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The Effect of Entrepreneurial Ideas and Skills on the Intentions of Algerian University Students to Launch New Start-Ups

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Abstract: In the fast-paced and ever-evolving world of entrepreneurship, start-ups have become synonymous with innovation and limitless potential. One of the significant channels used to encourage them is investing in the capabilities and ideas of visionary youths and university students who are considered society's elite. However, despite the Algerian economy's shift towards supporting entrepreneurship, especially among students, there is limited entrepreneurial activity overall, particularly in innovative start-ups, which has remained notably low. This indicates less inclination toward launching new start-ups among the students. Thus, the primary objective of this research is to examine the role of entrepreneurial ideas (EID) and entrepreneurial skills (ESK) in influencing the intention to launch new start-ups (ILNS) in Algeria. A cross-sectional research design was employed, involving the distribution of a pre-designed questionnaire among students registered in Algerian universities. Data collection was conducted across all the regions of Algeria, yielding a total of 297 valid responses. Data was analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) via Smart-PLS 4 software. The findings highlight significant correlations between EID, EKS, and ILNS. These outcomes furnish fresh insights into the significance of cultivating personal entrepreneurial competencies. Moreover, they shed light on the mechanisms for nurturing entrepreneurship and offer practical recommendations to bolster students' capacities to launch new start-ups, thereby contributing to the local economy.

Keywords: *Start-Ups, Launch, Intentions, Entrepreneurial Ideas, Entrepreneurial Skills,Algeria.*

1. Introduction

Innovative start-ups are playing a pivotal role in driving economic growth by creating jobs, fostering innovation, and introducing competition [17]. These start-ups rely heavily on technological innovation to solve complex problems [1]. The start-up is defined as "A new entity that leans on innovative and non-existent solutions that can turn into a scalable business model and then a dynamic enterprise in an uncertain environment." [37]. The start-ups' ability to adapt to unstable conditions contributes to their survival [64]. The COVID-19 pandemic and subsequent lockdowns, while causing economic atrophy and reduced social interaction, paradoxically created opportunities for entrepreneurship and innovative start-ups. Urgent demands for innovations in health, remote communication, and logistics, along with changes in societal habits and consumer behavior, fueled this trend [50]. Despite these opportunities, however, the low rate of new start-up launches in Algeria remains a topic of discussion. Developing countries, in general, must prioritize bridging the technology and entrepreneurship gap [26]. Therefore, there is a growing need to encourage the establishment of more start-ups while comprehending the underlying factors fueling this phenomenon, especially among Algerian university graduates and students. Extensive research has been dedicated to understanding the determinants of entrepreneurial intentions across various settings, but studies specific to the Algerian context are notably scarce.

The latest literature reveals unremitting efforts to identify what leads to be entrepreneurs and the factors that

shape intentions to establishing new ventures in a myriad of contexts. Scholars sought to investigate many aspects and characteristics of different entrepreneurial phases: individual and personality (psychology) aspects [18, 19, 42, 53, 57], educational [57], cognitive[10], cultural [52], institutional [52, 53, 59], and policy and support aspects [68]. Thus, the entrepreneurial processes involve internal and external factors [51].Moreover, the importance of understanding entrepreneurs and their mental processes has been widely recognized [61]. However, studies investigating the role of innovative ideas in the entrepreneurial process are scarce. The effect of innovative ideas in intentions to launch new start-ups needs to be explored. The recent developments in the present times have opened up numerous opportunities for potential entrepreneurs to generate and commercialize new ideas [55]. Additionally, the swiftly evolving requirements and expectations of customers in this technological era exert significant strain on them to generate and execute a multitude of innovative ideas [63]. Consequently, generating novel entrepreneurial ideas becomes indispensable as they enable entrepreneurs to launch new start-ups by introducing new products, markets, or customer bases [2].

