

## Article

# University Incubator Support and Entrepreneurial Intention among Tourism Graduates: Mediating Role of Personal Attitude

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**Abstract:** The Saudi Arabian government has promoted the tourism industry as a way to achieve the Kingdom's Vision 2030 by diversifying the economy and reducing overdependence on the oil sector. To align with this, several universities in Saudi Arabia have started providing tourism education. Accordingly, several academic programs and university incubators were launched to prepare workers and entrepreneurs for the industry. This study examines the role of support given by university incubators—embedded in networking support, financial support, and training support—in enhancing entrepreneurship intention among tourism graduates. Furthermore, the study examines the mediating role of personal attitude in the aforementioned relationship. Data were collected from a sample of 750 senior students at tourism and hospitality management colleges in Saudi Arabian public universities. All of the research participants have had access to these incubators. Using structural equation modeling, the study shows that the personal attitude of graduates partially mediates the impact of networking support as a dimension of university incubator support and entrepreneurship intention. However, the personal attitude of graduates was found to fully mediate the relationships between financial and training support and entrepreneurship. Future research implications and limitations are elaborated.

**Keywords:** university incubators support; entrepreneurial intention; tourism entrepreneurship; personal attitude; Saudi Vision 2030



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## 1. Introduction

Saudi Arabia has witnessed dramatic structural and economical changes over the last decade. Since the announcement of Saudi Vision 2030 by his Royal Highness Crown Prince Mohammed bin Salman bin Abdulaziz Al Saud, on 25 April 2016, the Council of Ministers has directed all its resources and efforts to achieving this Vision [1]. The Council of Ministers has directed the Council of Economic and Development Affairs to diversify the national economy and reduce the economy's overdependence on oil. Hence, the government has paid more attention to entrepreneurship and investment as major drivers for economic growth. It is widely acknowledged that the Vision has created employment opportunities for Saudis by stimulating entrepreneurship culture, privatization, and new investment in new industries such as tourism, which is new to the Saudi culture and economy. A recent report showed that Saudi Arabia is diversifying its economy and creating exciting opportunities as non-oil government revenue has achieved an increase of 122% from USD 44 bn in 2015 to USD 107 bn in 2021 [1].

A recent report in relation to the Global Competitive Index has shown that the Kingdom is ranked number 12 in the index of Venture Capital Availability. This is due to the government's commitment to encouraging entrepreneurship activities and small businesses, which is expected to reach 35% of the contribution to the Saudi GDP by 2030 [2]. The government encourages investment in new industries such as sports, entertainment, and tourism; hence, new bodies were established to support this such as the Ministry of Tourism. The Kingdom has been identified traditionally as a religious tourism destination due to the Holy Mosques in Mecca and Medina, which are a destination for Muslims worldwide. However, to align with the Vision, the government started investing in other forms of tourism such as cultural and recreational tourism. Hence, the electronic tourist visa was inaugurated in 2019 to open the door for tourists from 49 countries. Additionally, the first regional office of the World Tourism Organization opened in Riyadh in 2021 [2]. Along the same line, the government has promoted tourism education and several academic programs were launched at public and private Saudi universities to prepare workers and entrepreneurs for the industry.

To promote entrepreneurship culture, especially among higher education graduates, the government has taken several steps. This includes establishing entrepreneurship centers at most Saudi public universities [3]. The number of these entrepreneurship centers has increased after the launch of Vision 2030, reaching more than 35 business incubators operating under universities as non-profit institutions. These centers are aimed at supporting students in their startups, removing barriers to entrepreneurship activities, developing regulations to support new businesses, and adding new courses such as "Principles of Entrepreneurship" to higher education curricula [4–6]. The role of higher education institutions in promoting entrepreneurship cannot be underestimated [3,6]. It is argued that if university graduates receive the required support from their institutions, they are more likely to become successful entrepreneurs [3,7,8]. However, a limited number of studies have examined the role of the university support system in stimulating entrepreneurship among university graduates [3,5]. This is especially true for Saudi Arabia, where a limited number of studies have been undertaken to address this issue despite the dramatic changes in the economy and the promotion of entrepreneurship by the government and universities. Furthermore, to the authors' knowledge, this is the first study that investigates the impact of three dimensions of university incubator support (networking support, financial support, and training support) on entrepreneurship intention with the mediating role of personal attitude and employing structural equation modeling (SEM) as the main data analysis technique. Hence, the important questions that will be addressed in the current study are as follows: what is the impact of Saudi university incubator support on entrepreneurial intention among tourism graduates? What is the effect of graduates' personal attitudes on this relationship? How can Saudi universities stimulate the entrepreneurial intention of tourism graduates through university incubator support?

The purpose of the current study is to examine the impact of university incubators' support on the entrepreneurial intention of tourism graduates from Saudi public universities. The study focuses on tourism graduates and their ability to run new ventures related to the tourism industry, which has great potential in Saudi Arabia. More specifically, the study examines the direct impact of network support, financial support, and training support on the entrepreneurial intention of tourism graduates. It tests the indirect impact through the personal attitude of graduates. The study has drawn on the theory of planned behavior [9] to understand the link between university incubators' support and entrepreneurial intention through the role of graduates' personal attitudes. The study attempts to understand the factors that affect the entrepreneurial intention of tourism graduates to provide the appropriate recommendations for higher education decision-makers as well as academics about the promotion of entrepreneurial intention among graduates. A proper understanding of these factors will help decision-makers in Saudi public universities stimulate entrepreneurial intention among tourism graduates through effective university incubator support. This ultimately will significantly impact the Saudi tourism industry,

which is of great value to the Saudi economy. For this purpose, the study adopted the following structure. It reviewed the relevant studies and developed the theoretical model with study hypotheses. The study then adopted a pre-examined survey for data collection and Amos software for data analysis. The findings are then presented and discussed. The major recommendations for decision-makers and academics are then highlighted. Finally, the study conclusions and limitations are highlighted.

