



The Role of Individual Resource Capital, University Support Environment and Government Policy in Academic Entrepreneurship: Evidence from China

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ABSTRACT

There is a growing understanding that professors worldwide are engaging in academic entrepreneurship. Still, many issues remain unresolved about the personal and institutional factors that influence professors' decisions to pursue such endeavours. This study aims to understand better the factors that influence academic entrepreneurship intentions in Chinese institutions. This work creates a model associating China's university context and academic researchers' psychological characteristics with establishing academic entrepreneurship using a classic entrepreneurial model and some studies on academic entrepreneurial intention. We use Smart PLS 4.0 software and a partial least squares structural equation modelling (PLS-SEM) approach to evaluate the model on 364 samples from China's teaching and research universities, with the findings indicating: 1) personality, individual resource capital, and government policy can significantly affect academic entrepreneurship; 2) university support environment can both moderate the relation between government policy and academic entrepreneurship, but also university support environment can significantly affect the academic entrepreneurship directly. The findings have significant implications for China's goal to encourage more extraordinary academic entrepreneurship around universities, as well as the strategy to establish an entrepreneurial university.

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1. Introduction

There are three main areas that academics studying entrepreneurship in China and elsewhere have focused on. First, the entrepreneurial environment, which includes both the resources available to academic entrepreneurs and the challenges they must overcome. National policies, the market and business climate, the transfer of R&D, cultural and social standards, and so on are all part of academic entrepreneurship (Maharana & Chaudhury, 2022). There have been several laws enacted to encourage academic entrepreneurship in China, but this isn't enough to tackle the country's thornier entrepreneurship issues (Burchi, Włodarczyk, Szturo, & Martelli, 2021). Instead, more governmental backing and top-level design are required. It is believed that the appropriate policies provided by schools and the social support plan from society and government are essential environmental elements (Jin, 2022).

There is also the second, more personal, aspect, which is the academic entrepreneurs themselves. Scholars' strategic management of their academic careers and the development of new disciplines (Rustiana & Mohd, 2022)—including factors like entrepreneurial prowess, psychological make-up, gender, entrepreneurial experience, academic prowess, and managerial chops—make up what is known as academic entrepreneurship. In this study, we investigate the role of gender, Sarango-Lalangui, Santos, and Hormiga (2018) build an assessment model of university entrepreneurship education teachers' academic entrepreneurial capacity, and Fang, Razaq, Mohsin, and Irfan (2022) find that teachers have limited skills in enterprise management, opportunity identification, and academic entrepreneurship. Thirdly, academic organizations and

individuals will face several challenges while attempting to adopt entrepreneurship, including role conflict, operational mechanism, and the study of the entrepreneurial process. Taking into account the multifaceted nature of the entrepreneurial process, this grounded theory study develops a theoretical model of the academic entrepreneurship process that centers on nine essential elements (GEM, 2022). The effect of university settings on academic entrepreneurship was also investigated (Miao, Du, & Ou, 2022).

China has announced a number of measures to boost investment in STEM fields and accelerate the development of first-class subject clusters. Despite occasional successes in technological innovation, the majority of academic scientific research projects conclude with papers and reports rather than practical applications of their findings. Only a minority of schools have liberalized administration and control out of concern of becoming market vassals, and plans have not been completely applied. Numerous factors affect professors' propensity for academic entrepreneurship in the classroom. Entrepreneurial education, Entrepreneurial policy, the economy, and society are all examples of external environmental influences. Opportunity detection skill, risk perception skill, and self-efficacy are three of the most important internal personal qualities.

Yangjie Huang summarizes the persuading aspects of academic entrepreneurship through the examination of international and Chinese literature (Alkhaled, 2021). Theoretical studies, model development, and empirical investigations all play a role in the Chinese literature on the topic of influential variables. The paper uses planning theory, and structural equation modelling to conduct an empirical investigation of the psychological, environmental, and organizational aspects that contribute to university faculty members' levels of academic entrepreneurship (AE). The success elements of academic entrepreneurship are broken down into external factors and internal components based on the analysis and contrast of 66 global studies (Salamzadeh, Sangosanya, Salamzadeh, & Braga, 2022). Societal and government assistance programs, as well as school district and district-level laws, are examples of external forces (Faghih, Vahabzadeh, & Danesh, 2022). Gender, entrepreneurial prowess, experience, originality, and mental health are all examples of intangibles that might influence success.

Too far, most empirical research (mostly case studies) on regional governments' roles in local entrepreneurship education have been carried out in highly developed institutional settings (Criado-Gomis, Iniesta-Bonillo, Cervera-Taulet, & Ribeiro-Soriano, 2020; Schaltegger & Wagner, 2011), where regional governments are supposed to be capable of carrying out their key functions (i.e., a governance, adequate supply of infrastructure, and social facilities) to support enactment of regional policies. However, this may not be the case in institutionally weak settings (such as many emerging economies) (Belitski, Guenther, Kritikos, & Thurik, 2022; Soto-Acosta, Cismaru, Vătămănescu, & Ciochină, 2016). As a result, the lessons learned about how regional governments might aid in the development of local entrepreneurship education in more advanced institutional settings have limited transferability to less advanced settings. The role of regional governments in undeveloped institutional situations is unclear, and the literature pays scant attention to this crucial contrast between the two institutional contexts (Mukhtar, Wardana, Wibowo, & Narmaditya, 2021; Silvestri & Veltri, 2020).

Knowing the aspects that describe students' intents regarding academic entrepreneurship and having in-depth knowledge of whether or not the university actively endorses entrepreneurship on campus through virtual and campus events is crucial since numerous campuses need to develop specific programs to encourage entrepreneurship. To ensure that students graduate with the skills necessary to launch their own businesses, it is crucial to identify whether or not the school facilitates interactions between start-ups and students. There is a need to understand how students feel about the level of assistance their country provides in terms of encouraging them to pursue entrepreneurial endeavors. Students' perspectives on the numerous factors that influence their intents to engage in environmental or ecological activity are considered.

