

DO THE CHARACTERISTICS OF STARTUP FOUNDERS MATTER FOR FUNDING PERFORMANCE?

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ABSTRACT

Introduction/Main Objectives: Based on the upper echelons theory, this research examines the role of startup founders' characteristics on startup funding performance (SFP). This study considers the founder's experience, education, and gender as the characteristics that positively affect the SFP. **Background Problems:** While academia and industry emphasize the importance of startup funding performance (SFP), the empirical evidence on its determinant has received less attention. Yet, upper echelons theory addresses the importance of a leader's characteristics in increasing the organization's performance. Therefore, the current study focuses on investigating the role of startup founders' characteristics in the SFP. **Novelty:** The current study proposes the founder's characteristics as the key factor for startup funding. Unlike previous studies, this study utilized a survey design to answer the research question. Additionally, this study is the pioneer for entrepreneurial finance studies in gauging the upper-echelons framework. **Research Methods:** This research collected information from 228 Indonesian Startups through a survey. The estimation model is estimated using robust cross-sectional OLS regression and logistic regression. For robustness purposes, this study tackles the endogeneity issue by using two-stage least squares (TSLS) and PLS-SEM. **Finding/Results:** The regression results (including the two-stage least square approach) reveal that education and gender play a significant role in SFP but not experience. Moreover, it shows that higher education would increase a startup's probability of having better funding. Meanwhile, male entrepreneurs have lower funding performance than women entrepreneurs. **Conclusion:** Our study surmises that the education of the founders is crucial for startup financing in Indonesia. It also shows that the experience of founders has a trivial effect. It supports the upper echelons theory, emphasizing the pivotal role of founders' characteristics in entrepreneurial finance. Policy-wise, focusing on education can enhance startup success while addressing gender disparities is crucial. However, limitations exist, suggesting the need for longitudinal studies and broader sample sizes. Future research could explore managerial abilities and cultural factors, offering fresh insights into the literature.

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INTRODUCTION

Funding is a vital resource for a startup to overcome its vulnerability and exposure to failure during its early life stages. Failure in accumulating funding is like a death sentence for the startups, which is aligned with the anecdotal evidence from Forbes¹: "90% of startups failed with 21.5% of it failed in the first year, and it is due to the lack of funding". Therefore, the founders need to convince investors through a series of pitching for higher funding.

Entrepreneurial finance literature exploits this problem with two approaches. First, several empirical findings explore the role of organizational factors from the resource-based view perspective, such as startup size (Quas&D'Adda, 2018; Coleman et al., 2016), asset intangibility (Quas&D'Adda, 2018), turnover (Coleman et al., 2016), and innovation (Kim et al., 2018; Spender et al., 2017). Conversely, the proponents of upper echelons theory argue the importance of the founders' characteristics for startup success. This school of thought addresses that education (Soejono et al., 2015; Franco et al., 2021), experience (Honoré, 2022), and gender (Kanze et al., 2018) are critical factors in the entrepreneurship success story. A systematic literature review from Tenca et al. (2018) concludes that the managerial ability of entrepreneurs is a crucial factor in the success story of a startup.

In the theoretical development of entrepreneurship literature, the findings of organizational characteristics' effect on startup performance have reached a consensus. Those variables, such as the firm's size, age, reputation, and type of business, are commonly used as the control variables to isolate the effect of other factors on startup dynamics. However, unlike those resource-based views (RBV)-related variables, the upper-echelons approach still lacks evidence

of the significant characteristics. As seen in **Table 1**, empirical literature focuses more on the separate dimension of the founder's characteristics, and little has attempted to exploit the determinant of the startup performance.

Zooming into the detailed observation of **Table 1** reveals that most research is dominated by secondary data. It seems that it is hard to collect the personal characteristics of the founders by hand through a survey research design because of its accessibility. Entrepreneurship researchers in this field commonly retrieve data from national surveys, Kaufman databases, or Crunchbase databases. Nevertheless, those databases provide mixed empirical findings about founders' characteristics and performance relationships. We also argue that startup as an ideal empirical setting was hardly accessible until recent years. Identifying which registered startup we should approach for the research was difficult, leaving a constraint for the researchers in conducting the survey research design. Nowadays, most countries have their own agency for startup registration, and the Crunchbase database is accessible for cross-checking the startup's existence, leading to the ease of the data collection process.

