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RESEARCH ARTICLE

Perceived Entrepreneurial Orientation to Academic Entrepreneurship Intention: An Understanding of an Integrated Model

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ABSTRACT

Academic entrepreneurship is becoming a more widely recognized source of new knowledge and a driving force in the modern-day information society movement. This strategy differs from country to country, and Pakistan is no exception. The present study uses the quantitative approach to evaluate the role of perceived entrepreneurial orientation towards academic entrepreneurial intentions with the mediating role of knowledge creation and research ambidexterity. Moreover, the present study proposed the perceived entrepreneurial climate as moderating factor between research ambidexterity and academic entrepreneurial intentions. The present study considered the Psychological climate theory as the underpinning theory to evaluate the association among the latent constructs. This study surveyed the individual faculty members from public and private universities in Pakistan as the unit of analysis in the present study. The present study employed the quota sampling technique to determine the sample size. A total of 700 questionnaires were distributed, and a total of 389 questionnaires were used for final analysis with a response rate of 53%. The present used the Smart pls-sem to assess the second-order model and testing of the hypothesis. The result of the present study reveals that perceived entrepreneurial orientation is positively and significantly associated with academic entrepreneurial intentions. Moreover, the findings also affirm that knowledge creation positively and significantly mediates the association between perceived entrepreneurial orientation and academic entrepreneurial intention. Moreover, the entrepreneurial climate moderate the association between research ambidexterity and academic entrepreneurial intentions. The present study's findings will facilitate the individual faculty members, management of public and private universities, policymakers, and regulatory authorities in identifying factors that contribute to entrepreneurship intentions. It will also help universities in fulfilling the third mission of making universities entrepreneurial.

INTRODUCTION

Academic entrepreneurship has stimulated the interest of the corporate sector, policymakers, academic literature, and it is seen as a critical component of the shift to a knowledge-based society (Teixeira & Nogueira, 2016; Orazbayeva, Davey, Plewa, & Galán-Muros, 2020). Academic entrepreneurship is the process by which academic institutions arrive at their entrepreneurial configuration (Bergmann, Geissler, Hundt, & Grave, 2018). It includes, among other things, research collaboration between universities and industries, patent claims, idea spin-offs into new businesses, and business incubators (Berryman, 2019).

Academic entrepreneurship is the process by which academics discover new knowledge through industrial start-ups, spin-offs, patents, licenses, and alliances (with students, faculty, and research) (Breznitz & Zhang, 2019). The value of academic entrepreneurship in better understanding these knowledge creation activities is increasingly significant in the literature (Wright & Phan, 2018) the literature is increasingly emphasizing the significance of academic entrepreneurship in gaining a deeper comprehension of these activities of knowledge creation. It also denotes the bottom-up transfer of knowledge from the scholar or researcher to the institution (Al-Tabbaa & Ankrah, 2019). Academic entrepreneurship has been attributed to individual motivations (Bogatyreva, Edelman, Manolova, Osiyevskyy, & Shirokova, 2019).

Pakistan's entrepreneurial ecosystem is currently at a junction (Plan9, 2017; Saleem, 2020). Despite the fact that entrepreneurship was a novel concept in Pakistan just a few years ago, universities are becoming more entrepreneurial over time (Baglieri, Baldi, & Tucci, 2018). A conservative nation would need to make significant adjustments. However, significant progress has been made in recent years. As more educational organizations take on breaking new ground into their educational plan, a progressive yet tremendous change is noticed (Habib, Jamal, Khalil, & Khan, 2021). In 2005, National University of Science and Technology constructed the nation's first cutting-edge incubation center (Qureshi, Hassan, & Mian, 2021).

The outcomes were delayed to arise until the Punjab Information technology Board (PITB) created Plan X, Plan9, an incubation center and accelerator program, in 2012. Twenty-two institutions have established incubation centers up until recently; two of these were well-known private sector universities, while the remaining twenty-two were public sector universities (HEC, 2021). This has been made possible by the Pakistani Higher Education Commission's ongoing efforts and desire to make universities more entrepreneurial (Soomro, Kale, Curtis, Akcaoglu, & Bernstein, 2020).

