

Exploring the Impact of Female entrepreneurs' Leadership characteristics, Social media use, Business Model Innovation and Employee's Job Satisfaction on Firm Performance^{*}

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Abstract

The purposes of this research were 1) to study role of female entrepreneurs leadership in firm performance, 2) to find impact of female entrepreneurs leadership characteristics on business model innovation and job satisfaction, 3) to find impact of social media use on firm performance. Research objectives 1 and 2 adopt quantitative research methods since the questionnaire was organized on the basis of the previous maturity scale. The objective 3 is used mixed method (quantitative and qualitative methods). For quantitative research, the sample is 385 Chinese female entrepreneurs from China Association of women entrepreneurs (CAWE). The proportional random sampling method was used a questionnaire to collect data. Statistical analysis is conducted through the use of structural equation modeling (SEM) analytical techniques using Smart PLS. For qualitative research, semi-structured and in-depth interviews with 15 female entrepreneurs who use social media operation were to collect data.

The results of qualitative research showed that: a major challenge in measuring firm performance lies in adapting traditional performance measurement methods to social media. But the results of the interview can still prove it social media use motivation, social media use learning approach and social media use methods are important reasons for social media use performance, which should be evaluated from both non-financial attention and financial sales. To sum up, this study established a link between female

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Entrepreneurs' leadership characteristics, social media use, business model innovation and employee's job satisfaction on firm performance. These variables composed the conceptual model of this study and represented the basic process of female leadership characteristics and social media use making an impact.

Keywords: Female entrepreneurs' leadership characteristics; Social media use; Business model innovation; Employee's job satisfaction; Firm performance

1. Introduction

Globally, an estimated 274 million women are involved in entrepreneurship, in addition to 139 million established business owners/female managers and 144 million female informal investors. In other words, women entrepreneurs are making a significant contribution to the global economy and society. (GEM 2020/2021). Hitt & Ireland (2015) proposed entrepreneurial leadership as the core element of strategic entrepreneurship, entrepreneurial leadership has gradually become the focus of the intersection of entrepreneurial research and leadership research focal point. Previous studies have not yet focused on gender differences in entrepreneurial leadership behavior. With the global boom of female entrepreneurship, female entrepreneurs and entrepreneurs have become important forces driving economic and social development (Kelley et al., 2011). In particular, female entrepreneurs

show a caring-oriented leadership style and their outstanding risk control ability. It has shown incomparable advantages in dealing with the 2008 economic crisis and the COVID-19 pandemic in the year of 2020-2022. At present, the global economic restructuring and transformation and upgrading after the epidemic is posing new challenges and opportunities for female entrepreneurs to lead organizational reform and innovation. The Entrepreneurial environment is very complex and full of change. It is of great theoretical and practical significance for female entrepreneurs to show what kind of leadership style and characteristics, how to motivate the enthusiasm and initiative of employees, and how to change and improve the business model of the company, so that the company can survive the epidemic period and achieve corporate performance. Therefore, the research of women's entrepreneurial leadership has become a new issue worthy of attention.



The COVID-19 pandemic has had a significant impact on women entrepreneurs due to the relatively weak resilience of small and medium-sized enterprises (SMEs), major changes in industrial chains and work-family conflict. According to the data of GEM 2022, Female entrepreneurs are more severely affected by the pandemic than their male counterparts. According to the survey, women were likely business closures due to the pandemic at 41.9%, while men were at 35%, as such, women were 20% more than men, countries in Europe and North America showed the largest gender gap, with female entrepreneurs 50 percent more likely to go bankrupt as a result of the pandemic than their male counterparts. The opposite is true in Central and East Asian countries, where male entrepreneurs are more likely than female entrepreneurs to go bankrupt due to COVID-19 -- 37% vs. 34%. In addition to regional differences, high-income, middle-income and low-income countries report the following results: In middle - income and higher-income countries, the ratio of entrepreneurs going bankrupt due to COVID-19 is 1.4 vs 1.3, with male entrepreneurs higher than female entrepreneurs. While the ratio of women to men in low-income