In addition, most entrepreneurship literature focuses on the output of the startup dynamics, such as innovation, formation, or alliance, rather than the vital factor in a startup: total funding raised. It is intriguing that entrepreneurship research rarely explores the startup performance from the perspective of the total fundraised amid several attempts such as Franco et al. (2021) and Zhang (2011). These two research findings use secondary data to investigate the role of founders' characteristics on total fundraised. Notably, many empirical findings have not investigated the comprehensive founders' characteristics: gender, experience, and education. Hence, it leaves us a research gap to tackle.

According to upper-echelons theory, top executives and founders make strategic decisions through personalized lenses (Hambrick and Mason, 1984; Hambrick, 2007). Based on this logic, upper-echelons theory broadly suggests that the organizational outcome of startups is (partially) determined by the founders' characteristics (Mason, 2007). This logic suggests that when the startup needs more funding to operate the business, experience, education, and gender may play an important role in convincing the investors.

Given the importance of the personal characteristics of the founders in accumulating startup funding, a better understanding of how specific characteristics may play a crucial role in entrepreneurial finance is critical for the literature. However, this topic has received a lack of attention and is thus poorly understood. Questions regarding the performance of startup entrepreneurs are crucial for entrepreneurship literature, especially the discussion on upper echelons theory, yet remain largely unexplored. We aim to fill this lacuna by investigating the causal relationship under upper-echelons theory. The hypothesis is tested deductively to answer the intriguing research question: "Do the founders' characteristics matter for startup funding performance?".

To put it in a shed of light, addressing the relationship between founders' characteristics and startup funding performance (hereafter SFP) is our focus. Our objective is to investigate the role of CEO characteristics, such as Gender, Experience, and Education, on the SFP. Unlike previous research (refer to Table 1), we use primary data. Hence, we designed our research tool and disseminated our questionnaire to

startup founders through a survey. The questionnaire items were developed based on previous research (adopted-adapted items). This approach allows us to enrich the entrepreneurship literature, which is dominated by non-obtrusive methods, student-based experiments, and RBV-framed findings. It also allows us to investigate important yet still unanswered questions regarding SFP determinants from the perspective of upper-echelons theory.

This research makes several contributions. First, we test one of the most widely held but weakly tested assumptions in the entrepreneurship literature: that the founders' characteristics significantly affect startups' dynamics, specifically for startup funding. We provide empirical evidence that certain types of founder characteristics, namely, their education, gender, and experience, might play an important role in SFP. This hypothesis is framed under the upper-echelons theory, and our empirical findings support the theory. Second, we follow the prior studies in finance related to top executive characteristics, whereas experience, education, and gender are the dimensions. Previous studies (see **Table 1**) focus only on one or two dimensions. Lastly, unlike previous studies, which heavily rely on secondary data, our study uses a survey design, providing another dimension of the empirical investigation. In sum, this research's findings thus crystallize the effect of characteristics of startup founders on SFP.

In the next section, we review the theory and develop the hypothesis. Then, we describe and discuss the methodology and results. Finally, the last section concludes the research and offers some future directions.

Table 1. Literature Summary

Author	Samples	Approach	Factors	Dependent Variables	Results
Franco et al. (2021)	Startups	Secondary Data	Education	Funds Raised	Positive Association
Zhang (2011)	Startups	Secondary Data	Experience	Funds Raised	Positive Association
Sundermeier & Kummer (2019)	crowdfunding campaigns	Experiment	Personality Traits	Crowdfunding Raised	Positive Association
Brahmana & Kontesa (2023)	crowdfunding campaigns	Text-mining	Narcissistic Founders	Crowdfunding Raised	Negative Association
Cumming et al. (2016)	Startups	Secondary Data	Gender, education, and experience	Startup exit	Experience has a positive association, but education has a negative effect
Lee & Lee (2015)	Startups	Secondary Data	Education and Experience	successful entrepreneurial exit	Positive Association
Gaio et al., (2022)	Startups	Secondary Data	Education, Experience, and Gender	Cash Holding	Gender has positive associations
Brown et al. (2019)	Startups	Secondary Data	Experience, education, and gender	Entrepreneurial size	Positive Association
Symeonidou & Nicolaou (2018)	Startups	Secondary Data	Experience and Education	Startup Performance	Experience has a positive association
Stucki (2016)	Startups	Secondary Data	Experience, education, and gender	Startup International Sales	Partially positive association
Kato et al. (2015)	Startups	Survey	Experience and Education	Innovation	Experience partially increases innovation
Naude et al. (2008)	Startups	Secondary Data	Education	Entrepreneurial activity	Positive Association
Ahn et al. (2009)	Startups	Survey	Experience	Startup Alliance	Positive Association
Corolleur et al. (2004)	Startups	Secondary Data	Education and Experience	Startup Creation	Positive Association
Mazzarol et al. (1999)	Startups	Secondary Data	Gender, education, and experience	Startup Formation	Gender and experience have a negative association

Source: Compiled by authors from the Scopus database

LITERATURE REVIEW

1. Upper-Echelons Theory and Founders' Characteristics

The upper echelons theory, first introduced by Hambrick and Mason (1984), provides a better understanding of how top executives' personality characteristics influence their strategic decisions; hence, they affect the organization. This theory

posits that variance in executive characteristics drives numerous organizational outcomes. The empirical findings conclude that executives filter, analyze, and interpret business problems based on personal values (Hambrick & Mason, 1984; Hambrick, 2007).