## 2. Theoretical Background and Hypothesis Development

### 2.1. Theory of Planned Behavior

Many studies have examined and analyzed entrepreneurial intention, using several models, such as the theory of planned behavior, the entrepreneurial event mode, and the theory of reasoned action. Among these theories, the planned behavior theory is the most widely used theory in studies that focus on studying and interpreting students' entrepreneurial intentions and their attitudes toward new projects, as well as studying the impact of various educational activities on entrepreneurial intentions [3], and for that reason, TPB has been adapted in this study. Ajzen [9] emphasized, through the theory of planned behavior, that the behavioral intention of individuals is determined by their attitudes, norms, and perceived behavioral control, and that TPB has an important role in changing intentions and behavior through behavioral interventions that change the antecedents of intentions, either by motivating individuals or removing obstacles that may hinder behavioral control. In the context of entrepreneurship, the attitude of individuals toward entrepreneurship has been described as the degree to which a person is committed to a new venture or the idea of being an entrepreneur [3]. In addition, it has been emphasized that entrepreneurial attitude has a direct impact on entrepreneurial intentions [8]. Moreover, the empirical research that has adopted the TPB has proved its application in measuring the intention and behavior of individuals in starting a new business, taking into account the difference in its relative importance and the degree of its impact in each situation and country [3,4,8].

### 2.2. Defining the Study Constructs

Ayatse et al. [10] interpreted the concept of business incubators as a unique institutional structure that strives to spread and consolidate the culture of entrepreneurship in society. Academics and industrial organizations have competed in interpreting and formulating the concept of business incubators. The concept was initiated by Joseph Mancuso in 1959, at the Batavia Industrial Center in the USA, and subsequently many attempts have been made to explain it [11]. Hackett and Dilts [12] defined the business incubator as a combined office space facility designed to provide start-up corporate clients with a strategic intervention system to support businesses and monitor business execution. Meanwhile Hughes et al. [13] defined it as a specialized facility that includes a group of small, young companies, to help them achieve their goals of rapidly developing into competitive businesses. In the same context, and for a clearer meaning, Eshun [14] defined a business incubator as an entity designed specifically in order to support start-up companies in developing and marketing their new products and technologies. Grimaldi and Grandi [15] and Von Zedtwitz and Grimaldi [16] have identified five different types of business incubators, two of which are of public benefit, namely, university business incubators, and regional innovation centers, and the other three types are investment-oriented for the private sector, which are private commercial incubators, corporate private incubators, and virtual business incubators.

The two issues of the precise determination of the services provided by business incubators and measuring the performance of business incubators are among the most important issues that researchers have discussed [17]. Campbell, Kendrick, and Samuelson [18] developed the first model that identifies the different activities in business incubators and how those activities interact in order to transform a business idea into a startup that can survive in the markets. The model identified four contributions of incubators: diagnosing business needs, selecting and implementing business services, providing access

to networks, and providing financing. This was followed by a set of models in an attempt to provide a comprehensive model that clarifies the nature of the incubation process, such as the Smilor model [19] and the Hackett and Dilts model [12]. According to the OECD [20], the role of business incubators is to provide facilities to those who have new business ideas, by providing seed capital, technical and financial advisory services, and assistance in setting and formulating policies. In the same context, Jenyo [21] believed that business incubators provide different types of services such as networking services, capital, promotion services, and workplaces for beginner entrepreneurs, which was summarized by Lynn et al. [22], in the role of mediator between business incubators and the external work environment, as what has been called “external network services”. Moreover, Ahmed et al. [23] identified three areas of services provided by business incubators, which are capital support, networking services, and training programs, and used them to measure the performance of business incubators and their role in entrepreneurship development. This scale was adopted for measuring university business incubators’ variables in this study.

A business network can be defined as the interactions between two or more companies with each other [24]. A business network consists of two or more interconnected relationships, which may be roles, individuals, or organizations [25]. Numerous studies have confirmed that network support services are a vital source of competitive advantage and performance development for start-ups [26–28]. Network support services also play an important role in the survival of emerging projects in the markets by providing information, knowledge, and experience, and also reducing the uncertainty that they face, especially at the beginning of their work [29].

Financial support is one of the main services provided by business incubators to startups, as stressed by [30]. The funding life cycle for startups can be divided into five stages: the seed stage, the infant stage, the growth stage, the maturity stage, and the post-incubation stage. The financial support requests for startups vary in each period of their life cycle, depending on the size of the company and the size of the operation [31]. Gozali et al. [32] determined eight success factors for university incubators in Indonesia, one of which was financial support, and they proved the influence relationship between financial support and the success of business incubators. The proposed scale of measuring financial funding by Gozali et al. [32] was adopted to measure the financial support variable in this study.

Entrepreneurship training is an increasingly important global service [33], although the opinions of researchers differ on the extent of the impact of training on entrepreneurship. There are those who stress that entrepreneurs are born and not made, and that training does not play a fundamental role in enhancing the concept of the spirit of entrepreneurship among individuals [34]. The other view emphasizes that the personality traits of individuals associated with entrepreneurship are influenced by education, training, and other social factors [35]. Gibb [36] added that the characteristics of entrepreneurship appear to be cultural and experiential, and therefore may be influenced by education and training, which may thus affect orientation toward entrepreneurship activities. In line with the second point of view, Somsuk and Laosirihongthong [17] and Mahmoud et al. [37] argued that providing training and training services is one of the important services provided by business incubators, because of its importance in continuous learning, skills development, and performance improvement. On this basis, training services were used as a measure of the performance of business incubators; more specifically, the measure used by Mahmoud et al., in which the impact of training as one of the activities of business incubators in developing entrepreneurial activities was measured through five aspects of training—capacity building skills, product development skills, business management skills, marketing skills, and other customized training skills—was adopted for this study to examine the role of university business incubators and their impact on entrepreneurial intention and graduates’ attitude.

The intention is the latent force capable of inspiring, encouraging, and motivating an individual to pay attention [38], which can be expected from a person’s attitudes toward a particular behavior [39,40]. There is no standard definition or one way to measure

entrepreneurial intention [41]. Nevertheless, a significant amount of research agrees that it is the state in which people, both physically and mentally, show their desire to create businesses or organizations [42]. Entrepreneurial intention is a determining component of the performance of entrepreneurial behavior [43], and it is the strongest indicator of entrepreneurial behavior, which translates into entrepreneurial actions, without which further entrepreneurial steps cannot be taken [43,44]. Carsrud et al. [45] defined entrepreneurial intention as an individual willingness to establish and manage their own startup company. Thompson [46] defined it as a recognized conviction by a person who intends to establish a new business and deliberately plans to do so at some point in the future. Researchers Bello et al. [47] and Aure et al. [48] have paid special attention to the motives and causes that can lead to a person's intention to start an entrepreneurial project, and many motives have been investigated. Examples include Chen et al.'s [49] study, in which they examined the impact of entrepreneurship self-efficacy on entrepreneurial intentions, and the study by Liñán and Chen [50], in which they examined the three motivational antecedents to entrepreneurial intention and the effects of cultural differences on the entrepreneurial intention. The scale of entrepreneurial intention in both studies was adopted for this study.