countries is 35.6% vs. 38.5%. The explanation for these results is likely to lie in work-family balance, business size, and industry characteristics. The COVID-19 pandemic has also had a significant impact on the entrepreneurial intentions of male and female entrepreneurs, according to the report. Globally, the average is 29.5% for women and 27.5% for men, indicating that the pandemic has had a significant impact on their entrepreneurial intentions. This suggests that the pandemic has had a greater impact on women's entrepreneurial intentions than men's. According to the data of GEM 2019/2020, in central Asia and east Asia, Latin America, the Middle East and Africa almost all economies, more than half of the early entrepreneurs entrepreneurial activities (total earlystage entrepreneurs, TEAs) is more difficult than a year ago, the outbreak of the delay of new business promotion and operation, this is a red signal for the prospect of Chinese enterprises, but is also a development opportunity. China's Early-Stage Entrepreneurship Index in 2019 (total earlystage entrepreneurial activity, TEA) is 8.7 (35/50), Lower from the results of the 2017/2018 GEM Report survey (9.9); Enterprise Employee Activities (entrepreneurial employee activity, The EEA) index is 0.2 (47/50),



Compared with the corporate employee activity index (1.4) in the past two years, Combined with the global economy, Trade frictions between China and the United States and COVID-19 have affected entrepreneurship in China to some extent, Enterprises themselves should take the initiative to build an employee sharing platform, Through Shared Employees, Cloud Recruitment, Develop entrepreneurial activities.

In the past three years, there has been a very important phenomenon that in the past two years, social media use have become an important firm strategic in business. Early 2020, the global economy was rocked by the COVID-19 pandemic. Before 2020, studies on the epidemic mainly focused on the medical field, with little attention paid to the impact of the pandemic on the global economy, corporate performance, consumer behavior, corporate strategy, and business model innovation. Many enterprises use social media to collect consumer feedback, promote and publicize brands, collect customer opinions, develop new products and improve services. Social media operations have become an integral part of corporate strategic planning.

Therefore, it is necessary to study how entrepreneurs can survive the pandemic

and lead employees to achieve business performance. The object and sample of this study are the growing group of female entrepreneurs in China. They have played an important role in China's vigorous economic development and are an important driving force for China's economic reform. At the same time, they also show the world the startling change in the status of women in China.

2. Research Objectives

1. To study the role of female entrepreneurs leadership in firm performance.
2. To find impact of female entrepreneurs leadership characteristics on business model innovation and job satisfaction.
3. To find impact of social media use on firm performance.

3. Methods

This research aims to explore how female entrepreneurs cope with drastic changes in the business environment and lead their employees to achieve business performance together in the context of change. Research objectives 1 and 2 adopt quantitative research methods since the questionnaires were based on previous



theories. The objective 3 is used mixed method (quantitative and qualitative methods) in this study since the questionnaire was prepared by the researchers. So it is necessary to conduct in-depth interviews to test the hypothesis. The details appear according to the research process as follows:

1st step: The researcher conducted the research using quantitative research methodology. By reviewing the literature and research related to the variables that affect Chinese female entrepreneurs firm performance consisting of female entrepreneurs' leadership characteristics, social media use, business model innovation and employee's job satisfaction. Determine indicators of variables according to the research concept. Then create a questionnaire according to the 5-level rating scale according to Likert 's (Likert, 1932, pp. 42-48) guidelines, with a test for validity, reliability of the gauge before using it. used to store data to lead to statistical analysis by using the analytical technique of structural equation modeling (SEM).

2nd step: The researcher conducts the research using a qualitative research methodology. The researchers used in-depth

interviews from female entrepreneur in China Association of women entrepreneurs (CAWE) were selected by purposive sampling to compile qualitative data. Categorizing and analyzing, interpreting, linking information to draw conclusions to explain the results of the quantitative analysis with more depth and reasoning.

3rd step: Key informants are:

3.1 Population and sample. In this research, the population is female entrepreneurs in China from the most well known women entrepreneurs association organizations, called the China Women Entrepreneurs Alliance (CWEA). In order to obtain a more reliable analysis result, the number of samples of exploratory element analysis must be full of two pieces:

3.2 Sample group 1) In terms of quantitative research, this study is using a structural equation model to analyze the causal relationship between the variables, which is the use of advanced research statistics. The sample size is calculated according to Cochran population unknown calculation formula. At a 95% confidence level, the researchers determined the maximum variance levels $p = 0.5$ and $q = 0.5$, as follows:



$$\begin{aligned} \text{Denote } N &= \frac{(1.96)^2(0.5)(1-0.5)}{0.05^2} \\ N &= 384.16 \end{aligned}$$

By calculation, the investigators adjusted the sample in the online questionnaire, that is, 385 people, 2) In terms of qualitative research, the researchers used in-depth interviews from 15 Chinese female entrepreneurs in China Association of women entrepreneurs (CAWE) by purposive sampling to compile qualitative data. Purposive sampling covers different stages (standards) of entrepreneurship, namely, the initial stage of entrepreneurship (less than 3.5 years) and the establishment period of entrepreneurship (more than 3.5 years), and it is further divided into career adaptation stage, selection stage and development stage according to the entrepreneurial experience of female entrepreneurs.