Economics and business literature in this area construe personal values in many ways,

such as personality (von den Driesch et al. (2015), psychosocial (Yang et al., 2021), and characteristics (Shen et al., 2021). The empirical findings show those values are significantly related to performance (Al-Matari, 2022; Liu & Jiang, 2020), unethical decisions (Bouaziz et al., 2020; Kontesa et al., 2021), innovation (Cucculelli, 2018), Internationalization (Ramón-Llorens et al., 2022), financing (Jiang & Liu, 2020), CSR (Velte, 2019), and compensation (Leszczynska & Jiang, 2020). This field is dominated by CEO characteristics instead of entrepreneurs and is extensively tested on listed companies instead of startups.

Indeed, each upper echelons construct (personality traits, culture, psychosocial, and characteristics) has its rationale in its significant relationship with the organization. One may argue that personality traits are more important than culture, or lifestyle is more important than characteristics. However, our study does not pursue that direction, coping with the debates by testing all constructs separately. Instead, we take it as the limitation of our study and leave it for future research to test other upper echelons constructs within the context of startups.

Meanwhile, in small business literature, upper-echelons theory is usually utilized to frame how the character of entrepreneurs determines the business dynamics, such as performance (refer to **Table 1**), innovation (Ahn et al., 2017; Nurhayati et al., 2021), SME internationalization (Saeed & Ziaulhaq, 2019), entrepreneurial orientation (Tang et al., 2021), and small business financing (Zor et al., 2019). Most likely, the findings support the upper echelons by addressing the importance of entrepreneurs' characteristics for businesses. It is aligned with the meta-analysis from Jin et al. (2017), which surmises that most entrepreneurship literature agrees on the unique effects of entrepreneurs' characteristics on startups.

2. Founders' Characteristics and Startup Funding

Given the vast amount of research on top executive characteristics with upper echelons theory as the framework, it is surprising that the findings and theoretical assumptions from this area have not been extensively explored within the startup context. Most findings are theorized and investigated based on listed companies or SMEs. Moreover, the current startup literature heavily exploits the startups' dynamics and neglects the importance of startup funding determinants. If any, the existing literature only partially examines the characteristics or uses the secondary data approach. Therefore, we leverage insight from the listed companies, SMEs, and the available similar research findings to develop our hypothesis.

Previous findings with listed companies and SMEs as the unit of analysis have the role of top executives (CEOs for listed companies and entrepreneurs for SMEs) on the organization's performance comprehensively. For instance, Nguyen et al. (2018) observed 2702 Australian firms over 2011-2011. They found the vital role of CEO tenure in a firm's value. Kaur and Singh (2019) affirm that conclusion by revealing the negative effect of CEO tenure on firm performance. They also found a negative association between CEO gender and firm performance in Indian listed companies. Meanwhile, Liu and Jiang (2020) report the negative association between CEO tenure and firm value in Chinese listed companies.

From more recent findings, Shen et al. (2021) investigate the effect of CEO characteristics on Australian firm performance. They found that CEO education is a key factor in the firm performance. Al-Matari (2022) re-affirms the conclusion from the context of Saudi Arabia. The tenure and expertise of top executives would increase the financial firm's performance.

However, Cho & Lee (2018) found that education has a negative effect on business performance.

Table 1 reveals that each founder's characteristics have different and unique findings for different organizational dynamics measures in the startup context. For example, founders' experience has a positive relationship with startups' exit (Cumming et al., 2016; Lee & Lee, 2015), size (Brown et al., 2019), international sales (Stucki, 2016), innovation (Kato et al., 2015), alliance (Ahn et al., 2019), and creation (Corolleur et al., 2004). Even though the positive relationship dominates it, the founders' experience has a negative or insignificant effect on the cash holding (Gaio et al., 2022) and formation (Mazzarol et al., 1999).