If you believe the theories of planned behavior (TPB), the first step in the long and complicated process of entrepreneurship is forming an entrepreneurial intention (Alferaih, 2022). When a person's behavior is unusual, difficult to see, or involves an unknown time lag, it has been shown that intentions are the best forecasters of that behavior (Butkouskaya, Romagosa,

& Noguera, 2020). According to Zhou, Ke, and Waqas (2023), entrepreneurial intention is the closest predictor of the choice to become an entrepreneur since it indicates the degree to which an individual is prepared for and intends to exert themselves in carrying out entrepreneurial behavior. Without the right motivation, even those with considerable potential will not make the leap into entrepreneurship (Zhu, Zhao, Long, Huang, & Huang, 2022).

The extent to which universities encourage and support faculty members to engage in entrepreneurial activity is a hotly contested topic. In-depth interviews (Ashari, Abbas, Abdul-Talib, & Mohd Zamani, 2021); analysis of publicly available metrics (Colombelli, Loccisano, Panelli, Pennisi, & Serraino, 2022); and statistical analyses based on survey data are just some of the methods used to study the factors that are conducive to commercialization in the growing literature on academic entrepreneurship (Huang & Yang, 2022; Zulfiqar et al., 2021). So far, only a narrow variety of entrepreneurial pursuits has received much attention. The formation of new companies (Gu & Zheng, 2021; Sampene, Li, Khan, Agyeman, & Opoku, 2023), and the licensing of research outputs are all examples (Cui, 2021; Okuwhere & Tafamel, 2022).

This narrowing of attention can be attributed to a few main factors. One reason for this is that studies of entrepreneurship in the academic literature have found that these specific types of formal activities most closely reflect those studied. The second is that the economic impact of such actions is generally calculated while the impact of less formal, "under the radar," actions is sometimes more difficult to measure. In one of the few exceptions, Astuti and Fatimah (2022), who investigate academics' participation in a wide variety of activities, discover substantial participation in unstructured endeavors like contract research and consultancy.

The purpose of this research is to quantify a number of important factors which has significant impact on the academic entrepreneurship. We begin by assessing the impact of university support environment, which we define as the encouragement and inspiration offered by the University to faculty who want to launch a new endeavor. An additional factor that is investigated is government policy, which is defined as the extent to which the government of a country provides incentives for business creation through policies and legislation. The initiative to create new ventures, pre-professional practices, and relationships with entrepreneurs are all measurable outcomes of the university's entrepreneurship education development support. Personality, the academics' confidence in his or her ability to engage in entrepreneurship and create a business, is another component assessed and serves as an independent variable in this research. Last but not least, a variable known as "individual resource environment" assesses whether or not it affects the academic entrepreneurship.

To brief the rest of the paper's format, here it is: Informational Context, comprising a variety of academic Entrepreneurship Theories and Factors, is presented in Section 2. Section 3 details the methodology, including a depiction of the instrument, sample, and data process. Results from the questionnaire are presented in Section 4. The results are reviewed in Section 5. Section 6 provides final thoughts, including theoretical, practical, and societal consequences and recommendations, as well as possible directions for further research.

2. Literature Review

Recent years have seen an increase in the study of academic entrepreneurship as a response to the rise of startups inside the academic community. Sivotwa, Jaiyeoba, Roberts-Lombard, and Makanyeza (2022) are just a few of the reviews that can be found in the literature on the topic. While previous research in this area focused on quantifying university knowledge transfer activity (licenses, patents, spin-offs) and analyzing plans that could affect the efficacy of this activity (Vrontis et al., 2022), there has been more recent work devoted to examining the factors that lead academics to show entrepreneurial behavior.

2.1. Government Policy and Academic Entrepreneurship

A number of nations have instituted measures meant to spur entrepreneurial activity and economic growth because of this belief. Implementing an entrepreneurial policy in Sweden has helped spread entrepreneurship teaching and culture throughout the country's institutions of higher learning (Arni, Siswandari, Akhyar, & Asrowi, 2022). University students and faculty members in Turkey who are interested in launching their own businesses must have access to structural support (help from the structural system, which includes private, governmental, and NGO organizations) (Debarliev, Janeska-Iliev, Stripeikis, & Zupan, 2022). To add, the Japanese

government encourages entrepreneurship and has fostered a more favorable environment for new firms by means of a number of policy initiatives (Uddin et al., 2022).

A tendency of entrepreneurship and innovation in China was sparked when Premier Li Keqiang proposed the term "Mass entrepreneurship and innovation" during the Summer Davos summit in 2014 and included it in the government work report the following year. The Opinions on Indorsing Development of Entrepreneurship and Innovation and Building an updated Edition of Mass Entrepreneurship and Innovation were released in 2018 by the State Council of China, and they emphasize the promotion of mass innovation and entrepreneurship on a greater scale and at upper and deeper levels. Although China's academic entrepreneurship movement got started later than in the West, it has gained significant traction in recent years thanks to China's aggressive push to advance the startup and innovation sectors.

There is a severe shortage of teachers with real-world experience in China's classrooms right now, and as a result, innovation and entrepreneurship education is lacking, according to research (Ahmad et al., 2022). Therefore, it is challenging for both students and educators to successfully implement the principles of entrepreneurship and innovation in practice. Research into how academic entrepreneurship might be improved through the lens of entrepreneurial practice has been conducted by a number of academics (Zhang, Liu, Geng, & Wei, 2022). Some international researchers have proposed solutions to the problems that Chinese university professors have when they try to implement academic entrepreneurship (Belitski et al., 2022).

According to the research presented by Saptono, Wibowo, Widyastuti, Narmaditya, and Yanto (2021), China needs to regularly update its innovation policies in order to keep up with the times and facilitate the country's evolution into a more innovative and entrepreneurial one. China's central and local governments have established a series of laws designed to encourage and facilitate business startup among university faculty. Policies like these provide aid and favourable tax treatment to recent graduates who are looking to launch their own firms. Governments can aid by lessening the social stigma of disappointment, eliminating bureaucratic hurdles, and increasing public consciousness of effective entrepreneurial role models (Adedeji & Olanipekun, 2022). University faculty recognize entrepreneurship prospects because of three factors: government encouragement, academic entrepreneurship, and the general social atmosphere (Colombelli et al., 2022). Academic entrepreneurship is encouraged when there is strong government backing for it (Nasar, Akram, Safdar, & Akbar, 2022). This study makes a hypothesis because there is scant prior research on how government policy affects university startups.

H₁: Government policy has a significant and positive impact on the academic entrepreneurship.