Attitude has been defined as the extent to which an individual has the ability to positively or negatively evaluate the behavior in question [7]. From the perspective of entrepreneurship, many studies have strived to explain the concept of attitude. Souitaris et al. [51] believed that the definition of a person's attitude towards self-employment expresses the difference between perceptions of a personal desire to become self-employed and work in an organizational way. On the other hand, Liñán and Chen [50] defined the attitude toward startups as the degree to which an individual has a positive or negative personal assessment of being an entrepreneur. This is consistent with Schultz and Oskamp's [52] statement that entrepreneurial attitude is not limited to a mere personal realization; rather, it is individual feelings and thoughts towards entrepreneurship, as confirmed by Robinson et al. [53], who argued that attitude affects confidence, enthusiasm, inclination, and ambition toward entrepreneurship. Two types of personal attitude can be distinguished: the first is the emotional/experimental attitude, which refers to feelings and emotions, and the second is the instrumental/cognitive attitude, which refers to rational arguments and ideas [54–56]. It is worth noting that among the most important theories dealing with the interpretation of people's attitudes and behavioral phenomena are the theory of reasoned action and the theory of planned behavior, which is the main reference in most research that deals with individuals' attitudes and behaviors [6,57–59]. The scale proposed by Ajzen [58] was adopted to measure tourism graduates' attitudes in this study.

### *2.3. Network Support, Attitude, and Entrepreneurial Intention*

According to Pettersen et al. [60], business networking support services include a combination of connections made through cooperation with several intermediaries or companies that present a project with important means. Alpenidze and Pauceanu [61] addressed the assertion that the internal capabilities of companies and network services have a strong dynamic and positive relationship with the development of entrepreneurship. Njau et al. [30] have previously studied the relationship between networking support services provided by business incubators and the creation of new startups related to the technology sector in Kenya as perceived by business incubator managers in Nairobi. The study concluded that network support services had a significant positive impact on Intent to establish new technology-based ventures in Kenya. In the same context, Collinson and Gregson [29] compared three organizations that promote new technology startups in the USA, UK, and Canada, examining how networks affect the interactions and attitudes of entrepreneurs, and found that the networks are among factors that help explain differences and attitudes of entrepreneurs across the sampled regions. For more in-depth understanding, Njau et al. [30] developed a scale for measuring network support services for projects, through five criteria: market access, supplier network access, access to a network of professionals, internal networks, and external network, and proved that



there is a positive impact of network services on project creation. To conclude, networking support services by business incubators might have an effect on graduates' attitudes and their entrepreneurial intention towards tourism startup ventures. These discussions can be formulated into the following hypotheses:

**Hypothesis 1 (H1):** *Networking Support has a direct impact on tourism graduates' attitude.*

**Hypothesis 2 (H2):** *Networking Support has a direct impact on the entrepreneurial intention of tourism graduates.*

#### 2.4. Financial Support, Attitude, and Entrepreneurial Intention

Several studies have dealt with issues of financial support and entrepreneurship. Gozali et al. [32] examined the success factors for e-incubators at public universities in Indonesia, and confirmed that funding support is among eight factors that affect success of e-incubators at Indonesian public universities and establishing startups. On the other hand, Cui et al. [28] went further, and examined the relationship between the financial support system by incubators and the business life cycle of companies, and concluded that startups in incubation face different financial needs phases depending on the size of the company and the size of the operation. Moreover, Dee et al. [62] reviewed the results of academics and practitioners' research on business incubation and concluded that startups usually spend about two years in an incubator, during which incubators provide many advantages to startups such as financing, equipment, office space, financial advice, equipment, etc. In the same context, Njau et al. [30] stressed the need for startups to obtain support from business incubators in their journey toward survival and growth in the markets, and they believed that this support may be in the form of financial support, office space, technical consultancy, network services, or services training. These discussions can be formulated into the following hypothesis:

**Hypothesis 3 (H3):** *Financial Support has a direct impact on tourism graduates' attitudes.*

**Hypothesis 4 (H4):** *Financial Support has a direct impact on the entrepreneurial intention of tourism graduates.*

#### 2.5. Training Support, Attitude, and Entrepreneurial Intention

Kuryan et al. [63] believed that mentoring and training services are among the main business support services provided by business incubators to start-ups, and explained the concept of training program services—that the incubating company appoints a coach or mentor for each startup to provide professional advice on many issues to help develop new ideas and entrepreneurial business development. In support of the importance of training support services, Armellini et al. [64] and Myint et al. [65] emphasized that training support services and network support services are the main reasons for the success and excellence of European technology business incubators and that capital support services and managerial consulting are among the reasons for the success of American businesses. Several studies have dealt with the relationship between training support and attitude, and the intentions of individuals. McClelland [35] analyzed the occupational position of 55 Wesleyan graduates and believed that personality traits of individuals associated with entrepreneurship are influenced by education, training, and other social factors. In the same context, Gibb [36] added that the characteristics of the entrepreneurship of individuals may be influenced by education and training and thus may affect their orientation toward entrepreneurship activities. However, the opposite point of view is also present; for example, Shapero and Sokol [34] found that training services do not play a fundamental role in enhancing the concept of the spirit of entrepreneurship among individuals. According to the previous discussion of the literature, it is clear that there are differences in the results of the effect

of training support on attitude and intention. Accordingly, the following hypotheses are proposed:

**Hypothesis 5 (H5):** *Training Support has a direct impact on tourism graduates' attitudes.*

**Hypothesis 6 (H6):** *Training Support has a direct impact on the entrepreneurial intention of tourism graduates.*

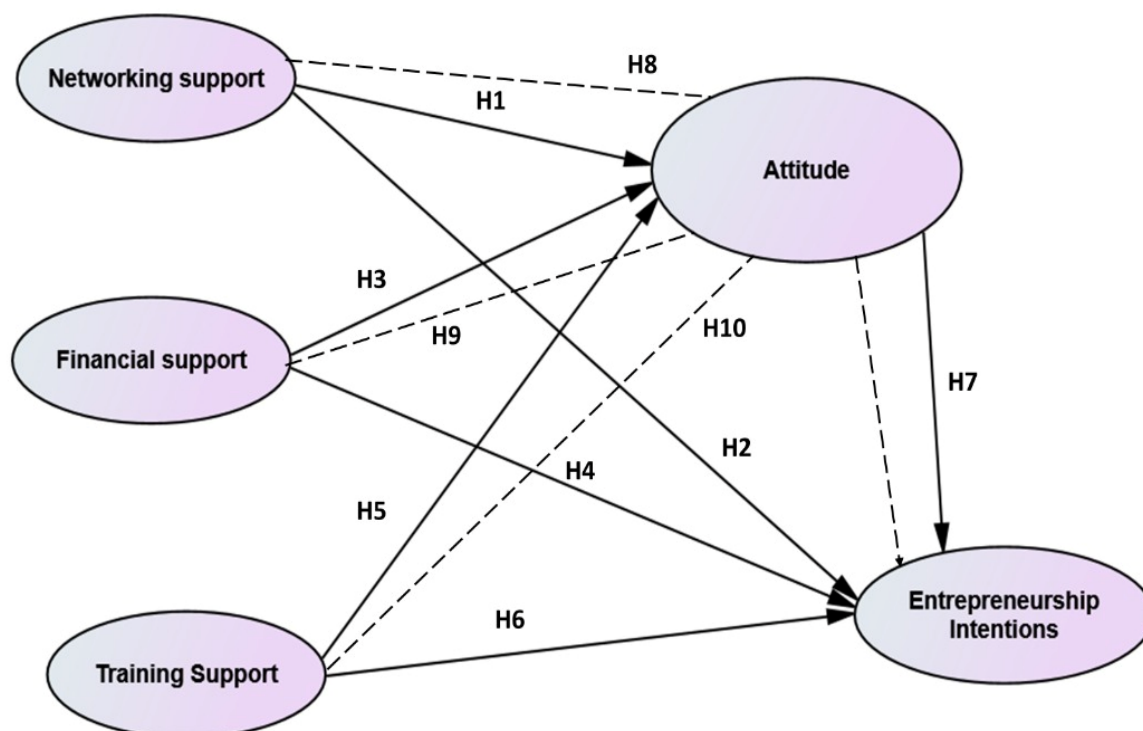
#### 2.6. Attitude and Entrepreneurial Intention

Several studies have dealt with the relationship between attitude and intention. Cavazos-Arroyo et al. [66] examined how self-criteria, attitudes, and self-efficacy of entrepreneurship affect entrepreneurial intentions in the Mexican population and found that they have a positive impact on social entrepreneurial intention. The same result was obtained by Vinothkumar and Subramanian [67] in their study, which has been applied to the military. Another study conducted by Yap et al. [68] highlighted the importance of attitudes and assumed that it is the most influential factor in the intention of individuals, and they concluded that attitude is the main predictor of many behavioral intentions of individuals. In the same context, Tshikovhi and Shambare [69] demonstrated that personal behavior and entrepreneurial knowledge are the two important factors in motivating students in South Africa to act systematically toward entrepreneurial activities. Furthermore, Utami [70] found that attitudes, self-standards, and self-efficacy have a positive and significant impact on entrepreneurial intention among Indonesian undergraduate students. However, the opposite point of view has been adopted by, for example, Zhang et al. [71], who found that attitude did not have a significant impact on the intention of entrepreneurship in a sample of students at an American university. The same conclusion was reached by Siu and Lo [72] based on a sample of MBA students from China and Hong Kong. According to the previous discussion of the literature, it is clear that there are differences in the results of the effect of attitude on intention. Accordingly, the following hypothesis is proposed:

**Hypothesis 7 (H7):** *Attitudes have a direct impact on the entrepreneurial intentions of tourism graduates.*

#### 2.7. The Mediating Impact of Personal Attitudes

Ajzen [73] emphasized, through the theory of planned behavior, that intentions are the most important determinant of behavior of individuals in carrying out a specific act or not. The theory of planned behavior has an important role in changing intentions and behavior through behavioral interventions; the latter change the antecedents of intentions by motivating individuals to pursue desired behavior and carry out intentions by helping to remove any obstacles that may impede effective control of behavior [58,73–75]. Based on the literature and all previous discussions, on the basis of which hypotheses 1 to 7 were built, and according to the theory of planned behavior, this paper argues that the premise that the support provided by university business incubators to the new tourism graduates (network support services, financial support services, and training support services), is a type of behavioral intervention directed toward graduates' attitudes as one of the precedents of intention. Therefore, it assumes the probability that the variable of tourism graduates' attitudes as a mediator will influence the relationship between the independent variables and the dependent variable. Therefore, as seen in Figure 1, it may be proposed that:



**Figure 1.** The theoretical model of the study.

**Hypothesis 8 (H8):** Attitude has a mediating impact on the relationship between networking support and the entrepreneurial intention of tourism graduates.

**Hypothesis 9 (H9):** Attitude has a mediating impact on the relationship between financial support and entrepreneurial intention of tourism graduates.

**Hypothesis 10 (H10):** Attitude has a mediating impact on the relationship between training support and the entrepreneurial intention of tourism graduates.

### 3. Methods

#### 3.1. Operationalization of the Study Constructs

All variables that were employed to operationalize the study factors were derived from previous research that showed a good psychometric property. Personal attitude items were adopted from Ajzen's [58] theory of planned behavior scale. An example item is the following: "If I had the opportunity and resources, I'd like to start a firm". The measures exhibited satisfactory reliability with an  $\alpha$  value equal to 0.969. Entrepreneurship intention was operationalized by six items derived from Chen et al. [49] and Liñán and Chen [50]. Sample items include: "I am determined to create a firm in the future", and "My professional goal is to become an entrepreneur". The scale showed good reliability with an  $\alpha$  value equal to 0.956. The university incubator's support was measured in three dimensions. The first one is named networking support and highlights the provision of forums for the interaction of businesses with potential customers, suppliers, and professionals, or internal and external collaborations. The networking support scale was adopted from Njau et al. [30]; the scale has five items and showed adequate reliability in our study with an  $\alpha$  value equal to 0.953. The second dimension of the university incubator support scale is named financial support and emphasizes support in the financing arrangement issues, such as help in obtaining a commercial or noncommercial loan. The scale was adopted from Gozali et al. [32] and exhibited good reliability in our study with an  $\alpha$  value equal to 0.947. Finally, the third factor of the university incubator support scale is named training support and shows the effort that supports improving product development skills, business



management skills, and marketing skills. The scale was adopted from Lukes et al. [76] and Mahmood et al. [37]. The scale showed high reliability with an  $\alpha$  value equal to 0.901. Students were required to answer the survey and declare their level of agreement on each question using a five-point Likert scale “1 = strongly disagree; 5 = strongly agree”.