The same conclusion is found on the founders' education effect, whereas the positive effect prevails in the empirical findings. The findings compile the positive influence on startups' exit (Lee & Lee, 2015), size (Brown et al., 2019), international sales (Stucki, 2016), performance (Symeonidou & Nicolaou, 2018), entrepreneurial activity (Naude et al., 2008), and creation (Corolleur et al., 2004; Rostiani et al., 2014). Only a few studies show the inverse or insignificant effects, such as Mazzarol et al. (1999 on startup formation), Kato et al. (2015 on startup innovation), Symeonidou & Nicolaou (2018 on startup performance), and Gaio et al. (2022, on startup cash holding).

The last personal characteristic, according to upper echelons theory, is gender. In the entrepreneurship literature, there is a consensus related to the gender gap in entrepreneurial orientation (Brush et al., 2019; Manolova et al., 2020). Within the startup context, the results are mixed. For instance, Cummings et al. (2016) found the insignificant effect of gender on startup exit. However, Gaio et al. (2022) and Brown et al. (2019) found a positive effect on

startups' cash holding and size. This is intriguing, considering other characteristics (education and experience) are usually positively associated with startups' performance. Using the postulation of upper echelons theory, gender should significantly affect business, whereby there is a significant difference in business dynamics between male-dominated founders and female-dominated founders of startups.

Several attempts have been made to examine the effects of the founders' characteristics on startup funding. For instance, Zhang et al. (2011) found a positive relationship between the founders' experience and startup funding, surmising that higher education leads to higher total funding. There is also Franco et al. (2021), who found a positive association between founders' education and startup funding, concluding that founders with better education would have better SFP. Yet, those empirical findings are limited to certain characteristics, such as experience (Zhang et al., 2011) and education (Franco et al., 2021).

Theoretically, upper echelons theory argues that individuals view their situation through personalized lenses and that individualized construal arises from their personal characteristics. Given that this theory posits the importance of personal characteristics for an organization, we should expect that better founders' characteristics would raise higher funding for their startups. Thus, we hypothesize:

H1 : Founders' characteristics will positively affect startup funding performance.

H1a : Founders' gender will positively affect startup funding performance.

H1b : Founders' experience will positively affect startup funding performance.

H1c : Founders' education will positively affect startup funding performance.

METHOD, DATA, AND ANALYSIS

This research collected the data by distributing the questionnaire to Indonesian startup companies. We use the Indonesia startup directory with a sampling frame of 1,722 Startups (registered startups per 2021). Initially, we received the list from the Directorate General of Informatics Applications, part of Indonesia's Ministry of Communication and Information Technology. We then cross-referenced this list with the Crunchbase database to ensure accuracy (Refer to our note for the list). However, many startups have not disclosed the complete data needed in this research, such as no email or contact address. Because our survey design is more email-based, we sent them three follow-up reminder emails within three months with the appropriate information regarding the study's objectives. The questionnaire also contains information related to the consent to use the information to achieve the research objective. Even though the standard practice for non-respondent error is six months, we did compare t-tests for the first and the second 45 days of SFP to ensure there was no non-respondent error. The results in **Table 2** reveal that non-response bias does not exist. In the end, our data ends with 288 startups.

Table 2. Statistically Significant Differences Between Responses of First and Second Window

Variables	Mean Difference	t-test
SFP	-0.12	-0.57
Education	-0.21	-1.02
Gender	0.06	1.42
Experience	-0.49	1.34
Reputation	0.16	1.11
SocMed	0.08	0.51
Age	-0.01	-0.12
Founder Size	0.09	0.69
Size	0.19	1.46

Source: Calculated by authors

Our estimation model is framed under the theoretical framework of upper-echelons theory and previous empirical findings to specify our regression model. Our regression model is as follows:

$$SFP_i = \beta_0 + \beta_1 Education_i + \beta_2 Gender_i + \beta_3 Experience_i + \beta_4 Reputation_i + \beta_5 SocMed_i + \beta_6 Age_i + \beta_7 FounderSize_i + \beta_8 Size_i + \beta_9 Type_i + \varepsilon_i \quad (1)$$

We follow the literature on entrepreneurship in developing our constructs. Our dependent variable, startup funding performance (SFP), is the total funding acquired by the startups. This measurement implies the financing success in earning funding for their operation. The total funding is transformed into a natural logarithm form. For robustness reasons, this research also employs alternative measurement, the dummy variable of the funding performance. If the funding exceeds the 75th percentile, we score "1"; otherwise, we score "0".