H₂: Government policy has a significant and positive impact on the university support environment.

2.2. Individual human capital and Academic Entrepreneurship

Many previous researches have underlined the importance of personal qualities in encouraging academic entrepreneurship (Tantawy et al., 2021). Academic scientists' cognitive capabilities to assess entrepreneurship prospects, requirements, and risks are shaped by this inborn knowledge and experience, which is why human capital, described as individual over-all knowledge and skills, acquired through education and experience (Okuwhere & Tafamel, 2022), influences the probability of academic entrepreneurship engagement (Hassan et al., 2021b). Research excellence (GEM, 2022) and industrial experience (Shahin, Ilic, Gonsalvez, & Whittle, 2021) are two factors that have been shown to predict academic entrepreneurship, consistent with the human capital perspective. These are the two dimensions of human capital that the study will focus on. In particular, we choose individual scientific output as a reflection of research brilliance, and prior commercialization experience as a reflection of business acumen.

To begin, most academic scientists continue to work at universities while engaging in entrepreneurial activities, making academic entrepreneurship a unique framework for entrepreneurship (Cui, 2021). Academic or scientific output in this example indicates academic scientists' privileged position, such as access to resources and recognition (Lopez, Alvarez, Martins, Perez, & Román-Calderón, 2021). Those academic researchers who produce a lot of

research also tend to be involved in various forms of commercialization. Patenting, licensing, contract research, and consulting are all examples of commercialization activities that are often seen as extensions of academic scientists' study activities (Boubker, Arroud, & Ouajdouni, 2021). Moreover, consulting activities and contract research provide academic scientists with new viewpoints and ideas to incorporate into their own research (Duong, 2021). Academic spin-offs may benefit from a great level of scientific productivity since it lends credibility and facilitates entry to relevant resources.

In addition, a person's capacity to network in the business world may be heavily informed by their history of commercialization. Academic scientists who have had previous opportunities to participate in commercialization activities are more likely to do so again, and they are better able to anticipate potential barriers and difficulties in the commercialization process as a result (Uvarova, Mavlutova, & Atstaja, 2021). In addition, having commercialization expertise is useful for a number of reasons, including expanding one's social network and gaining access to new commercialization prospects, securing funding and resources from the business community, and developing one's commercialization abilities (Gavriliuță, Grecu, & Chiriac, 2022). So, it can be hypnotized as;

H3: Individual human capital has a significant and positive impact on the academic entrepreneurship.

2.3. Personality and Academic Entrepreneurial

By "proactive," we mean an individual who makes intentional efforts to improve his or her surroundings (Ratten & Jones, 2021). An individual with a proactive personality is one who is not content to simply accept the status quo but instead actively works to change it for the better or create something brand new (Mohamed & Sheikh Ali, 2021). Simply said, those who possess a strong proactive personality are better able to spot favorable situations and take advantage of them through the adoption of a series of proactive, active, and persistent actions that will continue until the desired or desired improvements are accomplished (Bateman and Crant, 1993).

Previous studies have shown that the likelihood of entrepreneurial aspirations among the proactive is higher (Hassan, Anwar, Saleem, Alalyani, & Saleem, 2022). Lu, Song, and Pan (2021) defines "prior entrepreneurial intention" as the idea that a person has always meant to start a new business and has always planned to actively execute it at a future date. The subjective aim of an entrepreneur was represented in entrepreneurial intention, making it a useful predictor of actual entrepreneurial actions (Nguyen, Nguyen, Phan, & Vu, 2021). Knowledge entrepreneurial activity in society requires an understanding of entrepreneurial intention, or the intention of an individual to engage in entrepreneurial conduct (Shkabatur, Bar-El, & Schwartz, 2022). The characteristics of an individual's willingness to take risks, as well as their own capacity for innovation and initiative, were underlined as essential to an entrepreneur's mindset (Soomro & Shah, 2022).

Previous empirical investigations demonstrated that different personality factors significantly affected college students' intent to start their businesses (Ziyu & Lixia, 2021). People who possessed the positive personality trait of being proactive were more likely to venture into business ownership. Proactive employees are more likely to have entrepreneurial aspirations, according to earlier research (Kurniawati, Idris, Handayati, & Osman, 2021). In the realm of academic study, it was discovered that college students' proactive personalities had a substantial effect on their aspirations to start their businesses (Kariv, Baldegger, & Kashy-Rosenbaum, 2022). Researchers in Istanbul found that college students' business aspirations were positively correlated with their levels of assertiveness (Cowling, Brown, & Rocha, 2020). Proactive personality was found to enhance the entrepreneurial intention of Chinese college students, which was then effectively turned into entrepreneurial conduct in the study's subjects (Vechkinzova, Petrenko, Benčić, Ulybyshev, & Zhailauov, 2019). Results indicated that an individual's proactivity level was directly correlated with their plan to start a business. That's why the study suggests;

H4: Personality has a significant and positive impact on the academic entrepreneurship.

2.4. The Moderating Role of University Support environment

Universities have a long history of encouraging creative problem-solving and a can-do attitude among their students. Universities have the power to significantly influence students' propensity for and ability to engage in entrepreneurial activity, setting them on a path toward the creation of new businesses (Kurniawati et al., 2021). Colleges and universities can be of assistance in various ways, one of which is by teaching students the knowledge and abilities they'll need to launch their own businesses. It is also possible for colleges and universities to offer pupils individualized aid. Targeted aid may be provided to assist with things like coming up with ideas and getting a business off the ground (Yousaf et al., 2020).

Therefore, educational institutions have a responsibility to inspire students to consider entrepreneurship as a career path. Universities have not been investigated as a bringer and enabler of an environment favorable to growing entrepreneurship intentions leading to new venture formation, even if a small number of academics have analysed the role of entrepreneurship education in the training of student entrepreneurship intentions (Nungsari et al., 2022). Few studies have examined the correlation between EI and PUS in developing economies, especially Asian nations Dvorak, Komarkova, and Stehlik (2021) and Jun, Ariyesti, Ali, and Xiaobao (2023) both agree that students' entrepreneurial aspirations benefit greatly from exposure to entrepreneurship education, and that this is especially true at the university level.