According to a Pakistani study on academic entrepreneurship, only a small percentage of technical university professors participated in the creation of new businesses in collaboration with universities (Mirani & Yusof, 2016). This highlights how being an enterprising university has become a phenomenon in Pakistan (Liu, et al., 2020). This features how being a venturesome college has turned into a peculiarity in Pakistan. Universities have started to play a functioning job in forming new companies (Urban, 2019), building "business incubators" (Hausberg & Korreck, 2021), and producing "university-based consultancy" (Khandakar, Saidi, & Elsalem, 2018). We discovered that professors are not doing much of anything entrepreneurial despite all of these efforts to make universities more entrepreneurial (Morselli, 2017).

To understand why some academic scientists are more interested in commercialization than others, it is necessary to investigate the roles that individual academic scientists play in these endeavors (Hmieleski & Powell, 2018) The effects of corporate and individual characteristics on academics' involvement in diverse entrepreneurial ventures have received little attention (Vodă & Florea, 2019). In this field, new research areas have emerged. Still, there is a lack of research on how organizational and individual level variables affect results rather than in isolation.

According to one study, perceived entrepreneurial orientation can be linked-to opportunity exploitation indirectly (Kalar & Antoncic, 2015). It is also argued that faculty members' entrepreneurial attitude influences opportunity recognition, followed by opportunity exploitation actions (Do & Dadvari, 2017). As a result, universities must focus on how to help academics comprehend the advantages of participation in entrepreneurial activities. Academics' participation in traditional research-related activities, for example, is an instance of opportunity recognition behavior. Will academics engage in opportunity recognition if they have the necessary skills to become entrepreneurs and their organization and faculty have an entrepreneurial focus?

As a result, the act of knowledge creation calls our attention to the fact that it is more closely associated with Academic Entrepreneurship. Faculty members who sense the opportunity do not always take advantage of it, according to (Do & Dadvari, 2017), and they are thought to be influenced indirectly by mediating variables. Faculty members will directly participate in university-industry joint efforts, provide consultancy services to entities other than their university, license their intellectual property (IP), and start new businesses. These initiatives will help the institution achieve its third goal of becoming an "entrepreneurial university." An individual's capacity to undertake these seemingly incompatible activities is linked to his or her willingness to do so (Bergmann, Geissler, Hundt, & Grave, 2018). Bogatyreva et al., 2019, created the term "research ambidexterity" to explain why there is a strong link between knowledge creation and exploitation in academic contexts.

Entrepreneurs' knowledge production is described in the literature as opportunity exploration, whereas commercialization is defined as opportunity exploitation. When a person is attempting to identify an opportunity, which is defined as a match between market wants and resource availability, he is engaging in knowledge creation (Hills, 1995; Tolentino, 1998; Gibb, 1998). Individual considerations are more important in deciding who executes entrepreneurship (Shane & Venkataraman, 2000), also known as utilization of opportunity, according to the broader context of entrepreneurship (Chang et al., 2009).

This research used psychological tools to answer the question. According to the literature review, "opportunity recognition, initiative risk management," is a partially undiscovered area and emerging trend for future research, are crucial for academic staff engaged in entrepreneurial development and are critical aspects of effective entrepreneurialism (Blair & Shaver, 2020). Incorporate entrepreneurship literature. It is argued that a person who identifies an opportunity may be unable to promote it due to a lack of resources, abilities, and networks to pursue the opportunity (Morselli, 2017). Individual entrepreneurial skills to become an entrepreneur are critical in engaging academics in seizing opportunities.

According to psychological climate theory, people are more likely to try new things when they feel the environment is supportive (james & Sell, 1981). Individual perspectives or cognitive interpretations of the work environment serve as the foundation for behaviour and affect in psychological climates (James & Sells, 1981; Field and Abelson, 1982). From the perspective of psychological climate theory, the current study therefore investigates how a person perceives a particular aspect of their workplace—namely, entrepreneurial climate, and perceived entrepreneurial orientation — and how this perception relates to the decision to engage in entrepreneurial behaviours.

LITERATURE REVIEW

2.1 Perceived Entrepreneurial Orientation (PEO) and Academic Entrepreneurial Intentions (AEI)

The findings of an empirical study by O'Shea, 2015 supported the argument that workplace factors play a critical role in encouraging employee behavior aligned with the company's aims. According to

the findings of another study, entrepreneurial attitude is one of the organizational traits that has a significant impact on successful productivity (Do & Dadvari, 2017).