Our main independent variable is the founders' characteristics, which we operationalized using three commonly used characteristics: education, gender, and experience. The education is measured on a five Likert scale, in which "0" implies no formal education, "1" is for an undergraduate degree from a non-200 QS university ranking 2020, and "2" is for the undergraduate degree from a top 200 QS university ranking 2020, "3" is for a postgraduate degree from non-top 200 QS university ranking 2020, "4" is for the undergraduate degree from top 200 QS university ranking, "5" is for a postgraduate degree from top 200 QS university ranking. We adopt this education level from Kontesa et al. (2020), which is a modification of Reeb and Zhao (2013).

Meanwhile, our gender measurement is straightforward: "1" for men entrepreneurs and

"0" for women entrepreneurs. In terms of experience, we measure it by taking the working experience of the founders sitting as top executives. We use open-ended questions to measure and transform them into a Likert scale to capture the experience, in which "0" is for no experience, and "5" is the highest percentile.

This research includes several control variables to isolate the effect of founders' characteristics on SFP, which are chosen from previous research. This research considers reputation ($Reputation_i$), breadth of social media ($SocMed_i$), startup age (Age_i), the number of founders ($FounderSize$), startup size ($Size_i$), and the type of startups $Type_i$ as the control variables.

Reputation is measured by checking the startup's CrunchBase reputation score. The breadth of social media is measured by the ratio of the number of actively used social media. Startup age is the age of the startup from its establishment to the research period. We take the natural logarithm of age as the final construct. Startup size is the natural logarithm of the total employees of the startups. Lastly, the number of founders is measured by the total number of founders of the startups. One tenet of the

measurement is that the founders are also the top executives, especially since most of our samples are still under the Pre-Seed and Seed A stages. This is aligned with Aryadita et al. (2023) and Abebe et al. (2020). A complete list of variable definitions is provided in **Appendix A**.

RESULT AND DISCUSSION

1. Descriptive Statistics

Table 3 presents the mean value of 1.05 with a maximum value of 5.14. In nominal terms (raw data), the highest is USD 5.15 million, with a mean value of USD 1.05 million. This value aligns with a survey from Katadata, where the average funding of Indonesian startups was USD 500K for pre-seed A, which increased to 4.6 million if it was Seed A funding. Table 3 also reports the summary statistics for the main independent variables: education, gender, and experience. The mean value of education is 2.49, with a standard deviation of 1.44, implying the Indonesian startup founders had undergraduate degrees from the top 200 QS-ranking universities. The relatively high standard deviation implies a moderate gap in education level among founders.

Table 3. Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Funding (Value)	1.05	1.56	0	5.14
Education	2.49	1.44	1	5
GENDER	0.90	0.31	0	1
Experience	2.60	1.34	1	5
Reputation	12.29	1.13	6.03	13.76
Socmed	2.50	1.12	1	4
Year of Establishment	2014	3.58	1990	2019
Age (LN)	1.61	0.52	0	3.40
Founders	1.82	0.96	1	9
No of Employees	27.59	94.19	2	877
Size (LN)	2.36	0.87	0.69	6.78

Source: Calculated by authors

In terms of gender, the mean value is 0.9, implying the domination of males as startup founders. It aligns with Brush et al. (2019) argument that women entrepreneurs are less likely to explore startup businesses. Our gender statistics are slightly lower than those of Corolleur et al. (2004), with a mean value of 92.5% for French startups. In addition, the mean value of experience is 2.6, with a standard deviation of 1.34. It implies that most startup founders in Indonesia have less experience, which is a tally with the conclusion from Corolleur et al. (2004).

Table 4 presents the correlation between the founders' characteristics and funding value, providing a preliminary view of their univariate associations. It shows that only education is significantly associated with SFP, implying that high education is positively associated with SFP. Meanwhile, the other characteristics (Gender and experience) have small correlation coefficients with funding performance. All the control variables have the expected signs. For example,

high reputation, many social media platforms, older startups, big size of founders, and larger startups are positively associated with funding performance.

2. Regression Results

The results for hypothesis testing (the positive relationship between founders' characteristics and SFP) are estimated under robust cross-sectional OLS regression and logistic regression. All estimation results are presented in Table 5. It is noteworthy that both regression models (robust OLS and Logistic) have consistent conclusions. First, we describe the results from the cross-sectional OLS regression followed by the logistic regression result. The OLS regression reveals that founders' education and SFP have a positive relationship ($\beta = 0.15$, $SE = 0.05$), suggesting that the higher education level achieved by the founders earns more extensive funding than their peers. Our results are consistent with the findings from Franco et al. (2021) and Symeonidou & Nicolaou (2018).