Since colleges provide students with a wide range of resources, we need to know how effective these programs are and how much they sway students toward entrepreneurship as a career path. For Emami, Welsh, Davari, and Rezaszadeh (2022), help comes in the shape of material goods, moral encouragement, and monetary gifts (scholarships). Only programs offered by universities, such as classes, loans for new businesses, workshops, inspiration, and internships, will be considered in this analysis.

Furthermore, it has been theorized that EP's surrogate, entrepreneurial intensity, is linked to gut feelings. Students' passions are what bring them closer to engaging in entrepreneurial activity, it seems (Miocevic, 2022). Students' mindsets, actions, and exposure to entrepreneurial activities can plant seeds for future business creation (Kwapisz, Schell, Aytes, & Bryant, 2022). As a result, the motivations behind students' aspirations to start their own enterprises is an exciting and evolving field that need more investigation. Internships and university-supported business incubators are two factors that can sway a student's decision to pursue entrepreneurship (Drăgan, Panait, & Schin, 2021).

While those with a strong interest in entrepreneurship are more likely to be self-assured in their ability to run a firm and have a greater propensity to take risks, these favorable outcomes are not necessarily shared by the general population (Jun et al., 2022). It appears that encouraging students to consider starting their own businesses is a group effort. There may be a complicated and mutual interaction between students' feelings and emotions and factors including entrepreneurial orientation, business incubation program, entrepreneurial self-efficacy, facilitation and social support system, all of which work to amplify students' entrepreneurial intents (Adam & Alarifi, 2021).

In order to foster students' EI, universities must provide resources and encouragement. Due to a dearth of relevant research, this investigation focuses on the universities' crucial supervisory role in the development of students' EI. A person's confidence in their own abilities, as well as their drive and ambition to launch a business, can be transformed by the backing they receive from their university (Rajamani, Jan, Subramani, & Raj, 2022). In addition, prior research has shown that students' propensity to be enterprising is indirectly influenced by their college experience. In contrast, it is important to identify how the college setting might help boost aim by reinforcing the impacts of factors already recognized to influence intention (Kusa, Duda, & Suder, 2022). This study is predicated on the hypothesis that a person's enthusiasm for becoming an entrepreneur (in terms of innovating, starting, and developing businesses) has a direct effect on EI, and that this Following that logic, we can make some assumptions:

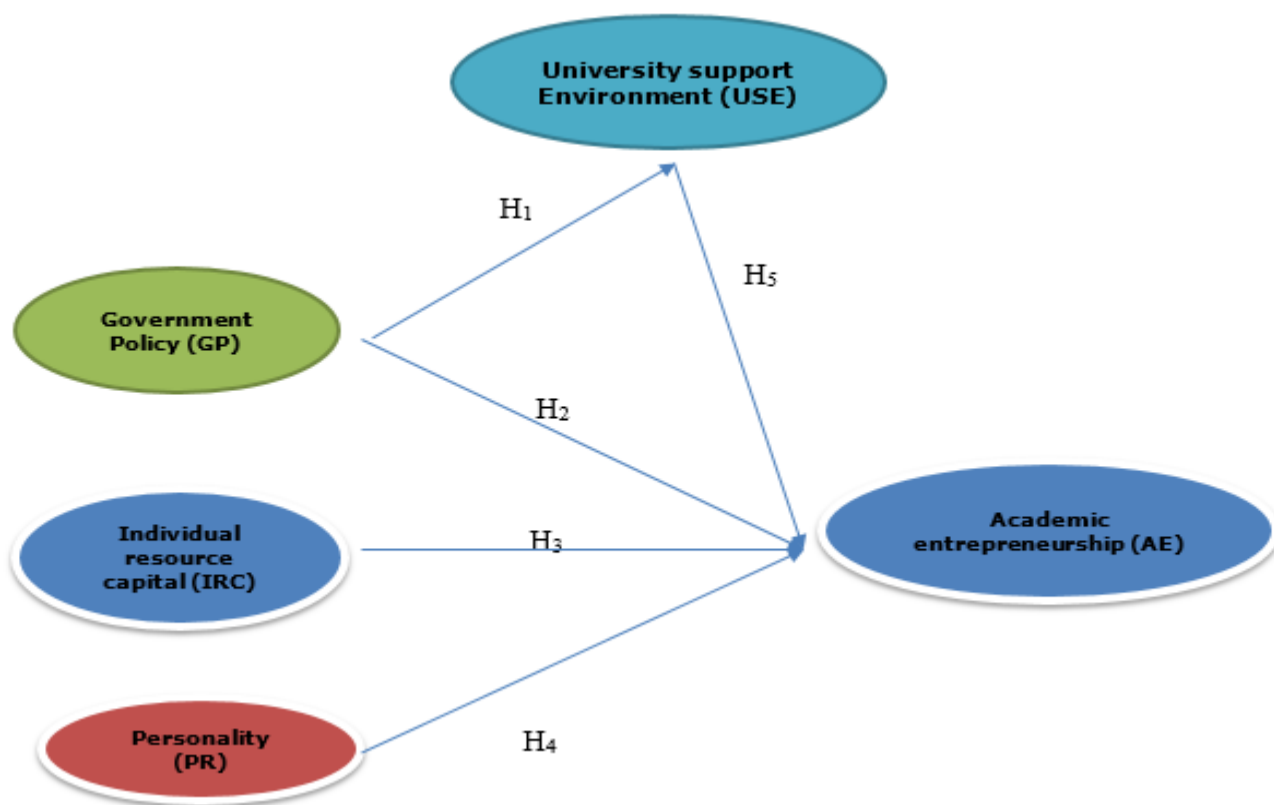
- H₅:** University support environment has significant impact on the academic entrepreneurship.
- H₆:** University support environment has Moderating impact on the academic entrepreneurship.

3. Theoretical Framework

The 'third mission,' or transfer of university research and development to private business, has been a focus of recent policy shifts and advancements at both the university and government levels (De la Fuente, Kauffman, Díaz-Orueta, & Kauffman, 2018). The primary objective of these laws is to encourage academic institutions to produce more research with commercial potential. In spite of this, many institutions are still a long way from being "entrepreneurial," and most scientists still appear to have low entrepreneurial intents, according to the literature (George, McGahan, & Prabhu, 2012).