4th step: Tools and methods used in the study. For quantitative research, this study used questionnaires as a tool for data collection. Adopt a questionnaire based on literature about the relationship between the female entrepreneurs leadership characteristics, social media use, business model innovation, employee's job satisfaction and firm performance, which use 5-level Rating Scale. For qualitative

research, an in-depth interview will be used to obtain in-depth information. The interview will follow the questions of the research objective 3, that the effect of social media use to firm performance. This is an open questionnaire interview.

5th step: Data collection for quantitative research, the researcher has coordinated with the Beijing Women Entrepreneurs Alliance sent a notice to provincial branches to fill out questionnaires. A total of 400 questionnaires were issued in the formal survey, and 385 questionnaires were effectively recovered, with a recovery rate of 96.75%. For qualitative data collection, this study provides semi-structured and in-depth interviews with female entrepreneurs who use social media operations to understand the detailed process of her social media operations. Each interview takes approximately 1-1.5 hours, and 15 interviews total 22 hours.

6th step: Reliability and validity test. The study operated the survey by using measurement scales established and validated in prior studies. Then reliability and validity would be verified preliminarily at first. The instruments comprise quantitative



questions and respondents' basic information. The measurement items of 5 main variables contain 56 items measured by the Likert scale.

6.1 Pilot test. Before forming the formal questionnaire, it is necessary to analyze the validity of the measurement of relevant variables through pilot test, so as to realize the optimization of the questionnaire. Since the research background of this paper is slightly different from the original mature scale, in order to ensure the effectiveness of the subsequent large sample survey, this paper first conducts a pre-survey and conducts the small sample test of the initial test scale. The reliability and validity test of the small samples was conducted, the items that did not meet the requirements were deleted, and finally the large sample questionnaire was obtained. The researchers participated in a meeting of the Shandong Province Women Entrepreneurs Chamber of Commerce on May 15 and collected 57 questionnaires from the site. Questionnaires are generated electronically by Questionnaire Star (<https://www.wjx.cn>) and distributed during the intermission.

6.2 Formal survey. For the measurement model we assessed the

loadings, average variance extracted (AVE) and the composite reliability (CR). The values of loadings should be ≥ 0.5 , the AVE should be ≥ 0.5 and the CR should be ≥ 0.7 . The result shows that the AVEs are all higher than 0.5 and the CRs are all higher than 0.7. The loadings were also acceptable with only four loadings less than 0.700 (Hair et al., 2019, pp. 2-24). Since the study have 3 constructs which are second order namely 1. Female Entrepreneurs Leadership, 2. Firm Performance, 3. Social Media Use. The study also assessed the validity and reliability of the second order constructs. The second order measurement were also valid and reliable.

Then the study assessed the discriminant validity using the HTMT criterion suggested by Henseler, Ringle, & Sarstedt (2015, pp. 115-135) and updated by Franke & Sarstedt (2019, pp. 430-447). The HTMT values should be ≤ 0.85 the stricter criterion and the mode lenient criterion is it should be ≤ 0.90 . The result shows that the values of HTMT were all lower than the stricter criterion of ≤ 0.85 as such we can conclude that the respondents understood that the 9 constructs are distinct. Taken together both these validity test has shown that the measurement



items are both valid and reliable.

7th step: Data analysis. The researcher's data analysis was performed in the following order.

7.1 Quantitative data analysis.

1. Descriptive statistics. The study used mean and standard deviation. The results shows that the female entrepreneur leadership score was 3.76, the score of each dimension is 3.72-3.8 points, all were greater than 3.5 points, which show that female entrepreneur leadership is at the above-average level. Business model innovation score of 4.07, greater than 4 points, at a good level. Employee satisfaction score was 3.42 points, greater than 3 points, which indicates that the employee satisfaction score is above the average level. The social media use score of 3.79, each dimension was scored as 3.72-3.88 points, all were greater than 3.5 points, close to good levels. The firm performance score was 3.69 points, each dimension was scored as 3.67-3.71 points, all were greater than 3.5 points, that being at the above-average level. 2. Statistics for analysis Structural equation modeling (SEM) was used for model fit. The study reported the path coefficients, the standard errors, t-values and p-values for the structural model using a 5,000-sample re-sample

bootstrapping procedure.