Table 4. Correlation Matrix

	Funding	Education	GENDER	Experience		
Startup Funding Performance	1					
Education	0.36	1				
GENDER	0.07	0.04	1			
Experience	-0.03	0.01	0.23	1		
reputation	0.34	0.11	-0.02	-0.13		
socmed	0.63	0.27	-0.12	-0.12		
age	0.12	0.03	-0.11	-0.06		
founder	0.17	0.15	-0.14	0.11		
size	0.39	0.18	0.02	-0.06		
	Reputation	Socmed	Age	Founders	Size	
reputation	1					
socmed	0.33	1				
age	0.05	0.06	1			
founder	0.22	0.15	0.11	1		
size	0.08	0.07	0.08	0.10	1	

Source: Calculated by authors

Our cross-sectional regression results in Table 5 also report the relationship between founders' gender and SFP. The cross-sectional regression surmises a negative relationship between gender and SFP ($\beta = -0.80$, $p = 0.34$), indicating the funding of male founders is underperformed compared to the female founders.

As mentioned above, we also tested the hypothesis using logistic regression. We modify the dependent variable by treating it as a dummy variable: high funding vs. low funding. The median value (1.05, refer to Table 3) is the threshold to classify high and low funding. If the funding achieved by the startup is higher than the median value, we score it "1"; otherwise, "0". Then, we re-run the estimation model under the logistic regression regime.

Table 5 reveals that founders' education has a positive relationship with SFP ($\beta = 0.79$, $SE = 0.21$), implying that founders with higher

education levels are more likely to achieve high funding. Meanwhile, the gender of founders has a negative relationship with SFP ($\beta = -3.21$, $p = 1.01$). It affirms our earlier findings, indicating that male founders have a lower probability of increased funding than female founders.

In addition, we find that the founders' experience does not affect the SFP, indicating that no matter whether the founders have tremendous experiences or are less experienced, it would not affect the SFP. High experience does not mean good funding ability. Less experience also does not mean lousy funding ability.

An analysis of the control variables' impact on SFP shows that all control variables positively affect SFP, except for AGE, FOUNDERS, and TYPE. It implies that better startup reputation, breadth range of startup social media, and larger startup are important factors for SFP.

Table 5. Founder's Characteristics and Funding Performance

	Value-robust cross-sectional		Dummy -Logistic	
	Beta	SE	Beta	SE
<i>CEO Characteristics</i>				
education	0.15***	0.05	0.79***	0.21
gender	-0.80**	0.34	-3.21***	1.01
experience	0.05	0.06	0.32	0.22
<i>Control Variables</i>				
reputation	0.14*	0.08	0.45**	0.23
socmed	0.78***	0.09	2.21***	0.37
age	0.21*	0.12	0.64	0.55
founder	0.05	0.09	0.17	0.36
size	0.57***	0.13	1.87***	0.55
type	0.05**	0.02	0.1	0.09
Constant	-0.88	1.16	-7.05**	3.50
N	188		188	
R2/Pseudo R2	0.59		0.59	

Note: *, **, and *** denote 1%, 5%, and 10% significance level

Source: Estimated by authors

3. Robustness Check

We performed several additional tests, such as robustness tests, to explore our primary results further. First, we perform a robustness check to address endogeneity concerns by employing the Two-Stage Least Square approach (TSLS). We argue that the potential of omitted variable bias, simultaneity, and reverse causality may incur in our robust OLS regression.

We first estimate the model for the determinants of characteristics using instrumental variables and then examine SFP determinants. Indeed, identifying instrumental variables is difficult. Therefore, we follow previous research such as Zhang et al. (2022) and Wang and Zhang (2019) to identify the instrument variables for our first-stage process and proceed with the estimation model under Two-Stage Least Square (TSLS) as the estimation approach for the endogeneity issue. The founder's age, income, and ethnicity are important determinants of the characteristics. Moreover, we consider that those variables are not directly associated with SFP. Therefore, those two variables are included as instruments in our TSLS approach's first-stage regression and are valid as IV.

Table 6 reports that education has a positive relationship with SFP. The result of using funding value as the dependent variable surmises that higher education would increase the SFP ($\beta = 0.16$, $SE = 0.06$). In the logistic model, the education effect result also shows a positive association ($\beta = 0.33$, $SE = 0.15$). This implies that highly educated founders are more likely to have a good SFP. Finally, it re-affirms our earlier findings.

The negative association between gender and SFP is also found in Table 6. First, male founders underperformed in SFP compared to female founders ($\beta = -1.15$, $SE = -1.89$). Meanwhile, the logistic TSLS surmises that male

founders have a lower probability of achieving better SFP than female founders ($\beta = -1.89$, $SE = 0.52$). In addition, the experience remains to be an insignificant factor for SFP. Therefore, Table 6 shows that our earlier hypothesis testing conclusions remain intact even though we re-estimate it under TSLS.