According to Cueto, Frisnedi, Collera, Batac, and Agaton (2022), about 28% of all academic or research institution scientists view start-ups as a desirable place to work. Though many scientists strive to start their own businesses, just 3.2% of them succeed. Furthermore, these findings suggest that the driving factors for university scientists to transition into entrepreneurship may be quite unique and directly related to the transition process, but are located in early phases of the entrepreneurial decision process. Academic staff members' individual tendency for entrepreneurship may be influenced by their working environment, their networks, and the policies and procedures of their respective institutions, all of which are the subject of the subsequent chapters. The variables relation has been shown in figure 1, given below;

Figure 1: Structural form of variables link



4. Methodology and Data Collection

The structural equation model (SEM) for analyzing the interrelationships between the latent variables was built with the help of the Smart PLS 3.0 software. When testing whether or whether the data from a sample can be used to infer information about a theoretical structure, the SEM is the method of choice (Santos, Nikou, Brännback, & Liguori, 2021). In order to test hypotheses about latent variables that are difficult to measure, Smart PLS 3.0 software use a partial least squares structural equation modelling (PLS-SEM) approach (Wang, Soetanto, Cai, & Munir, 2022). PLS-SEM is favored in exploratory and explanatory research (Liao, Nguyen, Chi, & Nguyen, 2022) because to its ability to optimally handle measurement errors linked with small samples and have strong prediction power. Paliwal, Rajak, Kumar, and Singh (2022) used the PLS-SEM technique found in SmartPLS30 to look into how institutional pressure affects the legitimization of information security and how it affects the performance of an organization. SmartPLS-SEM was used by Mir, Hassan, and Khan (2022) to categories the variables influencing

employees' participation. SmartPLS-SEM has been proven effective in studying the factors affecting rural e-commerce entrepreneurship by returnees.

4.1. Data collection

According to Xu and Jia (2022) research on intents, the samples should be made up of people who lack actual considerable expertise in entrepreneurship but who have access to entrepreneurial surroundings. This will allow them greater latitude when deciding on a path to take professionally. Doctoral students have the potential to become academic entrepreneurs (Appolloni, Jabbour, D'Adamo, Gastaldi, & Settembre-Blundo, 2022). Entrepreneurial intent can be more accurately detected among people of younger ages since, from a psychological standpoint, they are more susceptible to the effects of environmental change than their older counterparts. Williams, Du, and Zhang (2020) similarly limited their study size to young educators and technically-inclined Ph.D. candidates. Researchers who have always been supported by the government are more likely to embrace academic entrepreneurship, according to research by Barrett, Dooley, and Bogue (2021). Informed by the work of others, we decided to focus on young professors and students who are pursuing doctoral degrees in technical fields (such as computer science, applied mathematics, physics, chemical engineering, civil engineering, mechanical engineering, etc.) and who have received funding at the provincial level or higher (this age range represents the transition between young and experienced academic workers in China's university system). All of the samples come from either purely research institutions or from both teaching and research institutions.

Our study spanned 5 months, from April 2022 through April 2023, and was performed primarily by electronic mail and on-site questionnaires. We received 364 complete surveys out of a total of 812 that were sent out. There were 244 men and 120 women who filled out the survey, with 191 from research universities and 173 from teaching and research institutions. Out of a total of 207 samples, 157 are mostly engaged in basic research while the remainder perform applied studies. Section 4 puts our theoretical framework to the test by means of structural equation modelling (SEM) in Smart PLS 3.0.

4.2. Variables

4.2.1. Academic entrepreneurship (AE)

Intentions to engage in academic entrepreneurship were assessed using a five-item scale derived from the work of (Akinboye & Morrish, 2022). Survival, success, and the economic and social advantages of research commercialization were cited as examples of what academic entrepreneurs should be striving for in addition to the actualization of their research goals in these studies (Faghih et al., 2022). This article employed a five-item scale to assess academic entrepreneurs' aforementioned goals and motivations. Academic entrepreneurial performance reliability ($\alpha = 0.91$) was above the cutoff of 0.70 (Kitsios & Kamariotou, 2018), indicating high levels of internal consistency and dependability.

4.2.2. Personality

Our research makes use of a shortened, validated version of the Five Factor model of personality to quantify individual differences (Krasniqi, Kryeziu, Bađiđ, Kurutkan, & Idrizi, 2021). We incorporate five indices (one for each dimension) into our model, one for extraversion, agreeableness, emotional stability, conscientiousness, and openness to experience (with each of these measured by two questions). Based on prior studies (Rizvi, Mirza, Naqvi, & Rahat, 2020), we used a fit measure that integrates the Big Five dimensions into a single index to put a numerical value on the characteristics of a person who is likely to engage in entrepreneurial activity. Comparing this fit metric to the D2 profile similarity method developed by Thomas and Subhashree (2020) yields similar results. D2 measures how far an individual's scores vary from these statistical extremes by comparing them to a reference profile of successful entrepreneurs that has been predetermined and includes only the greatest and lowest potential scores (the lowest probable score in agreeableness and neuroticism; conscientiousness, the highest possible score in extraversion, and openness). This was accomplished by computing the squared disparities between each respondent's reference values and their own personal values across all five of the Big Five dimensions. As an illustration, if a respondent scored 3 on the neuroticism scale, the squared difference would be 9. (because the reference value was 0). Each respondent had their sum of the five squared differences inverted (a value of 20 became 20, for example). The resulting index provided the final component of the entrepreneurial disposition profile. A

greater distance from zero indicates a more entrepreneurial personality structure in the respondent.

4.2.3. University support environment

Start-up bootcamp; founders' or idea award; consultancy; coaching; entrepreneurship education; technology transfer office; patent exploitation agency; entrepreneurship education; and a variable tracking the number of offers used are all examples of institutional influences considered.

4.2.4. Entrepreneurship Policy

Government action at the macro, meso, and micro levels to foster entrepreneurship is the government's "entrepreneurship policy." EPo was largely ignored by academia until the mid-1990s, and there is still no consensus on what the term really means (Wang et al., 2022). EPo refers to the policies and supporting measures put in place by the government to encourage the launch and development of small businesses (Ayyagari, Beck, & Hoseini, 2020). The tendency of governments to support entrepreneurial endeavors is growing worldwide. According to Maheshwari and Kha (2022), many government programs are focused on fostering entrepreneurship because of its potential to foster long-term economic and social growth. For the most part, the absence of venture capital, finance, and governmental backing causes college students, who are the most probable potential entrepreneurs, to abandon their ventures.