A significant favorable link was discovered between the perceived entrepreneurial intention of the department and enterprising outcomes by academics in research (Khandakar et al., 2018). According to research and the theory of planned behavior, actual activities are always preceded by the desire to conduct certain behaviors (Saleem, 2020). It is also suggested that because the intention to perform and the performance level cannot be examined simultaneously, no link between the two can be formed in this study as it is a bridge study (Senelwa, 2017).

This study aims to determine whether there is a link between reported entrepreneurial intention and entrepreneurship intention among Pakistani university professors. It's also supposed to figure out what their relationship is like. As a result, perceived entrepreneurial orientation was deemed an essential antecedent in this study to improve academic entrepreneurship intention (Qureshi, Hassan, & Mian, 2021). Numerous studies on entrepreneurial intention and academic entrepreneurial intention have been conducted. Several writers have researched these aspects, such as a study of university students for entrepreneurship education that found awareness is key in encouraging people to start their businesses. Hence, the present study proposed that:

H1: There is a significant relationship between the perceived entrepreneurial orientation of the department and academic entrepreneurship intention.

Perceived Entrepreneurial Orientation and Knowledge Creation (KC)

This study aims to link perceived entrepreneurial orientation and knowledge creation activity among faculty members of Pakistan. Relevant literature from past investigations has been considered to support this statement (Gold, Malhotra, & Segars, 2001; Byrne, 2005; Wibowo, Purwana, & Wibowo, 2020).

Entrepreneurial orientation aids organizations in improving their ability to function in those necessary ways for a competitive market. On a personal level, the orientation activities instil a sense of purpose for pursuing enterprises and commercial undertakings (Wibowo, Purwana, & Wibowo, 2020). In this sense, knowledge creation aids the firm in bringing forth the internal expertise and talents of its personnel to promote the entrepreneurial process.

Using data from a research-oriented business, it was also discovered that employees' perceived entrepreneur orientation enhances their skills and talents while motivating them to contribute their internal knowledge, resulting in information exchange. It also allows employees to conduct research in the workplace. Organizations gain from their inventions, which propel them into competitiveness (Weerakoon et al., 2020).

Organizations' competitiveness is enhanced through knowledge sharing or trading practices, which results in more new ideas, which are shared with others' suggestions, and learning continues. The concept of entrepreneur orientation is useful for creating a more strategized environment for the practice of knowledge sharing, demonstrating the positive impact of entrepreneur alignment on the knowledge creation process, as the knowledge creation process is linked to service innovation, which boosts organizational performance (Alshanty & Emeagwali, 2019).

They noted that these resources might provide financial opportunities for researchers to expand their expertise and finance the development of new projects. The resources might also be intangible, such as intellectual capital or employees, which are the most important (Alshanty & Emeagwali, 2019). Employees are the most significant resource of any company that wants to keep up with the current world perspective, especially if they have valuable expertise.

As a result, entrepreneur orientation should be implemented in the organization to raise awareness of the practice of knowledge creation, which is the process of socialization, internalization, externalization, and combination, which is the process of transferring knowledge within the organization to external information (Blair & Shaver, 2020).

The involvement of faculty in research-oriented activities is determined by departmental features (Do & Dadvari, 2017). Individuals' evaluations of their department's EO as being focused on research activities and their contributions to research publications are believed to have a positive correlation (Kalar & Antoncic 2015). As a result, the hypothesis will be as follows:

H2: The perceived entrepreneurial orientation and knowledge creation have a significant association.

2.3 Knowledge Creation Behaviour and Academic Entrepreneurship Intentions

The productivity of an organization is employed by its individuals who contribute their new ideas toward perceived competitiveness, and knowledge production is the process that progresses with familiarity and exchange of knowledge (Ji et al., 2011). As a result, the findings of the studies suggested that employees' knowledge production activity is a precursor to their entrepreneurial purpose that they want to pursue entrepreneur when they participate in the organization's research issues (Wibowo et al., 2020).

The link between academic entrepreneurship intention and knowledge creation behavior. Past research investigated academic entrepreneurship intention and found that knowledge is used to initiate research projects in universities, normative concerns, and individual attitudes influence their intentions for entrepreneurs (Miranda, Chamorro-Mera, & Rubio, 2017).