Second, we further estimate the model using the structural equation model for two reasons. First, our PLS-SEM is an MLE-based model aiming to explain the variance of the dependent latent constructs based on its maximum-likelihood estimation (Barroso et al., 2010; Arteaga et al., 2010). This model allows the estimation of a system of equations and the structural path between the latent constructs in a single direction. Therefore, this model might tackle the issue of variance bias and simultaneity.

The SEM estimation results in Table 6 have a similar conclusion to the TSLS approach. In terms of founders' education, we also find the positive effects on SFP. Given that SFP is continuous data (the funding value), the result indicates that a high level of education would increase the SFP ($\beta = 0.15$, $SE = 0.05$). Given that SFP is a dummy variable, the result surmises that high founders' education would have a high probability of success in SFP ($\beta = 0.06$, $SE = 0.02$).

The conclusion remains intact for the founders' gender in the SEM model. When the SFP is measured as the value of funding, the result reveals that male founders' SFP was underperformed compared to the female founders' SFP ($\beta = -0.80$, $SE = 0.26$). The logistic-SEM regression shows that female founders have a higher probability of larger SFP than male founders ($\beta = -0.31$, $SE = 0.08$). Therefore, the SEM approach also surmises that gender negatively affects SFP.

Meanwhile, the experience of founders remains with no significant effect on SFP. The control variables are reported with no significant difference in conclusion for both TSLS and SEM approaches. Table 6 reveals that the startup's social media, size, and industry type have a positive relationship with SFP.

To sum up, these empirical results partially support our hypotheses. First, our results show that education has a negative relationship with SFP, aligning with our H1a. Second, gender has an inverse relationship with SFP, contradicting the proposed sign in H1b. That negative

relationship implies that the SFP of men founders is relatively underperformed than women's. Lastly, the experience owned by the founders does not affect the SFP, rejecting H1c.

Several previous studies have pointed out the significant effect of founders' characteristics on SFP (refer to Table 1). However, we argue that not all human capital attributes contribute to achieving larger or better funding performance. Indeed, as our estimation results demonstrate, the education level of founders affects the funding, indicating the importance of education for a founder to earn significant funding.

Table 6. Robustness Check: Endogeneity

	value	dummy	value	dummy
	TSLS		SEM	
<i>CEO Characteristics</i>				
education	0.16** (0.06)	0.33** (0.15)	0.15*** (0.05)	0.06*** (0.02)
gender	-1.15** (0.53)	-1.89*** (0.52)	-0.80*** (0.26)	-0.31*** (0.08)
experience	-0.3 (0.44)	-0.15 (0.68)	0.05 (0.06)	0.03* (0.02)
<i>Control Variables</i>				
reputation	0.09 (0.11)	0.19 (0.22)	0.14** (0.07)	0.03 (0.02)
socmed	0.75*** (0.09)	0.97** (0.46)	0.78*** (0.07)	0.23*** (0.02)
age	0.18 (0.17)	0.35 (0.32)	0.21 (0.14)	0.06 (0.05)
founder	0.14 (0.14)	0.17 (0.21)	0.05 (0.08)	0.02 (0.03)
size	0.53*** (0.11)	0.84* (0.47)	0.57*** (0.09)	0.14*** (0.03)
type	0.05** (0.02)	0.04 (0.05)	0.05** (0.02)	0.01 (0.01)
Constant	-0.24 (1.43)	-2.21 (2.85)	-0.88 (1.05)	-0.27 (0.33)
N	188	188	188	188
R2/Pseudo R2	0.51	0.5	0.59	0.55

Note: *, **, and *** denote 1%, 5%, and 10% significance level
Source: Estimated by authors

We theorized that this finding is driven by the formal knowledge gained by founders and applied during pitching for funding. Note that our education measurement is formal education attained, and score it according to their latest education and the education quality (top 100 world rank or not). The positive effect of education implies that education does matter for entrepreneurship performance, specifically, the SFP. Formal education trains founders to have an important cognitive skill to evaluate and exploit entrepreneurial opportunities (Jiménez et al., 2015). The founders also retrieve good self-confidence through continuous assessment in the formal class (Jiménez et al., 2015), which is essential during funding pitching (Clark, 2008; Sundermeier & Kummer, 2019). This entrepreneurship ability, trained and practiced during their formal education, builds a better skill in finding funding, leading to better funding performance. This finding confirms the upper-echelons theory of Hambrick and Mason (1984), which posits that managerial characteristics are essential determinants of organizational outcomes.