### 3.2. Data Collection Procedures

A self-administered survey was structured and designed to acquire the study’s primary data. This paper surveyed 850 senior students in different KSA public universities. The 805 self-administrated questionnaires were distributed and collected using a simple random sample method. Data were collected from senior tourism students in September 2022. A total of 750 valid questionnaires were received with no missing data, with a response rate of 93.2%.

The study population includes all senior tourism students in KSA public universities (there is no available official number). However, the sample size of 750 valid responses is proper and adequate to be analyzed with SEM as it fulfils Hair et al.’s [77] condition of at least 100–150 answers required for a good estimation. Moreover, Krejcie and Morgan [78] suggested that if the population total size exceeded 1,000,000, the lowest adequate sample size should be at least 384 answers. When all of the prior considerations are taken into account, a sample size of 750 is appropriate and sufficient for the subsequent data analysis.

Tourism senior students who encountered some services from the university incubator (the university incubators database was checked to randomly contact the target students) were selected as our study target sample. Students who contacted university incubators might have a high potential to run their own entrepreneurial tourism business with the support of the KSA government. This approach is consistent with the Tourism Shapers that was established by the Saudi Tourism Authority (STA) to foster the growth of local trade partners in the private tourism sector. This project is taking place at a time when the Kingdom of Saudi Arabia is expanding its destination offerings to accommodate local, regional, and international tourists. In addition to fostering the expansion of the tourism ecosystem, one of the goals of Tourism Shapers is to encourage entrepreneurs of small and medium-size enterprises (SMEs) to see the potential for growth within the tourism industry.

An independent sample t-test was carried out in SPSS to assess and compare early responses and late replies. No statistically significant differences were detected ( $p > 0.05$ ), implying that non-response bias was not a problem [79]. Every student was given the assurance that their responses would be kept private, and they would remain anonymous [80]. In order to gain further insight, the questionnaire was put through a series of pilot tests with 17 senior students and 17 academics. The common method variance (CMV) was investigated with the help of Harman’s single factor method and SPSS version 24. All scale items were tested through exploratory factor analysis (EFA). The extracted choice for all the factors was fixed to the value of 0.1 without any rotational process. Therefore, one factor was extracted to explain 27% of the variance (less than 0.50), which serves as evidence that CMV is not a concern [77].

### 3.3. Data Analysis Techniques

SPSS vs. 24 was utilized to estimate the descriptive analysis and illustrate the respondents’ characteristics, perform an independent sample t-test, and assess the scale reliability with Cronbach’s alpha scores. Considering the sophistication of the proposed theoretical framework, its psychometric properties were assessed with CFA “confirmatory factor analysis”, and SEM “structural equation modeling”, while the AMOS vs24 program was employed to evaluate the study hypotheses.

## 4. Results

### 4.1. The Respondents’ Characteristics

The 750 valid responses were from 407 males (54.3%) and 343 females (45.7%). The majority of students were aged between 21 and 25 years old (66.1%). The selection of

universities was made according to their geographical location, and similar numbers of questionnaires were distributed to each university, which was deliberate, to ensure that all regions of the Kingdom of Saudi Arabia were represented in the study sample (north, south, center, west, and east of the Kingdom). Students from each university were between 10% as the lowest percentage (Jazan University) and 21.6% as the highest percentage (King Faisal University). See Table 1.

**Table 1.** Respondents' characteristics.

	Profile	N	Frequencies	Percent
University	King Faisal University	750	162	21.6%
	King Saud University		141	18.8%
	King Abdulaziz University		135	18%
	Umm Al Qura University		138	18.4%
	University of Tabuk		99	13.2%
	Jazan University		75	10%
Gender	Male	750	407	54.3%
	Female		343	45.7%
Age	Below 21 years	750	84	11.2%
	21–25 years		496	66.1%
	25 years and above		170	22.7%

The data were found to be more spread and less intense over its mean value, as demonstrated by the values of the data mean which were between 3.05 and 3.85, and the standard deviation (SD) scores were found to be between 1.006 and 1.34. Additionally, no skewness or kurtosis values were found to exceed + or −2, giving evidence that supports the univariate normality [81]. Additionally, no VIF value exceeded the number 10, which indicates that multicollinearity is not a problem in our data [78].

#### 4.2. Psychometric Properties of the Employed Measures

Assessment of the psychometric properties (validity and reliability) of the employed measures was performed employing CFA with Amos vs. 24 graphical programs. The model satisfactorily explains the data, as shown in Table 2:  $\chi^2 = 4.491$ , SRMR = 0.031, CFI = 0.942, NFI = 0.935, and PCFI = 0.748 (Table 2).

Cronbach's alphas and composite reliability (CR) scores for every employed factor exceed the recommended threshold of 0.80 [81], demonstrating adequate internal reliability. Convergent validity was further supported by two main indices. First, all standardized factor loadings (SFL) were found to range between 0.774 and 0.983, which surpasses 0.7 with high significant t-values beyond 24.782 [82] (Table 2). Second, the values of average variance extracted (AVE) for all the employed dimensions (personal attitude, 0.904; entrepreneurship intention, 0.781; networking support, 0.905; financial support, 0.919; and training support, 0.934) exceeded the cutoff point of 0.50 [82], giving more evidence that the employed scale has adequate convergent validity.

Similarly, two main indices were used to evaluate the scale discriminant validity. First, the AVE square root scores for each employed dimension should surpass the dimensions' shared correlations [83].

As seen in Table 3 the bold diagonal value represents the AVE squared roots which exceed the below diagonal value (dimensions shared correlations). Second, as suggested by Hair et al. [78], in order to ensure that the discriminant validity is sufficient, the AVE score for each employed dimension should surpass the MSV value. The results presented in Table 2 demonstrate that AVE scores exceeded the MSV values. Taken all together, the previous analysis gives evidence that the employed scale has a satisfactory level of reliability and validity.