From another perspective, to enhance entrepreneurial activities in individuals, it's crucial to understand the barriers they face when starting new businesses [51]. These barriers include a lack of skills and experience, impeding young entrepreneurs [39]. In the Algerian context, the inability to launch a start-up often results from inadequate skills and knowledge [67]. Four primary skills are identified as essential for overcoming these barriers: personal, entrepreneurial, managerial, marketing, and technological skills [7]. Developing these skills can instill motivation, confidence, and the ability to establish new businesses [16]. Entrepreneurial intention and behavior are closely tied to these skills and can be improved through education and training programs [23]. Further, even though several studies proved the relationship between skill and intention (e.g., [21, 43, 59],there is still a debate about the effect and a need for more investigation [59]. The inconsistent finding does not close the arguments. Thus, investigating the role of skills in the intention to launch new start-ups among Algerian students will contribute to the literature.To address these issues, this study used the Theory of Planned Behavior (TPB) as the underpinning theory to support this study framework and examine the entrepreneurial ideas and skills roles on the intention to launch new start-ups in Algeria. This study's results will contribute to the body of knowledge. Doing so will help university policymakers and educators provide mechanisms to improve ideas generation and student skills development.

Theoretical Background And Relationships Levels

Theory Of Planned Behavior (Tpb): Ajzen's Theory of Planned Behavior (TPB) is the central theoretical foundation employed in this research as one of the most significant social psychology theories [4]. TPB has been confirmed as a robust and comprehensive framework applicable to various aspects of human behavior in multiple contexts (Ahmed et al., 2020). Ajzen [3] explains that "intentions to perform behaviors in specific situations can be predicted with three antecedents (attitudes toward the behavior, subjective norms, and perceived behavioral control), and that intentions, together with perceived behavioral control, account for considerable variance in actual behavior". In the field of entrepreneurship, the TPB theory has gained extensive acceptance and emerged as a prominent theoretical framework. In this research, we do not adopt the complete model of TPB; it does not use the three factors of intentions in TPB. We aim to advance the understanding of predictors for EI beyond the conventional antecedents outlined in TPB. Although previous studies in entrepreneurship have found that the three TPB antecedents account for 30–45% of the variability in intentions [44]. The multifaceted nature of entrepreneurship involves numerous actions and complex sequences within dynamic situations [38]. Comprehending human behavior is intricate and demanding, and addressing these complexities involves varying levels of psychological processes referring to personal and social psychology [3].Moreover, analysis can be extended to the national level and even down to the ideas level [49]; the idea level (individual's mind) would allow another analysis level. At the heart of entrepreneurship lies the concept of internally stimulated opportunity recognition, as initially proposed by Kirzner[40]. This recognition occurs when an entrepreneur conceives a business idea and transforms it into a new venture. Consequently, the model posits that students are expected to yield positive outcomes once they formulate entrepreneurial ideas.For entrepreneurial skills, perceptions of ESK reflect the respondents' confidence level in possessing the required proficiency in specific entrepreneurship-related abilities (Liñán, 2008). Strong ESK, such as the ability to

identify an opportunity, is expected to positively impact personal attitudes, subjective norms, and behavioral control related to entrepreneurship [11, 20, 48].

Possessing ESK increases self-efficacy and motivation and could make individuals feel more capable of success as an entrepreneur [16, 22,12] assert that ESK psychologically impacts individuals' mindsets. This influence empowers individuals and steers them toward engaging in entrepreneurial behaviors in the future. Thus conferring the psychological nature of ES in instilling positive change factors that affect entrepreneurial intent. From this perspective, this study model presented the relationship between ESK and ILNS and assumed a significant correlation.

Entrepreneurial Ideas And The Intention To Launch New Start-Ups

In the realm of entrepreneurship, Hill and Birkinshaw [34] provide a definition of an entrepreneurial idea as a "comprehensive set of concepts that an individual possesses, stemming from their occasional moments of inspiration to ideas that have been transformed into commercial ventures." Analyzing the mental landscape of individuals, particularly at the idea level, presents an opportunity for further examination. It's crucial to stress that these ideas remain purely conceptual until active development efforts are initiated to address associated uncertainties. Over time, an idea may potentially evolve into an entrepreneurial opportunity ripe for exploitation [49]. However, if an idea is left unattended, it will stagnate and never evolve into an opportunity. Consequently, an idea on its own doesn't constitute an entrepreneurial opportunity. Nevertheless, no opportunity can materialize without the birth of an idea [30].Furthermore, aspiring entrepreneurs' degree of entrepreneurial intention can significantly impact their transition from mere ideas to actual entrepreneurial actions. The absence of a solid entrepreneurial intention or lower levels can be attributed to various factors, including the lack of viable entrepreneurial ideas [49].The greater the abundance of entrepreneurial ideas an individual possesses, the stronger their inclination becomes to select and pursue one of those ideas. Individuals' thought processes are pivotal in channeling their entrepreneurial intention [49].The idea itself lays the foundation for a new start-up. The emergence of ideas for new product or service development isn't spontaneous but rather arises from utilizing existing knowledge and experiences, along with creating innovative concepts, before individuals conceptualize these ideas [2, 60]. Hill and Birkinshaw [34] emphasized that entrepreneurial ideas, characterized by their content, quantity, novelty, and value, can influence entrepreneurial processes. Building on this, Molaei et al. [49] conducted an empirical study on the direct and indirect relationship between the dimensions of ideas and entrepreneurial intention among Iranian university students. The findings revealed that the four dimensions of entrepreneurial ideas positively and indirectly affect entrepreneurial intention. Consequently, based on these arguments, the following hypothesis is proposed:

H1: Entrepreneurial ideas positively and significantly impact the intention of launching new start-ups.

Entrepreneurial Skills And The Intention To Launch New Start-Ups

Skills refer to one's capacity to execute a particular task [47]. In a similar vein, Wickham [69]contended that "entrepreneurial performance results from a combination of industry knowledge, general management skills, and personal motivation (p.100)". Notably, within the entrepreneurial context, possessing skills is generally essential. Entrepreneurial skills are the aptitude to carry out responsibilities throughout all phases. Consequently, Mamabolo et al. [45] suggested that entrepreneurial skills encompass "the proficiency in performing tasks in the entrepreneurial phases as a result of human capital investments (formal and education, entrepreneurial education, work, industry, and entrepreneurship experiences) that can be enhanced through training, practice, and development". Prior research has yielded an extensive inventory of skills imperative for the entrepreneurial process, e.g., [8, 36, 46, 58]. There is a growing consensus among diverse studies that entrepreneurial skills constitute a multifaceted concept encompassing personal, managerial, and marketing proficiencies. These skills are pivotal and adaptable in various contexts and situations. Nevertheless, studies in the field of entrepreneurship often encounter an overlap in the required skills, making the categorization of skills challenging. To date, a consensus has not been reached regarding the components of entrepreneurial skills. Nonetheless, it is evident that various skill types play a pivotal role in the process of establishing a new venture [65].Baaziz [7] additionally contended that in the Algerian entrepreneurial ecosystem, an emerging Arab

economy, individuals face four primary barriers hindering successful start-up launches: a deficiency in personal entrepreneurial, managerial, marketing, and technological skills [7].Consequently, aspiring entrepreneurs must cultivate fundamental skills and techniques for establishing an enterprise. Gieure et al. [25] discovered that the significance of entrepreneurial skills in elucidating entrepreneurial intentions is substantial, as knowledge and training are presumed to foster high-level proficiency in individuals. Similarly, many research studies have established a positive and positive correlation between entrepreneurial skills and intentions. For instance, Ibrahim and Mas'ud[35] among university students in the Nigerian context. Farooq et al. [21]among fresh graduates in Pakistan. Hence, based on this, it can be hypothesized that:

H2: Entrepreneurial skills positively and significantly impact the intention of launching new start-ups.

2. ResearchMethods

Study Design: The research adhered to a positivist research philosophy and employed a deductive approach. The gathering data from participants in a single collection point, thus classifying the study's temporal scope as cross-sectional. A quantitative research design utilizing a survey instrument was employed to collect data from university students in Algeria systematically. The researchers initially established precise exclusion criteria and posed essential inquiries to assess the eligibility of respondents for participation in the study. These inquiries revolved around whether respondents had enrolled in or were currently enrolled in university-level entrepreneurship courses or if they had actively participated in any entrepreneurial programs or events within the university context. These screening questions were employed to ensure the sample's integrity and ascertain that participants held a general perception of entrepreneurship within the academic setting. Respondents who responded negatively to any of these questions were excluded. The students who responded affirmatively were further considered for inclusion in the comprehensive data collection phase.

Instruments

The measurement items were derived from existing literature and adapted accordingly. This study's dependent variable is the intention to launch new start-ups, defined as "the willingness or predisposition to start or engage in business activities shortly." [41, 62]. This research uses the six items of Linan and Chen's [44] well-used and known items to measure the intentions. Entrepreneurial ideas are operationalized as "a complete set of ideas that an individual possesses (i.e., from the individual's "mental sparkle," which is accessible now and then to the idea which is commercialized) [34]. The study used the four items adopted from Ahmad et al. [2]. ESK is the second independent variable measured by Linan [43] and Al-Mamun et al. [5]. ESK is defined in this study as « the proficiency in performing tasks in the entrepreneurial phases as a result of human capital investments (formal and education, entrepreneurial education, and entrepreneurship experiences) and can be improved by training, practice, and development."