7.2 Qualitative data analysis.

1. Open encoding. In open encoding, use native code whenever possible. The research object themselves shows some unique words, as reflect the research object conversation and meaning symbol, this helps to reflect the female entrepreneurs social media application situation and effect, considering the text finishing format will affect the effect of the integrity of the open coding in the "line coding", "sentence" and "word by word coding" according to the characteristics of the data, let the concept of nature. A total of 226 concepts were drawn from all data for 15 samples theoretically sampled. 2. Selective encoding. Selective coding is the second step of coding analysis, and is more directional, selective and conceptual than line-by-line, sentence-by-paragraph coding. This study needs to compare the initial concepts extracted during the open coding process, by "extracting" from the data and the core concepts associated with the social media application of the female entrepreneurial leadership process. Through the theoretical sampling analysis of female entrepreneurs and entrepreneurs in different entrepreneurial career stages, the contents of open coding



were merged and classified, and 18 sub-nodes with high correlation and occurrence frequency were extracted, and further merged and classified into 4 core nodes.

8th step: Summary of research results. The researcher has summarized the research findings from the analysis of quantitative and qualitative data in the following order: 1) the researchers used descriptive statistics to determine the mean and standard deviation, that to explain the level of variables affecting female entrepreneurs' firm performance. The researcher used the tool to collect data on a estimation scale. By averaging from the answer scores of scaled measures, each measure variable was compared with the criteria for interpreting the data. Then statistics for analysis Structural equation modeling (SEM) was used to analyze variables affecting female entrepreneurs' firm performance, and examining the harmony between the developed structural equation model and the empirical data, 2) the researcher summarizes and synthesizes the findings obtained from the data analysis to find the path and process of Social media performance, and verify social media can create value for companies and generate corporate performance.

4. Results

For the 1st objective, the study tested the effect of Female Entrepreneurs Leadership on Firm Performance, Employee's Job Satisfaction, Business Model Innovation. The effect of Female Entrepreneurs Leadership on Firm Performance ($\beta = 0.258, p < 0.01$), Employee's Job Satisfaction ($\beta = 0.199, p < 0.01$), Business Model Innovation ($\beta = 0.194, p < 0.01$) were all positively significantly, which gives support for H1-H3.

For the 2nd objective, the study tested the the effect of Employee's Job Satisfaction ($\beta = 0.168, p < 0.01$), Business Model Innovation ($\beta = 0.133, p < 0.01$), Social Media Use ($\beta = 0.281, p < 0.01$) on Firm Performance. The effect of Employee's Job Satisfaction, BusinessModel Innovation, Social Media Use on Firm Performance were all positively significantly, which gives support for H4-H5, H7.

For the 3rd objective, the study also tested the the effect of social media use ($\beta = 0.257, p < 0.01$) on firm performance is significant.

Knowledge Asset

The research is based on leadership theory and business model theory to propose a new theoretical framework. It is the first to empirically test the leadership



characteristics of female entrepreneurs in China against the background of COVID-19 and bring a new independent variable, social media use, into the framework and test the impact of it on BMI and firm performance. Based on this framework, a conceptual model including female leadership characteristics, business model innovation, employee's job satisfaction and social media use is constructed to verify the reasons why Chinese female entrepreneurs led their employees to achieve business performance during the epidemic. It fills the theoretical and practical gaps in related fields.

5. Discussion

The objective 1 found that female entrepreneurs leadership has significant influences on firm performance ($\beta = 0.197$, $p < 0.01$). Consistent with the research of women's entrepreneurial leadership is to cope with a variety of dynamic and complex changes and inclusive change environment, give full play to women's unique gender advantages, and promote the continuous change and firm performance.

The objective 2 found that female entrepreneurs leadership positively

influences employee's job satisfaction ($\beta = 0.199$, $p < 0.01$), business model innovation ($\beta = 0.194$, $p < 0.01$). Consistent with the finding that, both the cooperation, affinity, and caring of the change leather leadership can enhance the individual activeness and job satisfaction of employees, thus positively affecting organizational performance. (Moudry and Thaichon, 2020), and Dorta-Afonso, D., Gonz' alez-de-la-Rosa (2022) show that job satisfaction determines organizational performance more than organizational performance. The founding of the study also consistent with the fact that leadership issues are closely related to business model innovation, and that its success depends on leadership skills (Saebi, Lien, & Foss, 2017, pp. 567-581).