The theoretical framework for an entrepreneurial university integrates the various factors at play in development and growth described in existing theories: external factors, which are classified as formally and informally factors; and internal factors, which include capital and capacities and are supported by a resource-based approach (Guerrero, Urbano, & Fayolle, 2016). The resource-based view is a managerial paradigm that defines the strategic value that a company should exploit to acquire a long-term competitive advantage.

It has been discovered that the amount of literature in the previous year impacts the likelihood of commercializing research in subsequent years (Janet, 2008). Academics' knowledge generation and exploitation activities are believed to be complementary and favorably connected (Blair & Shaver, 2020). The following hypothesis is proposed:

H3: There is a significant relationship between knowledge creation behavior and academic entrepreneurship intention.

2.4 Perceived Entrepreneurial Orientation and Research Ambidexterity (RA)

Academic entrepreneurship has gotten a lot of attention in the scholarly papers, the policy community, and the business community. It is considered a crucial aspect of the transition to a knowledge society (Teixeira & Nogueira, 2016). Academic entrepreneurship includes research cooperation between universities and industry, patent applications, concept spin-offs into new enterprises, high-skilled entrepreneurship education, and business angels (Siegel & Wright, 2015).

The hypothesis statement investigates the association between a department's perceived entrepreneurial orientation and research ambidexterity among Pakistani university professors. To back up this claim, relevant material from past studies has been used, such as, "Entrepreneurship is about taking a solo or team actions toward innovation." Ambidexterity has been studied in various ways, including individual and organizational studies. However, this possibility can only be realized

if individuals are given departmental and organizational level guidance to explore their abilities in investigating and exploiting their abilities (Do & Dadvari, 2017).

Entrepreneurial intention is one of the strategies to help a company become more competitive by incorporating new ideas into its operations (Trong Tuan, 2017). A business can achieve competitiveness by working differently and productively than others in the same field. It enables organizations and their people to work more efficiently to provide more productive results (Habib, Jamal, Khalil, & Khan, 2021). Only by pursuing the ideal blend of employee orientation that suits their expertise can the management attain creativity. In this study, knowledge ambidexterity aids the researchers in further developing the process of knowledge exploration and exploitation.

The entrepreneurial orientation of businesses is linked to research ambidexterity. Explorative ambidextrousness is more successfully connected with entrepreneurial orientation than exploitative ambidextrousness (Ghantous & Alnawas, 2020). Explorative ambidextrous is to seek out new ideas and develop them via technology and processes. In contrast, exploitative ambidextrous sticks with existing ideas and processes and refine them for use in a given scenario or necessity (Enkel, Heil, Hengstler, & Wirth, 2017).

In terms of research, ambidexterity, entrepreneurial orientation, and organizational environment activeness are important factors. Organizations that are more effective at balancing their investigating and exploitation activities are more productive than those with additional or ambidextrous behavior (Mehrabi, Coviello, & Ranaweera, 2019). As a result, the research orientation aids in maintaining a balance between discovering new information and putting prior data to use. It would be more beneficial for employees to follow a straight road in pursuing their thoughts and ideas towards research innovation if they were guided in the research orientation (Vodă & Florea, 2019). The following hypothesis will be investigated based on this discussion:

H4: There is a significant relationship between the perceived entrepreneurial orientation of the department and research ambidexterity.

2.5 Research Ambidexterity and Academic Entrepreneurial Intentions

Diánez-González, Camelo-Ordaz, and Fernández-Alles, (2021) discovered a substantial link between researcher ambidexterity and academic entrepreneurship. Mehrabi, Coviello, and Ranaweera (2019) researched to investigate how organization design, innovation, and knowledge generation influence the company's research ambidextrousness.

The combined effect of knowledge production and research ambidexterity was also investigated. It was discovered that the organizational design that encourages individuals or researchers to engage in research activities has a significant impact. Individually developed knowledge can be ambidextrous in terms of including, investigating, and exploiting it (Baglieri, Baldi, & Tucci, 2018). As a result, the study finds that an institution's working environment and specific tactics for initiating research activities among its employees impact the organization's academic entrepreneurship.