Table 2. CFA and Psychometric properties.

Factors and Items	Standardized Factor Loading	T-Value	M	S. D	Skewness	Kurtosis	Psychometric Properties
Personal Attitude (Ajzen, 2011) [58]							
PA_1	0.960	b*	3.66	1.284	−0.553	−0.855	<i>a</i> = 0.969, CR = 0.979, AVE = 0.904, MSV = 0.089
PA_2	0.962	65.698	3.65	1.281	0.536	0.863	
PA_3	0.944	59.121	3.62	1.299	0.505	0.932	
PA_4	0.944	59.191	3.62	1.311	−0.524	−0.913	
PA_5	0.944	58.926	3.62	1.340	0.551	0.938	
Entrepreneurship intention (Chen et al.,1998; Liñán& Chen, 2009) [49,50]							
EI_1	0.774	b	3.39	1.006	−0.551	−0.043	<i>a</i> = 0.956, CR = 0.955, AVE = 0.781, MSV = 0.007
EI_2	0.848	26.140	3.29	1.137	0.465	0.288	
EI_3	0.814	24.782	3.23	1.140	−0.336	−0.544	
EI_4	0.960	30.879	3.16	1.209	0.343	−0.586	
EI_5	0.941	30.050	3.05	1.242	−0.316	−0.760	
EI_6	0.948	30.384	3.06	1.243	0.348	0.734	
Networking support (Njau et al., 2019) [30]							
NS_1	0.944	b	3.78	1.288	−0.934	−0.188	<i>a</i> = 0.935, CR = 0.983, AVE = 0.905, MSV = 0.250
NS_2	0.969	62.363	3.71	1.286	−0.858	−0.333	
NS_3	0.969	62.399	3.71	1.285	0.858	0.284	
NS_4	0.939	53.450	3.72	1.291	−0.900	−0.247	
NS_5	0.942	54.289	3.69	1.301	−0.838	−0.361	
Financial Support (Gozali et al., 2015) [32]							
FS_1	0.983	b	3.63	1.218	−0.510	−0.863	<i>a</i> = 0.947, CR = 0.979, AVE = 0.919, MSV = 0.089
FS_2	0.929	61.308	3.60	1.233	0.511	0.860	
FS_3	0.942	66.878	3.64	1.215	−0.516	−0.854	
FS_4	0.980	95.708	3.60	1.240	0.522	0.847	
Training support (Lukes et al., 2019) [76]							
TS_1	0.963	b	3.84	1.156	−0.777	−0.259	<i>a</i> = 0.901, CR = 0.986, AVE = 0.934, MSV = 0.081
TS_2	0.967	70.779	3.85	1.157	0.786	0.250	
TS_3	0.967	70.766	3.85	1.157	−0.786	−0.250	
TS_4	0.965	69.265	3.84	1.157	0.774	0.268	
TS_5	0.970	72.134	3.85	1.159	−0.779	−0.268	

Model fit: ( $\chi^2$  (289,  $N$  = 750) = 1297.899,  $p$  < 0.001, normed  $\chi^2$  = 4.491, RMSEA = 0.047, SRMR = 0.031, CFI = 0.942, TLI = 0.922, NFI = 0.935, PCFI = 0.748 and PNFI = 0.743). Not: factors items are available upon request; b\*: constant to run the model; *a*: Cronbach's alphas.

Table 3. Fornell–Larcker criterion test.

Factors	1	2	3	4	5
1-Attitude	<b>0.951</b>				
2-Networking support	0.401	<b>0.951</b>			
3-Financial support	0.298	0.159	<b>0.959</b>		
4-Training support	0.180	0.278	0.285	<b>0.966</b>	
5-Entrepreneurship intentions	0.33	0.053	0.083	0.491	<b>0.884</b>

Note: Bold numbers: average variance extracted (AVEs) squared root.

#### 4.3. The Tested Structural Model

For the purpose of determining whether or not the primary data that had been gathered matched the theoretical model that had been proposed, structural equation modeling (SEM) and maximum likelihood estimation were utilized. SEM is a reliable and adequate

technique for data analysis in the present study because it allows for the comprehensive and simultaneous examination of complicated relationships within one model [84]. The fit indices of the structural model are generally satisfactory, as depicted in Table 4: normed  $\chi^2 = 4.478$ , SRMR = 0.037, CFI = 0.945, and PCFI = 0.717. Furthermore, the tested model showed a high prediction power as the endogenous latent factors can explain 42% of the variance in personal attitude and 38% of the variance in entrepreneurship intention.

**Table 4.** Hypotheses assessment.

Hypotheses	Results			Hypotheses Results
	( $\beta$ )	( <i>T</i> -Value)	SMC	
H1 Network Support $\rightarrow$ Attitude	0.43 ***	9.587		Supported
H2 Network Support $\rightarrow$ Entrepreneurship $\rightarrow$ intention	0.29 ***	2.689		Supported
H3 Financial Support $\rightarrow$ Attitude	0.35 ***	6.541		Supported
H4 Financial Support $\rightarrow$ Entrepreneurship intention	0.10	1.610		Not Supported
H5 Training support $\rightarrow$ Attitude	0.33 ***	5.878		Supported
H6 Training support $\rightarrow$ Entrepreneurship intention	0.09	1.291		Not Supported
H7 Attitude $\rightarrow$ Entrepreneurship intention	0.52 ***	12.278		
H8 Network Support $\rightarrow$ Attitude $\rightarrow$ Entrepreneurship intention	Path 1: $\beta = 0.34$ *** <i>t</i> -value = 9.587			Supported
	Path 2: $\beta = 0.52$ *** <i>t</i> -value = 12.278			
	Path 1: $\beta = 0.35$ *** <i>t</i> -value = 6.541			
H9 Financial Support $\rightarrow$ Attitude $\rightarrow$ Entrepreneurship intention	Path 2: $\beta = 0.52$ *** <i>t</i> -value = 12.278			Supported
	Path 1: $\beta = 0.33$ *** <i>t</i> -value = 5.878			
	Path 2: $\beta = 0.52$ *** <i>t</i> -value = 12.278			
H10 Training Support $\rightarrow$ Attitude $\rightarrow$ Entrepreneurship intention	Path 1: $\beta = 0.33$ *** <i>t</i> -value = 5.878			Supported
	Path 2: $\beta = 0.52$ *** <i>t</i> -value = 12.278			
Attitude			0.42	
Entrepreneurship intention			0.38	

Model fit: ( $\chi^2$  (292,  $N = 750$ ) = 1363.932, \*\*\*  $p < 0.001$ , normed  $\chi^2 = 4.671$ , RMSEA = 0.046, SRMR = 0.036, CFI = 0.939, TLI = 0.921, NFI = 0.933, PCFI = 0.754 and PNFI = 0.748).