The objective 3 found that social media use ($\beta = 0.257$, $p < 0.01$) positively influences on firm performance. Consistent with the fact that since the outbreak of COVID-19, the application of social media has greatly changed the behavior pattern of consumers' choice (Mason, Narcum, & Mason, 2021). Social media operations have become an integral part of corporate strategic planning.



Table 1 Hypothesis Testing

| Hypothesis | Relationship | Std Beta | Std Error | t-values | p-values | BCI LL | BCI UL |
|------------|--|----------|-----------|----------|----------|--------|--------|
| H1 | Female Entrepreneurs Leadership -> Firm Performance | 0.197 | 0.050 | 3.994 | 0.000 | 0.099 | 0.293 |
| H2 | Female Entrepreneurs Leadership -> Employee's Job Satisfaction | 0.199 | 0.050 | 3.903 | 0.000 | 0.098 | 0.292 |
| H3 | Female Entrepreneurs Leadership -> Business Model Innovation | 0.194 | 0.050 | 3.856 | 0.000 | 0.093 | 0.289 |
| H4 | Employee's Job Satisfaction -> Firm Performance | 0.167 | 0.048 | 3.435 | 0.001 | 0.072 | 0.261 |
| H5 | Business Model Innovation -> Firm Performance | 0.134 | 0.051 | 2.615 | 0.009 | 0.034 | 0.231 |
| H6 | Social Media Use -> Business Model Innovation | 0.182 | 0.061 | 2.952 | 0.003 | 0.061 | 0.299 |
| H7 | Social Media Use -> Firm Performance | 0.257 | 0.047 | 5.440 | 0.000 | 0.162 | 0.349 |

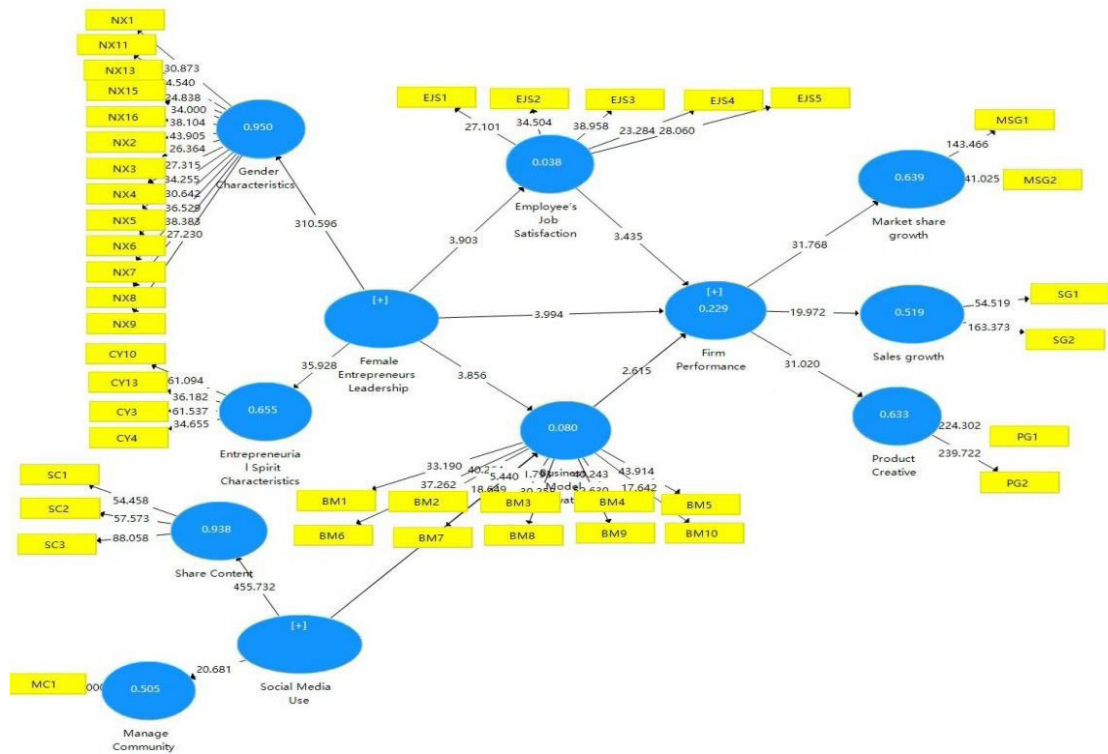


Figure 1 Final Result of Structural Equation Modeling

Conclusion

This study established a link between female Entrepreneurs' leadership characteristics, social media use, business model innovation and employee's job satisfaction on firm performance. These variables composed the conceptual model of this study and represented the basic process of female leadership characteristics and social media use making an impact. The research results show that: Change-mindset, Innovation, Risk-control,

Cooperation, Affinity, and Caring by female entrepreneurship leaders can effectively stimulate employees' individual body activity and improve employees' job satisfaction. Thus affecting corporate performance. At the same time, the entrepreneurial spirit in female leadership can effectively promote the innovation of enterprise model, thus affecting the performance of the company. In addition, the use of social media has a profound effect on corporate performance in the current environment full of uncertainty.