Sampling Design And Data Collection Procedure

The total population for this study comprised students who had participated in an entrepreneurial program or event at an Algerian university at least once. Researchers employed purposive sampling to choose the specific sample from this overall population, which considered 1,496,167 students across the country. This sampling method might occasionally represent the optimal selection of a sampling design, particularly in cases where the available population to provide the required information is limited. As outlined earlier, researchers established exclusion criteria through initial screening questions (e.g., have you recently participated in entrepreneurial events within the university?). Consequently, only students who enrolled in university programs, had engaged in entrepreneurial events, or were part of university business incubators in the academic year 2021/2022 were identified as potential participants during the data collection process. Data collection occurred after the initial stages of recovery from the COVID-19 pandemic when physical distancing and pandemic-related restrictions had eased, and social interaction had returned to normal. The research assistants distributed the questionnaires to potential respondents through the drop-off survey method, personally handing them out. Four research assistants with academic backgrounds were enlisted to facilitate questionnaire distribution, assist respondents in completing them, follow up on the collection of deferred surveys, and collect all completed questionnaires Among 500 questionnaires distributed, 311 potential responses were returned, resulting in a response rate of

66%. A final sample of 297 valid responses and verified that the data was suitable for conducting the data analysis. Ultimately, After carefully screening and preparing the data, the decision was made to proceed with data analysis. Using structural equation modeling partial least squares, Smart-PLS 4 was the chosen tool for conducting this analysis and has been used to estimate both the measurement and structural models.

3. Analysis And Results

A preliminary assessment of the data was carried out to address potential violations of the assumptions underlying multivariate techniques. This assessment included screening for missing values, normality, outliers, and a test for common variance, following the guidelines outlined by Hair [28]. Missing values were identified in the dataset, and to address this issue, we employed the mean-centered approach using SPSS. This approach is highly recommended by researchers, as indicated by Hair et al. [29]. It's worth noting that Smart-PLS, the analysis tool utilized, also offers a built-in feature for handling missing values, which replaces them with the mean values. Following the preliminary data analysis, we proceeded to examine the profile and demographics of the respondents, as detailed in Table 1.

Table 1 Demographic Profile of the Respondents

Variable	Category	Frequency	Percentage %
Gender			
	Male	194	65.3
	Female	103	34.7
	Total	297	100
Age	20-24	216	72.7
	25-29	68	22.9
	≥30	13	4.4
	Total	297	100
Program	Business & Economy	83	27.9
	Engineering	86	29
	Sciences	112	37.7
	Education and Law	16	5.4
	Total	297	100
Educational Level	Licence / Bachelor	81	27.3
	Master	127	42.7
	Engineer	86	29
	Doctorate	3	1
	Total	297	100

Prior Experience	Yes	82	27.6
	No	215	72.4
	Total	297	100
Family Business Background	Yes	116	39
	No	181	61
	Total	297	100

Assessment Of Measurement Model

A confirmatory factor analysis (CFA) was conducted to validate the item reliability, assess convergent validity, and establish discriminant validity. The results presented in Tables 2 and 3 indicate that the item loadings exceed the recommended threshold of ≥ 0.50 [6, 8, 9, 24]. Additionally, internal consistency reliability was established through composite reliability, with values exceeding the accepted cutoff of ≥ 0.70 [9, 13, 27]. Furthermore, the study achieved convergent validity, as evidenced by the average variance extracted (AVE) meeting the minimum criterion of ≥ 0.5, with values ranging from 0.601 to 0.660, in line with the guidelines of Fornell and Larcker [22] and Henseler et al. [33] criterion. The attainment of discriminant validity is demonstrated in Table 4, as the square root of the AVE values exceeds the inter-correlations between each construct in the research model and is also higher than the construct correlations [14].