Meanwhile, male founders have a negative relationship with SFP. This is an intriguing finding, considering that the entrepreneurship literature is dominated by support for the gender gap between men's and women's entrepreneurs' performance. It is extensively documented that the stereotyping of women entrepreneurs labels them as less aggressive and less proactive (Gupta et al., 2014; Cumming et al., 2016). Further, women entrepreneurs are stigmatized as failures, deterring them from trial and error in the business (Simmons et al., 2018; Winn, 2005) or being risk-averse. The literature puts men entrepreneurs with aggressive, bold, and risk-taker traits.

However, it seems that men's entrepreneurial traits will harm their funding performance. The

egocentric, expeditious, and ponderous dimensions constructed by being aggressive, bold, and risk-takers result in lousy funding. Buttner (2001) surmises that women use a relational approach when working with employees and clients, which is important in convincing others.

Research from Kanze et al. (2018) addresses the gender bias in the question posed to entrepreneurs playing an essential role in funding performance. They report that if there is no gender bias from investors' questions to the entrepreneurs, and the questions are promotion-focused, the gap is diminished. In fact, Dezsö and Ross (2012) surmise that women's representation in an organization will improve performance.

CONCLUSION AND SUGGESTION

This study examines the relationship between founders' characteristics and the startup funding performance (SFP). We provide at least three additional insights into the empirical literature. First, we find that the educational level of the founders plays a vital role in SFP. The cognitive skills earned in formal education would increase the ability of the startup founders to gain considerable funding. Second, we find that the SFP of men founders is lesser than women founders. We argue that the personality traits of men in entrepreneurship might give them a low probability of larger funding. Third, we reveal that experience is not an essential matter in the context of SFP. Whether the founders have massive or little experience would not induce their startups' funding. Additionally, our findings confirm the upper echelons theory by revealing the importance of founders' characteristics on SFP.

In addition to the above scholarly contributions, our study has direct implications for the policymakers and the entrepreneurship ecosystem, especially the potential investors

(angel investors, private equity, and venture capital). The evidence suggests that education is important to keep the startup flourishing in terms of policy implications. For example, policies to increase startup entrepreneurs have an economic rationale for overcoming lousy funding, whereas those focused on increasing funding have to consider the founders' characteristics. In this respect, our estimation results imply that the type of human capital of the founders, education, should be targeted as part of the policies—for instance, giving education and training or embedding this entrepreneurship in the curriculum. Meanwhile, policymakers must communicate the gender gap in SFP by campaigning for the importance of diversity in the startup ecosystem or by conducting awareness campaigns related to the gender gap.

However, our findings have several limitations that need further validation by future empirical research. The focus of this study is to examine the effects of the founders' characteristics on SFP. Our observation period, around one financial year from startups, might be too short to sufficiently capture the effect of founders' characteristics on SFP, especially with our samples of an average five-year-old startup. Future research might consider testing it in a longitudinal approach with more extensive samples in terms of startup ages. An additional limitation of this research is that it does not differentiate between the various stages of startup funding or explore the unique strategies entrepreneurs employ to secure funding. This is because the study focuses on the founder's characteristics and their impact on startup funding performance, which falls under a different research framework. Moreover, our data does not capture varied startup funding stages (the majority is under Pre-Seed and Seed A).

In the context of upper echelons, managerial ability characteristics also cover personality traits, culture, and cognitive psychology (i.e., overconfidence, optimism, happiness, narcissism). Testing those dimensions might give a fascinating insight into this area. More in-depth insight can be gained through incentives and entrepreneurship programs (hackathon series, business incubator, credit-linked subsidy, government-linked startups) on the founders' characteristics and SFP that might involve agency and rent-seeking theory.

NOTE:

- The list of startups can be downloaded from this link: https://github.com/rayenda83/finance_research.

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Appendix A. Variable Definition

Variables	Definition
Funding	(1) The natural logarithm of the total funding acquired by the startups (2) A dummy variable, in which "1" if the funding campaign reached at least the 25th percentile of their industrial funding median, otherwise "0."
Gender	If the founder(s) is female or dominated by females = "1", otherwise= "0"
Experience	The natural logarithm of total working experience
Education	The highest education of the founders
Reputation	Crunch Base reputation score
Social media	the ratio of the number of actively used social media divided by the total media used by other startups
Age	the natural logarithm of the established year of the startup
Founder Size	the total founders of the startups
Startup Size	the natural logarithm of the total employees of the startups

Source: Compiled by authors