And it also plays an important role in promoting the reform of the business model of enterprises, and thus has significant influences on firm performance. The interaction of these variables is the key reason why Chinese women entrepreneurs who have survived the COVID-19 pandemic.

6. Suggestions

1. The suggestion for using the finding of the research

1.1 For women entrepreneurs, a good balance of entrepreneurship and female gender characteristics can help motivate employees and achieve business performance. Therefore, women entrepreneurs should have a clear understanding of their role and be committed to growing both individually and as a team.

1.2 For corporate strategy. It is very important to integrate social media operations into corporate strategy, which is an important way for Chinese enterprises to adapt to the current Chinese market and transform their business model.

1.3 For human resource management. It is essential to recruit people who are skilled in social media operations and provide employees with the necessary training in social media operations.

2. The suggestion for future research

2.1 Due to the limitation of research time and budget, the data collection didn't cover all emerging economies enterprises. The study should cover more emerging economies enterprises in the future.

2.2 In the interview, it is found that whether women personally take care of their children is also an important reason affecting the performance of small enterprises, which is not discussed and verified in the paper, and can be studied in the future.

2.3 The decision-making process of entrepreneurs adopting social media strategies can collect more sample data for quantitative analysis in the future to verify its effectiveness.

7. Knowledge Assets

This research is based on leadership theory and business model theory to propose a new theoretical framework. Based on this framework, a conceptual model including female leadership characteristics, business model innovation, employee's job satisfaction and social media use is constructed to verify the reasons why Chinese female entrepreneurs led their employees to achieve business performance during the



epidemic. It fills the theoretical and practical gaps in related fields. The research results show that: Change-mindset, Innovation, Risk-control, Cooperation, Affinity, and Caring

by female entrepreneurship leaders can effectively stimulate employees' individual body activity and improve employees' job satisfaction.

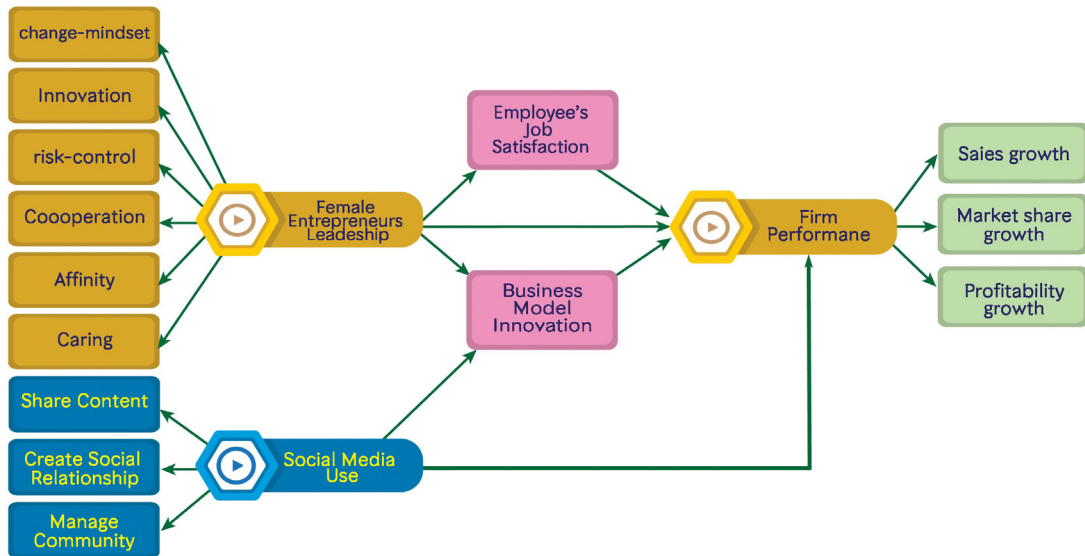


Figure 2 The decision-making process of entrepreneurs adopting social media strategies

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