Table 2 Cross Loadings

N°	**Construct**		**1**	**2**	**3**
1	Entrepreneurial Ideas	EID1	**0.830**	0.206	0.198
		EID2	**0.745**	0.143	0.147
		EID3	**0.713**	0.195	0.179
		EID4	**0.830**	0.122	0.221
2	Entrepreneurial Skills	ESK1	0.199	**0.818**	0.125
		ESK2	0.215	**0.785**	0.188
		ESK3	0.246	**0.809**	0.194
		ESK4	0.102	**0.837**	0.163
		ESK5	0.187	**0.804**	0.146
		ESK6	0.080	**0.819**	0.188
3	Intentions to Launch New Start-ups	ILNS1	0.125	0.129	**0.578**
		ILNS2	0.157	0.162	**0.753**
		ILNS3	0.170	0.169	**0.863**
		ILNS4	0.183	0.143	**0.847**
		ILNS5	0.277	0.180	**0.850**
		ILNS6	0.173	0.188	**0.723**

Table 3 Internal Consistency, Reliability, and Convergent Validity

Construct	Items	Loadings	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Entrepreneurial Ideas	EID1	0.830	0.787	0.802	0.862	0.610
	EID2	0.745				
	EID3	0.713				
	EID4	0.830				
Entrepreneurial Skills	ESK1	0.818	0.898	0.904	0.921	0.660
	ESK2	0.785				
	ESK3	0.809				
	ESK4	0.837				
	ESK5	0.804				
	ESK6	0.819				
Intention to Launch New Start-ups	ILNS1	0.578	0.864	0.887	0.899	0.601
	ILNS2	0.753				
	ILNS3	0.863				
	ILNS4	0.847				
	ILNS5	0.850				
	ILNS6	0.723				

Table 4 Discriminant Validity (Fornell–Larcker)

	EID	ESK	ILNS
Entrepreneurial Ideas	0.781		
Entrepreneurial Skills	0.211	0.812	
Intention to Launch New Start-ups	0.242	0.211	0.775

Notes: EID, Entrepreneurial idea; ESK, entrepreneurial skills; ILNS, intention to launch new start-ups; UBI, university business incubators.

Furthermore, in the evaluation of discriminant validity, a contemporary tool known as the heterotrait–monotrait (HTMT) ratio of correlations has been utilized in accordance with the recommendations made by Henseler et al. [31]. This tool is employed to gauge the level of correlation between factors [32, 54]. The HTMT represents a recently developed approach within PLS-SEM to assess discriminant validity, a pivotal component of model validation. It's worth noting that a threshold of 0.90 is typically considered in the HTMT criterion [31, 32, 66].

In the context of our study, all HTMT values fall below the established threshold of 0.90, indicating that there is no evidence of discriminant validity issues among the latent constructs. Table 5 demonstrates the specific HTMT values.

Table 5 Discriminant Validity (HTMT)

	EID	ESK	ILNS
Entrepreneurial Ideas			
Entrepreneurial Skills	0.253		
Intention to Launch New Start-ups	0.280	0.232	

It is evident that the measurement model meets the internal consistency reliability criteria, convergent validity, and discriminant validity. Consequently, the measures are considered both valid and reliable for the structure model assessment (figure 2).

Assessment of Structure Model

The assessment of the structural model was carried out by employing the PLS-SEM bootstrapping technique [13]. To facilitate this evaluation, specific criteria were applied, including the coefficient of determination (R^2), the significance of path coefficients, and predictive relevance (Q^2). Initially, researchers examined the coefficient of determination values (R^2) within the structural model. This metric gauges the overall predictive capacity of the theoretical model. The value obtained of R^2 was 0.17, considered moderate and substantial, per the criterion established by Cohen [15], which categorized the value of R^2 of 0.02 as weak, 0.13 as moderate, and 0.26 as substantial, as indicated in Table 6. The findings for hypothesis 1 (H1) revealed a statistically significant positive relationship with a ß of 0.207, t-values of 3.798, and p-value of 0.000. This outcome suggests that entrepreneurial ideas indeed influence the intention to launch new start-ups. Similarly, hypothesis 2 (H2) results demonstrated a positive and significant effect, with a ß of 0.167, t-values of 2.770, and p-value of 0.006, indicating that ESK impacts the intention to establish new start-ups. Detailed findings regarding these direct relationships can be found in Table 7.