4.2.5. Control variables

We selected these control variables because they have been suggested as potential moderators in the literature on identity and entrepreneurship (Ramírez-Montoya, Loaiza-Aguirre, Zúñiga-Ojeda, & Portuguese-Castro, 2021). These factors include gender, age, educational background, business training, and geographical region. Following the advice of Pidduck, Clark, and Lumpkin (2023), the geographic regions included Central China, North China, and South China, and this paper set two dummy variables—Central China and North China—to measure these demographics. Gender was measured using a dummy variable, age was measured using objective data, education background was measured using a scale from 1 to 4, representing middle school, undergraduate, high school, graduate, and higher education, and business preparation was measured using a dummy variable.

5. Results

Table 1 shows some descriptive data for the various factors. Standard deviations can be found between 0.59 (extraversion) and 0.96 (introversion), with means spanning from 2.22 (neuroticism) to 3.66 (Openness to experience) (entrepreneurial intention). In addition, the normalcy assumption was tested with Skewness and kurtosis. All variables' skewness and kurtosis values are within the recommended range (plus or minus 2).

Table 1: Descriptive statistics

Variables	AE	PR	IRC	GP	USE	Gender	Age	Edu	North	Central
AE	0.87									
PR	0.25***	0.85								
IRC	-0.22***	0.04	0.85							
GP	0.14**	0.09	-0.09	0.82						
USE	-0.09	-0.03	0.13**	-0.07						
Gender	-0.147	0.05	0.02	-0.03	0.38***					
Age	-0.0105	-0.05	-0.17	-0.01	0.27***	0.09				
Edu	0.042	0.01	0.17	0.17	0.05	0.06	0.21***			
North	0.08	0.07	-0.01	-0.00	-0.02	0.02	0.02	-0.09		
Central	-0.10	-0.13	0.06	0.01	0.02	-0.02	0.05	0.09	-0.59***	
Mean	3.26	3.94	3.28	3.91	0.71	42.95	3.87	0.27	0.42	0.34
(s.d.)	0.87	1.0	0.95	0.85	0.49	7.93	0.49	0.58	0.51	0.49

Note: AE=Academic entrepreneurship; PR=personality; IRC=individual resource capital; GP=Government policy; Edu=Education background; USE=University support environment; North, North China; Central, Central China; s.d.=Standard deviation, *p < 0.10, **p < 0.05, *** p < 0.01

Perceived university support is a determinative indication in the study, but there are also reflecting indicators built into the design of the research. Indicator collinearity and the association between indicator weights and statistical significance are two aspects of formative indicators that argue should be taken into account alongside the factor loading reliability, convergent validity, and discriminant validity of reflective indicators. Kreuzer, Lindenthal, Oberländer, and Röglinger (2022) proposed that a VIF less than 5 suggests there is no collinearity issue, based on the results of examining collinearity.

All the components in this investigation yielded scores in the 1.00–3.654 range, which is consistent with the indicators proposed in the literature. It has been proposed that factor loadings greater than 0.7 indicate dependability, specifically in terms of the correlation between questionnaire reliability and measurement precision. This research confirms that all factor loadings of reflected indicators are consistent with prior guidance. If a formative indicator's factor loadings are high (higher than 0.5, as stated in the literature), then even if the indicator's weight value is not significant, it should be treated as a significant factor, and the factor will be preserved (Marjerison, Chen, & Lin, 2021). As can be shown in Table 2, all of the formative and reflective markers in this study are positive, justifying their continued use.

Table 2: The analysis results of factor loading and weight

Constructs	Items	Factor Loading (Weight)	t-Statistics
Academic entrepreneurship (AE)	AE 1	0.862	68.899
	AE 2	0.86	80.137
	AE 3	0.912	134.163
Personality (PR)	PR1	0.896	97.47
	PR2	0.926	167.839
	PR3	0.919	119.307
	PR4	0.927	150.027
University support Environment (USE)	USE1	0.92	133.218
	USE2	0.948	223.559
	USE3	0.93	163.567
	USE4	0.94	202.354
	USE5	0.948	177.657
	USE6	0.944	186.576
Government Policy (GP)	GP1	0.893	87.196
	GP2	0.831	59.928
	GP3	0.935	91.902
	GP4	0.938	102.721
	GP5	0.913	92.341
	GP6	0.912	96.872
Individual resource capital (IRC)	IRC1	0.908	92.375
	IRC2	0.926	92.94
	IRC3	0.872	74.85
	IRC4	0.912	99.213
	IRC5	0.931	87.525

5.1. Reliability and Validity Test

When developing the PLS-SEM model, Smart PLS 3.0 was used. The reliability of the scale was analysed using an internal consistency test, and the results are presented in Table 3. Each latent variable has a Cronbach's alpha (CA) and composite reliability (CR) score more than 0.7, which is the accepted minimum level of reliability. Table 3 displays that the AVE for the latent variables is greater than 0.5 and the AVE for the external loadings is greater than 0.7 (the smallest AVE for the latent variables was 0.733). Results from this study lend credence to the validity and reliability of the scale and model used in the investigation. Table 4 shows that the

model has high discriminant validity and no multicollinearity (Cueto et al., 2022) because the square root of the AVE for each latent variable is larger than the correlation coefficient with the other latent variables.

Table 3: Results of reliability and validity tests

Latent Variables	CA	CR	AVE
AE	0.822	0.894	0.738
PR	0.764	0.864	0.680
USE	0.829	0.898	0.746
GP	0.823	0.890	0.730
IRC	0.812	0.889	0.727

Note: AE, Academic entrepreneurship; PR, personality; IRC, individual resource capital; GP, Government policy; Edu, Education background; USE; University support environment.

Table 4: Mean square root of extracted variance and factor correlation coefficient

Latent Variables	H1	H2	H3	H4	H5
AE	0.901				
PR	0.895	0.865			
USE	0.101	0.073	0.907		
GP	0.211	0.197	0.009	0.896	
IRC	-0.708	-0.682	-0.184	-0.189	0.894

Note: Diagonal elements are the square root of average variance extracted (AVE).