#### 4.4. Hypotheses Evaluation

Both Table 4 and Figure 2 show how the various latent factors in this study are related to one another (hypotheses). The study suggested seven direct hypotheses and three indirect ones. The SEM findings showed that networking support (as a dimension of university incubators support) has a positive and significant impact on attitude ( $\beta = 0.43$ ,  $t$ -value = 9.587,  $p < 0.001$ ) and entrepreneurship intention ( $\beta = 0.29$ ,  $t$ -value = 2.689,  $p < 0.001$ ), and thus hypotheses H1 and H2 were supported. Similarly, financial support (as a dimension of university incubators support) was found to have a positive and significant impact on attitude ( $\beta = 0.35$ ,  $t$ -value = 5.878,  $p < 0.001$ ), but a positive insignificant impact on entrepreneurship intention ( $\beta = 0.10$ ,  $t$ -value = 1.610,  $p = 0.077$ ), and thus hypothesis H3 was supported, while H4 was not supported. Additionally, training support (as a dimension of university incubators support) was found to have a positive and significant impact on attitude ( $\beta = 0.33$ ,  $t$ -value = 6.541,  $p < 0.001$ ), but a positive insignificant impact on entrepreneurship intention ( $\beta = 0.09$ ,  $t$ -value = 1.291,  $p = 0.134$ ), and thus hypothesis H5 was supported, while H6 was not supported. Furthermore, personal attitude was found to have a high positive and significant impact on entrepreneurship intention ( $\beta = 0.52$ ,  $t$ -value = 12.278,  $p < 0.001$ ).

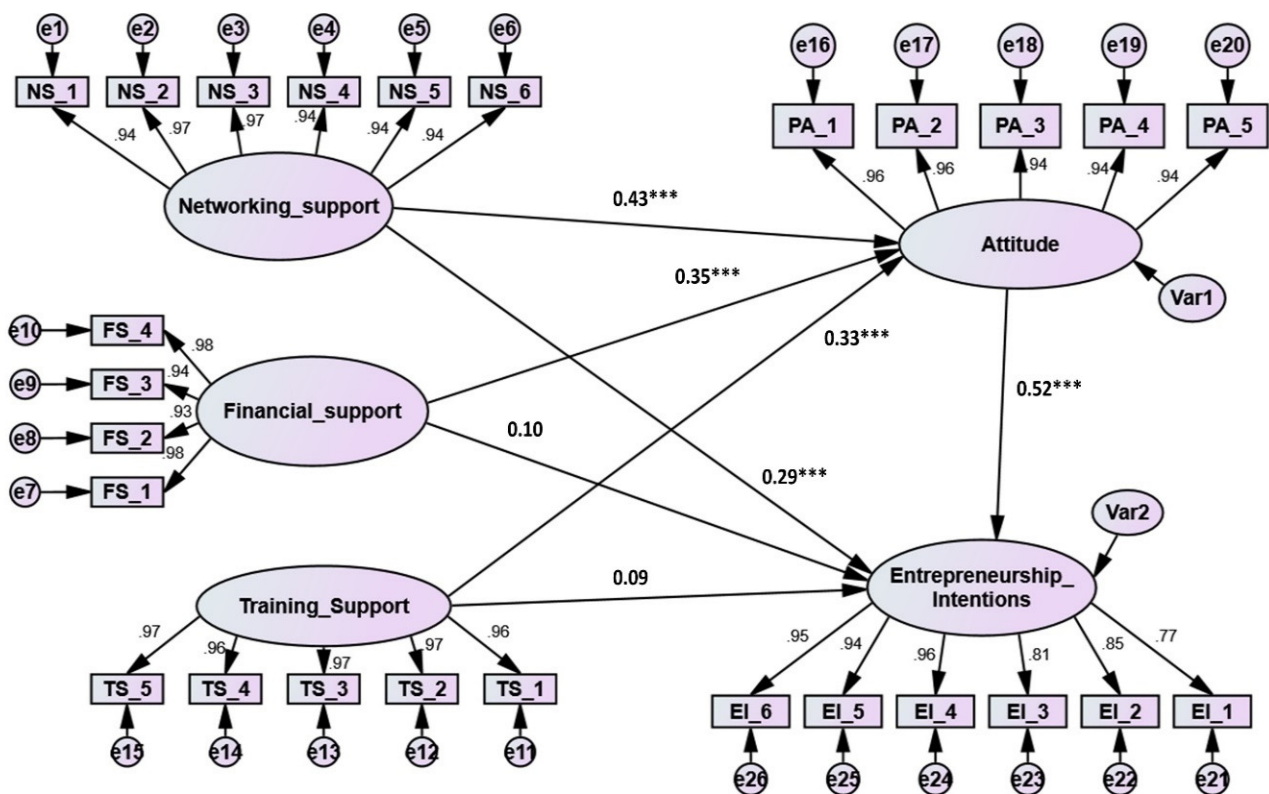


Figure 2. The research-tested model. \*\*\*  $p < 0.001$ .

Finally, the SEM output shows signals that support the mediation effects of the student's attitude in the relationships between the three dimensions of university incubator support (networking support, financial support, and training support) and entrepreneurship intention. The direct and indirect (through personal attitude) standardized path coefficient estimates from networking support to entrepreneurship intention were found to be positive and significant. Therefore, complementary (partial) mediation can be assumed, as argued by Zhao et al. [84], and thus, hypothesis H8 was supported. However, the direct impact of financial support and training support failed to significantly impact entrepreneurship intention but successfully impacted entrepreneurship intention through personal attitude. Therefore, a complete mediation effect was supported, as argued by Zhao et al. [85], and thus H9 and H10 were supported. Moreover, the SEM results provided more evidence that confirm the mediating influence of personal attitude in the relationships between university incubators support and entrepreneurship intention, as the positive direct significant effect of networking support on entrepreneurship intention was improved from ( $\beta = 0.29$   $p > 0.001$ ) to a total effect size of ( $\beta = 0.37$   $p > 0.001$ ). Similarly, the positive insignificant direct effect of financial support on entrepreneurship intention was improved from ( $\beta = 0.10$ ,  $p = 1.610$ ) to a total effect size of ( $\beta = 0.21$   $p > 0.01$ ). Finally, the positive insignificant direct effect of training support on entrepreneurship intention was improved from ( $\beta = 0.09$ ,  $p = 1.291$ ) to a total effect size of ( $\beta = 0.20$   $p > 0.01$ ).