Table 6 R^2 of the Latent Construct

Latent construct	R-square
Intentions to Launch New Start-ups	0.168

Table 7 TheStudy Relationship Results

Hypothesis	relationship	Path-b	SD	t-values	p-values	Decision
H1	EID > ILNS	0.207	0.054	3.798	0.000	Accepted
H2	ESK > ILNS	0.167	0.006	2.770	0.006	Accepted

Analyzing Predictive Relevance (Q^2)

The model's predictive accuracy was assessed using Stone–Geisser's Q^2 value, a method introduced by Geisser in 1974, as mentioned by Henseler et al. [33]. To determine this value, a blindfolding procedure was carried out. This procedure assesses how well the independent constructs predict the dependent variable within the structural model. If the Q^2 value exceeds zero, it signifies a significant level of predictive relevance [13,29]. In our study,

the blindfolding procedure yielded a Q^2 value of 0.061, more significant than zero, indicating that predictive relevance was established.

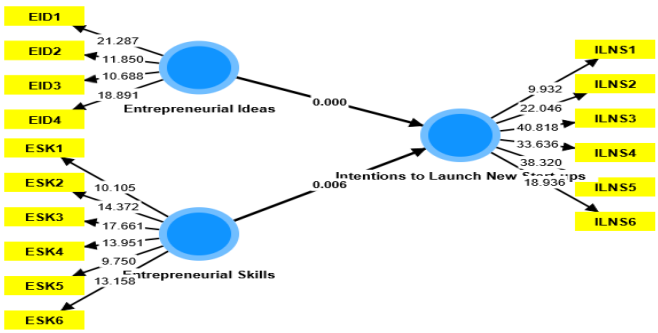

Figure 2 Structured Model of this Study

4. Discussion

As mentioned earlier, the hypothesis H1 was supported. The university students hold entrepreneurial ideas that can lead them to have the intention to launch new start-ups in the near future. This is consistent with the previous study by Molaei et al. [49] and meets with the proposition of Kahlessenane et al. [37]. The findings prove that students have the ability to generate entrepreneurial ideas that may be turned into innovative start-ups and introduce new products, markets, or customer bases that can solve some customer or market issues. The second hypothesis (H2) was accepted, too; this finding is in line with prior results in different contexts [20, 25, 43, 59], which means that students who believe in their entrepreneurial abilities are more inclined to launch a new innovative start-up.

5. Conclusion And Future Direction

The study's objectives were to determine the relationship between entrepreneurial ideas, skills, and the intention to launch new start-ups among university students in Algeria. The findings reflect that entrepreneurial ideas and ESK positively influence the intention to launch new start-ups. This study enhances the understanding of the intention to establish new start-ups by investigating entrepreneurial ideas, particularly those based on behavioral perspectives, such as the Theory of Planned Behavior (TPB) and Social Cognitive Theory (SCT). Furthermore, this study sheds light on the Algerian context, where very few studies have been conducted, especially in this country. The findings of this study may make a valuable contribution to various influential actors in the start-up ecosystem, such as ministries, universities, incubators, and individuals. It may assist in the development of Arab countries in general and Algeria in particular, helping to devise necessary solutions to overcome or at least minimize the problem of the low rate of launching new innovative start-ups, which the country may rely on for economic transformation. The research focuses on the perceptions of students in Algerian universities, considered the elite of society, to devise appropriate policies to address the phenomenon of the low rate of innovative start-ups in Algeria. Since start-ups, considered fast, scalable business models, have a significant potential impact on the economy and the knowledge economy, they play a crucial role in job creation (reducing the government's employment burden), providing technological solutions, and promoting digitalization in the nation. This assists the government in stimulating the economy, creating a broad and profound impact on the nation's socio-economic development. Specifically, the findings of this research provide politicians, managers, and educators in Algerian universities with a better understanding of the extent to which students' cognitive abilities (entrepreneurial ideas and skills) affect the intention to launch new start-ups. This study has some limitations. First, it investigated two independent variables (personal) with one dependent variable. Future research may introduce another variable, such as environmental and contextual factors. University culture,

climate, and business incubators are worth investigating as independent constructs or moderator variables, which can also enhance our understanding of the research model in different contexts. Second, future research can further investigate the behavior of launching new start-ups and explore the intention-behavior link or investigate the direct relationship between ideas, skills, and the behavior of launching new start-ups, recognizing that not all intentions transform into actual behavior. Finally, the present study used a cross-sectional research design. Intentions can change over time. Therefore, future research studies should adopt longitudinal and time series data collection procedures to help better analyze the intention to launch new start-ups and discover when and how it transforms into actual behavior.

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