This type of bias, known as common method bias (CMB), can occur at any point in the research process and has the potential to seriously compromise the reliability and impartiality of the results. Statistical and procedural controls were implemented to lessen the effects of prevalent technique bias (Dörr, Licht, & Murmann, 2022). For the respondents' peace of mind, they were informed up front that their responses would be kept confidential, that the poll's intended use was strictly academic, and that their daily activities would not be altered in any way by taking part in the survey. The results of the pilot test were used to refine the survey's scale and wording, enhancing the instrument's clarity and usability. Table 5 displays the outcomes of a one-way test (Harman) used for exploratory component analysis of all variables. It was calculated that the first factor accounted for 36.43 percent of the total variation. As the number is less than 0.4, there is no significant common method bias in the data.

Table 5: Total variance explained

Component	Initial Eigen Values			Extraction Sum of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.033	38.255	38.255	8.034	38.255	38.255
2	2.448	11.662	49.918	2.448	11.662	49.918
3	2.166	10.317	60.234	2.166	10.317	60.234
4	1.682	8.008	68.244	1.682	8.009	68.243
5	1.025	4.881	73.125			

5.2. Hypothesis Testing

The constructed model was processed by means of SmartPLS 3.0 software, and the outcomes are shown in Table 6. Excellent model explanatory power was found, with an R2 (R-squared) of 0.803. The hypothesis testing indicated that hypotheses H1, H2, H3, H4, H5 and H6 are acceptable (p-value 0.05), but hypotheses H2 and H3 are not. The general consistency of the model was also examined. According to the SRMR score of 0.067, the model is a good fit for the data (Abou-Shouk, Mannaa, & Elbaz, 2021).

Table 6: Results of hypothesis testing

Hypotheses	Path	Path Coefficient	t-Value	p-Value	Hypothesis Support?
H1	GP→USE	0.533	6.445		Y
H2	GP→AE	-0.022	0.565	0.619	N
H3	IRC→AE	0.004	0.108	0.963	N
H4	PR→AE	-0.163	2.584	0.014	Y
H5	USE→AE	0.118	2.671	0.011	Y
H6	GP→USE→AE	-0.042	2.493	0.018	Y

5.3. Discriminant validity

As a last step in evaluating the constructs' discriminant validity, we checked to make sure that no items had higher loadings in constructs other than the ones they were designed to measure (Brixiová, Kangoye, & Said, 2020). Discriminant validity is supported by the fact that the highest value of the heterotrait-monotrait ratio of correlations (HTMT) is 0.84. It can be seen in Table 7.

Table 7: Discriminant validity

Variables	AE	PR	IRC	GP	USE	Gender	Age	Edu	North	Central
AE	----									
PR	0.3612	----								
IRC	0.509	0.557	----							
GP	0.396	0.421	0.886	----						
USE	0.186	0.129	0.370	0.429	----					
Gender	0.247	0.124	0.254	0.286	0.463	----				
Age	0.495	0.523	0.717	0.602	0.413	0.407	----			
Edu	0.386	0.413	0.798	0.690	0.396	0.266	0.665	----		
North	0.155	0.458	0.307	0.176	0.205	0.110	0.327	0.317	----	
Central	0.30975	0.317	0.507	0.403	0.312	0.202	0.492	0.567	0.316	----

Academic staff entrepreneurialism is correlated with the degree to which universities provide targeted institutional support in the pre-founding stage. Collaborating, for example by forming clusters for entrepreneurial support, and expanding their networks to receptive institutions like chambers of industry and commerce in the region, is one way that smaller institutions of higher education can guarantee a comprehensive and expert set of infrastructures for facilitating entrepreneurship. A lack of statistical significance between entrepreneurship chair and entrepreneurship activity is not evidence that lectures on the topic have no real-world influence.

Academics must be encouraged to think like entrepreneurs in addition to having the necessary infrastructure and policies put in place. Education in entrepreneurship is viewed as a useful tool for achieving this objective. Entrepreneurship education, tailored to groups with little to no prior exposure to the field, aims to equip participants with the information they need to make an informed decision about becoming self-employed rather than simply forcing them into the field. A successful outcome of entrepreneurship education is when a participant in the program comes to the conclusion, based on what they've learned, that being an entrepreneur isn't a good fit for them (Sandhu, Farooq, Khalid, & Farooq, 2021). Education on entrepreneurship, on the other hand, is best thought of as a form of basic awareness training whose impacts are not easily quantified and frequently only become apparent after some time has passed (Leiva, Mora-Esquivel, Krauss-Delorme, Bonomo-Odizzio, & Solis-Salazar, 2021).

6. Discussion

This study aims to identify the factors that influence academic entrepreneurship inside China's higher education institutions. This work builds a model that connects the university environment in China, the psychological characteristics of academic researchers, and academic entrepreneurs' intentions, drawing from the literature on traditional entrepreneurship and a small

body of research on academic entrepreneurs. We pick 5 variables and make 24 constructs to investigate the causes. To put the theoretical model to the test, we employ the SEM in our empirical investigation and collect 364 valid samples from China's research-based and teaching-and-research universities. To ensure a good fit between the components and our constructs, we do factor analysis. We put all of our assumptions to the test via SmartPLS 3.0 software, and the results lend credence to the majority of them. Our model validates the associations between personality and individual resource capital as an entrepreneur, personal network, and academic entrepreneurship ambitions found in prior research (Su et al., 2021).

When our model is empirically investigated using samples from the Chinese context, however, the findings may have the following implications: In general, the findings indicated that the institutional backdrop in Chinese higher education bodies played more essential roles in predicting academic entrepreneurial participation than did individual human capital. Academic scientists with low human capital, such as low scientific productivity or lack of commercialization experience, are still expected to express high academic entrepreneurial intention, provided they are in a supportive institutional environment. This finding is consistent with the prior work that emphasizes university support environment in affecting academic entrepreneurship (Liang, Wang, Xu, & Chen, 2021), although it is somewhat at odds with the prior literature that emphasizes individual variables as considerably more important.