## 5. Discussions

This study was designed to test the direct impact of university incubator support, which recently appeared at Saudi public universities, on the entrepreneurial intention of tourism graduates. Drawing on the work of Ahmed et al. [23], the current study tested the direct impact of the three dimensions of university incubator support, i.e., network support, financial support, and training support of university incubators on the entrepreneurial intention of tourism graduates and the indirect impact through graduates' personal attitudes.



The study focused on tourism graduates of Saudi universities since the industry is new in the kingdom and has great potential for undertaking several entrepreneurship opportunities.

The results showed that network support has a significant positive impact on the attitude and entrepreneurial intention of tourism graduates. This result is inconsistent with the work of Collinson and Gregson [29], who also found that the support given by internal and external networks plays an important role in making new ventures possible and successful through the availability of required information, knowledge, and experience and reduction of uncertainty, especially at the beginning of their work. The current study confirmed that the five sub-dimensions of network support, i.e., access to markets, access to a network of suppliers, access to a network of professionals, internal networks, and external collaborators, have a positive impact on graduates' attitude and their intention to undertake new tourism ventures.

Furthermore, the results confirmed a positive significance of both training and financial support on tourism graduates' attitudes toward entrepreneurship, as it was hypothesized. The training and financial support given by the university incubators were found to be predictors of tourism graduates' attitudes toward entrepreneurship. However, these two university incubators' support, training, and finances failed to have a significant direct impact on the entrepreneurial intention of tourism graduates. Despite the results confirming a positive impact of training and financial support on the entrepreneurial intention of tourism graduates, this impact was insignificant. The results mean that the financial and training support given by the university incubators are enough for creating a direct entrepreneurial intention. However, Njau et al. [30] confirmed that financial support, office space, technical consultancy, and training services stimulate entrepreneurship activities. The results contradict previous studies that training support services are among the main reasons for the success and excellence of European business incubators [65].

Although both training and financial support did not have a direct significant impact on the entrepreneurial intention of tourism graduates, they have an indirect impact through the effect of graduates' attitudes. Graduates' personal attitude was found to have a full mediating effect on the link between training and financial support and the entrepreneurial intention of tourism graduates. It also has a partial mediating effect on the link between network support and the entrepreneurial intention of tourism graduates. Furthermore, the results confirmed a positive significant impact of tourism graduates' personal attitudes on their entrepreneurial intention. This finding supports previous studies that personal attitude affects entrepreneurial intentions [3,67]. It also supports the argument of Tshikovhi and Shambare [69] and Siu and Lo [72] that personal attitudes are among the important factors in motivating students to act systematically toward entrepreneurial goals. Nonetheless, this contradicts Zhang et al. [71] who had an opposite conclusion that personal attitude did not have a significant impact on the intention of entrepreneurship.

The study has a number of interesting findings, which contribute to both academic and tourism entrepreneurship. First, the study contributes to the limited literature on the role of the university incubators support system in stimulating entrepreneurial intention among university graduates. Second, the study confirmed that network support is the most significant predictor of graduates' attitudes toward entrepreneurship and their entrepreneurship intention. It has a direct and indirect impact on the entrepreneurship intention of graduates. Third, the results confirmed a full mediating effect on the link between training and financial support and the entrepreneurial intention of tourism graduates. This means that a graduate's attitude has the ability to change the effect of training and financial support on entrepreneurial intention. The existence of graduates' attitudes can make this relationship happens. Fourth, these results have implications for the administration of university incubators in that they need to pay more attention to network support and encourage the five sub-dimensions of network support in order to ensure the advancement of entrepreneurial intention among tourism graduates. Additionally, they should make every effort to create a positive attitude among graduates towards entrepreneurship to stimulate their entrepreneurial intention. This could be done through the support given to

the network, finances, and training. Finally, decision-makers in the Saudi tourism industry should pay more attention to the creation of entrepreneurship culture and creative entrepreneurship as an attractive career for university graduates, since this impacts positively on the industry and ultimately on Saudi Vision 2030.

## 6. Conclusions and Further Research Opportunities

Several scholars have argued that startups should spend two years in an incubator, where they receive networking, financial, and training support. These types of support are necessary for a startup to have any chance of thriving and expanding in the industry. This study aimed to investigate the impact of university incubators' support as a multi-dimensional construct on entrepreneurship intention with the mediating role of attitude. Data were collected from 750 senior students in tourism and hotel management faculties in KSA public universities. Several different approaches to data analysis were utilized. The results of first-order confirmatory factor analysis were used to determine the validity of the scale in terms of both convergent and discriminant validity. Using the AMOS v24 software, the structural equation modeling (SEM) technique was applied to the analysis of the study structural model. The SEM results showed that network support as a dimension of university incubators support has the most significant influence on graduates' attitudes toward entrepreneurship and their entrepreneurship intention. Moreover, a full mediating effect of attitude on the link between training and financial support and the entrepreneurial intention of tourism graduates was revealed. This means that a graduate's attitude has the ability to change the effect of training and financial support on entrepreneurial intention. Similar to other studies, the current one has some limitations that can open the way for further research opportunities. It is possible to investigate the demographic characteristics, such as gender, age, and the location of the university, in subsequent studies as moderators or by carrying out a multi-group analysis in order to identify any differences in the relationships that were investigated. Additional research could look at other potential mediators, such as subjective norms or perceived levels of behavioral control, and then compare their findings to those of our study. Generalizing the study's findings should be done with caution because it involved only senior tourism and hotel management students. Future research could retest the current model in other cultures. Cross-sectional sampling was used; potential causal impacts between study variables can be inferred but not confirmed. Therefore, future research might employ longitudinal study methods to support the causal relationships between the study variables.

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