of the present study is that indirect measurement reduces the explanation strength of the model and its ability to understand the dimensional composite factors of all latent variables and influencing strength.

CONCLUSION

Research finding

By integrating the studies in the previous sections, the present study proposes the following three results:

1. Female students tend to young and individual service is the first choice.

The age of female students was concentrated on 26 to 35 years old; thus, entrepreneurial age tended to be young. In addition, education degree was based mainly on junior college educational background. Individual service industry predominated in the industrial type, closely followed by the beauty industry. There were around 60% of students without relative work experience before becoming entrepreneurs. From the six-month tracing investigation, the distribution of actual entrepreneurial behavior of female students revealed that 10% of the students are in the "entrepreneurs" and "set-start" phases, while 80% have no business plan.

2. Model adaptive degree and inner quality evaluation are good, thus the overall model can effectively explain entrepreneurial behavior.

The TPB framework serves as the basis for the design of the female entrepreneurial behavior model established in the present study. In addition, the design method of scale proposed by Ajzen was used to conduct the title searching. The proposed model had sufficient theoretical basis. Moreover, the model verification of SEM shows that this female entrepreneur model meets all adaptive indicators, and had better inner quality
evaluation. The establishment of this model explains the influencing factors of female entrepreneurial behavior effectively and develops the effective measure tools in predicting such behavior. The proposed model has profound significance and practical application in relation to female entrepreneur theory.

3. Attitude, subjective norms, and PBC effectively influence behavior intention, but only behavior intention can influence entrepreneurial behavior.

The model path shows that positive and negative attitudes, subjective norms, and PBC have a significant impact on female entrepreneurial behavior intention. Positive and negative attitudes and PBC can predict the intention of female entrepreneurial behavior. The attitude of female students include positive thinking, risk taking, and other characteristics that affect entrepreneurial intention. Entrepreneurial self-efficacy, convenience, and other factors directly influence entrepreneurial intention and cause actual entrepreneurial behavior by means of entrepreneurial intention.

Suggestion

The current study finds positive and negative attitudes, subjective norms, and PBC in model variables all have significant impact on female entrepreneurial behavior intention; moreover, PBC and subjective norms can predict such intention. Counselors can provide entrepreneurial health check, consultation, education, and other services. By means of enterprise diagnosis consultation as well as enhancement of e-business and other courses, students can possess industry technology and professional knowledge in marketing trends and enterprise management during the initial stage. In addition, difficulties met during the entrepreneurial process can be solved through e-consultation and diagnosis, service window for enterprise consultation, entrepreneurial information exchange platforms, and other methods accompanied by the conveyance of governmental resources. Counselors can further encourage family members, relatives, and friends of entrepreneurial females to participate. In addition, related activities enhance the support and care of the important groups to female students. Opening a relative female entrepreneur growth course can also be helpful in consulting female students to find out the balance leading to improved female entrepreneurial intention. Moreover, counseling units can also provide relative professional consulting services, including entrepreneur, law and operating management, to female entrepreneurs with the assistance of female volunteers. These programs can improve information communication and the interactive experiences of female entrepreneur groups, consolidating the emotional support and mutual-assistance network of female entrepreneur groups.

Meanwhile, positive and negative attitudes are key factors influencing female entrepreneurial intention. The students of the Free & Young program have high entrepreneurial interests and active, positive attitudes. Thus, transforming the fear of entrepreneurial failure into detailed risk taking is a project for counseling units to carry out. The model of successful female entrepreneurs can be used to enhance the positive attitude of female students; in this case, the scale of detailed entrepreneur risk analysis and entrepreneur appropriate assessment can make students understand their own conditions and environment. The scales can effectively reduce the negative attitude of female students and enhance entrepreneurial intention leading to actual entrepreneurial behavior.

In addition, entrepreneurial intention can influence entrepreneurial behavior in the future. After the courses, female entrepreneur counseling units can start trace counseling to the students with higher entrepreneurial intention and make referral counseling to those without such intention. Letting students know they are not fit to be entrepreneurs can also be a key point in reducing entrepreneurial failure rate.
REFERENCES


performance of women entrepreneurs". Unpublished master's thesis, Yu-Da University, TW.


Ru-Yi Li. (1998). "Discussing the influence on entrepreneurial behaviors of personal background · the motivation of venture and personality of entrepreneurs". Unpublished master's thesis, National Dong Hwa University, TW.