We confirmed that academic scientists who place an emphasis on their entrepreneurial individuality in the perspective of spin-off formation are the only ones for whom the university's entrepreneurial purpose has any bearing. Previous research has highlighted the importance of a university's support environment in encouraging academic scientists' intention to establish start spin-offs. This result not only needs to reflect some limitation and lack of strength regarding to other alternative approach for research commercialization, such as patent protection, licensing, research contracting, and consulting. Although the Chinese government has passed a number of regulations to safeguard the ownership of intellectual property and to promote new ideas to be copyrighted, academic scientists still see this as a barrier to the commercialization of their research (Razumovskaia, Yuzvovich, Kniazeva, Klimenko, & Shelyakin, 2020), and in the Chinese "Guanxi" society, personal social networks with industry are more likely to affect activities like contracting research and consultancy.

Finally, PC did not have a significant association with entrepreneurial intention, in contrast to prior research (Thorgren & Williams, 2020). While PC propose that academics observe themselves as well armed to endorse their entrepreneurial asp, our study demonstrates that this does not translate into higher levels of entrepreneurial intention, contrary to the TPB model. This is vindicated by the detail that in certain perspectives (our study demonstrates that one of these is the Chinese academic context), to the contrary, people's perceived control has little to do with their actual goal to start their own business.

7. Conclusion

We examine the personal and institutional dynamics at play in the China's thriving academic entrepreneurship scene. Organizational, management, and educational perspectives have all seen considerable published study on this topic; we add to the current literature in two ways. First, we establish a clear argument for a broader definition of academic entrepreneurship based on past qualitative and quantitative studies as well as our own research. We contend that expanding the scope of academic entrepreneurship research beyond patent-based activities to include other marketable and non-commercial activities of an entrepreneurial nature is necessary.

Here, we use the term "academic entrepreneurship" to refer to any endeavor undertaken by a professor or other academic that is novel, involves some degree of risk, and yields financial benefits for the professor or the academic's institution. Additional research capital, student staffing, and benefits like approach to particular equipment are all examples of the kinds of monetary gains that might emerge from a researcher's fame, status, influence, or public acclaim. This broader definition of academic entrepreneurship has crucial policy ramifications, as it draws attention to the many forms of entrepreneurial endeavors that take place in the arts, the social sciences, and the humanities, all of which are frequently ignored by university and government program. There is a danger that existing institutional structures are stifling entrepreneurial endeavors that have the potential to yield substantial monetary and social benefits.

There are practical applications of our study as well. In the first place, we think it's important to be able to detect the key determinants of academic entrepreneurship in the Chinese university environment since policymakers should consider information transfer activities alongside research and teaching when assessing university performance (NGO et al., 2022). Second, the model indicates that public authority involvement to boost academics' government policy would have a direct impact on their Academic entrepreneurship, and hence on the number of spin-offs developed. Academic traits, such as CREA, BE, and PU, appear to have the greatest impact on whether or not an applicant receives a positive government policy. Therefore, it is crucial that university administrators realize that encouraging university support among faculty members is the best method to boost academic entrepreneurship at their institutions. According to (Alshebami, Seraj, & Alzain, 2022), it would be beneficial to implement new incentive systems for academics that not only evaluate how effective they are as teachers and researchers, but also reward them for their efforts to implement their findings in the manufacturing industry (patent licensing, collaborative projects, spin-off creation, etc.).

The study contributes as a whole by demonstrating the existence of moderating effects of institutional mechanism like university entrepreneurship environment on the connection between academic scientists' individuality and their ambition to become entrepreneurs. More specifically, this research shows that academic scientists' openness to and competence in commercializing research via spin-offs are affected by the university's purpose to foster entrepreneurship. This finding not only adds to the ongoing discussion in the literature, particularly about the significance of external and contextual factors in encouraging entrepreneurship (Dana, Salamzadeh, Mortazavi, Hadizadeh, & Zolfaghari, 2022), but it also raises the question of whether the current policies are placing too much emphasis on spin-offs and ignoring other forms of commercialization. This makes it difficult for university administrators like TTOs, department chairs, and heads of research groups to create rules that are customized to the unique traits and requirements of academic scientists.

The analysis of the interplay between the departmental setting and academic scientists' entrepreneurial motivation reveals the importance of the former in fostering the latter even in less-than-ideal conditions for academic entrepreneurship. This research expands upon TPB modelling by emphasizing on the role of environmental factors in shaping academic scientists' propensity to venture into the for-profit sector.

Additionally, some practical recommendations are provided by this study. Since the proactive personality of university faculty has a positive and significant effect on their entrepreneurial intentions, there are a number of specific practices that can be implemented, including: conducting an assessment of proactive personality and promoting the active consciousness of university academic professionals; implementing psychological quality training courses by trying to introduce leadership approach to strengthen professionals' willing; and providing opportunities for university academic professionals to engage in entrepreneurial activities.

7.1. Policy implications

From a policy standpoint, our findings indicate that academics who seek to engage in more informal entrepreneurial activities should benefit from more institutional support on the departmental, and university levels. A good place to begin would be for institutions to recognize the value of such initiatives, both in terms of reputational enhancement and the potential for social good and financial rewards. In the survey's free comment section, several respondents noted that their institutions showed little enthusiasm for their participation in such endeavors, especially if they were from the fields of the arts, humanities, and social sciences. Our findings highlight the need of entrepreneurship education and providing resources to junior female academics who are interested in pursuing entrepreneurial endeavors but lack the necessary commercial experience and knowledge. It is important to assess business advice to ensure it does not discourage unofficial activity that could lead to formal, mutually beneficial collaborations in the future. The public's perception of entrepreneurs could benefit from increased efforts to publicize the outcomes of successful entrepreneurial initiatives, especially in the context of contacts with the public or not-for-profit sectors at the national level. Case studies are one tool that could be used to accomplish this goal.

7.2. Limitation and future research

There are a few benefits and implications from this paper, but there are also some drawbacks. To begin, this poll only includes data from China, limiting the study's applicability outside the borders of that country. It would be fascinating to see if the results of this study might be generalized to other countries in future research. Second, the study relies on data from a single, unreliable source. While surveys are still the primary method of data collection for quantitative studies (Brown & Lee, 2019), combining data from a variety of sources has the potential to strengthen the reliability of findings. Finally, the impacts of entrepreneurial identity on academic entrepreneurship performance are investigated, with only social capital inactivity and entrepreneurial narratives included as moderators in this article. Potentially relevant contextual factors for academic entrepreneurship include prior entrepreneurial experience and institutional support.

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