The process is known as research ambidextrous, which enhances the organization's entrepreneurship. The rewards associated with knowledge sharing and creating new ideas while exploring and exploiting the maintained and obtained knowledge are recognized as the research adaptable that enhances the organization's entrepreneurship (Morselli, 2017). Exploiting and exploring knowledge is only possible when guidance activities are pursued (Jansen et al., 2009). Researchers also saw knowledge exploration and exploitation as a learning process that helps establish long-term relationships in the workplace. When employees share their ideas and viewpoints, it fosters an environment that encourages continual learning throughout the organization's lifespan (Urban, 2019).

As a result, the company will gain a competitive advantage. Knowledge exploitation is improved when employers provide proper training, manage employee performance to meet their expectations, and manage knowledge to organize it properly. Meanwhile, knowledge exploration is encouraged by being committed to continuous innovation in business procedures, enabling researchers or academicians to pursue their ideas in a project, and managing the risk affiliated with exploring new projects. This aids the research activities in balancing the organization's entrepreneurial initiatives.

H5: Research ambidexterity is significantly linked with the Academic Entrepreneurship intention of faculty members of the department.

2.6 Knowledge Creation and Research Ambidexterity

This hypothesis aims to see if there is a link between knowledge generation and research ambidexterity. Knowledge production is a component of research ambidexterity; knowledge created from an individual's knowledge creation behavior is likely to lead to the exploration and application of research knowledge. Researchers who endorse the current study go into greater detail about the relationship (Hausberg & Korreck, 2021).

Knowledge can aid firms in developing new products and services, as well as the cost comparison (Alshanty & Emeagwali, 2019a). As a result of the lack of productivity and innovation produced by knowledge dissemination and employees' creative behaviors, the need for employees' knowledge creation behavior has increased. The researchers discovered that employees' knowledge creation behavior significantly impacts their performance. They gathered feedback from employees who were given workplace flexibility to take the initiative and discovered that the knowledge-creating behavior of employees had a positive impact on the organization's performance (O Pinheiro, Almahairi, Benmalek, Golemo, & Courville, 2020).

The ability and capability of individuals involved in the context of teaching and learning and their competency to participate in the exchange and implementation of knowledge into a process are studied to be favorably connected (Martini et al., 2015).

The researchers discovered that non-productive industries are more reliant and successful on ambidextrous conduct. They also looked into how being proficient in research activities may assist companies in improving their performance (Saleem, 2020). Another study stressed the importance of enhancing researchers' and organizations' capacity in allocating appropriate resources to promote research exploitation as ambidextrous (Hughes, Hughes, Morgan, Hodgkinson, & Lee, 2021). The current study proposed a significant positive association between knowledge creation behavior.

H6: There is a significant relationship between knowledge creation and research ambidexterity.

2.7 Knowledge creation as Mediator

The following hypothesis seeks to determine whether knowledge creation has a mediating effect on the connection between perceived entrepreneurial intention and research ambidexterity among Pakistani university teachers.

Previous researchers have found a link between perceived entrepreneurial orientation and academic entrepreneurship intention. For example, (Nowiński & Haddoud, 2019) found that components of self and other knowledge transfer abilities influence the orientation process. These possible orientation activities improve employees' behavior and attitude toward entrepreneurial activities (Trong Tuan, 2017).

The entire knowledge creation, from exploring it as tacit and explicit knowledge to explicitly transferring it, requires guidelines supplied through proper relevant orientation. In contrast, the ability to better utilize this knowledge is dependent on the employee's or researcher's intention, which is again linked to better orientation practices (Hughes et al., 2021). As a result, it functions as

a bridge to provide a relevant relationship between entrepreneurial attitude and academic entrepreneurship goals, more particularly, developing the concern of knowledge generation (Soomro et al., 2020).

It is argued that when an organization makes a change, individuals will experience dissonance, a situation in which the learning they have received in the form of conducting traditional research and teaching missions is not in line with the entrepreneurial mission of the university. They will adapt to the new objective rather than sticking to their previous customs. Academic Entrepreneurship is favorably connected with a person's research ambidexterity (Do & Dadvari, 2017). According to Do and Dadvari (2017), knowledge creation is essential for improving individual research ambidexterity. The following debate will be used to examine double and singular mediation of knowledge formation and research ambidexterity.

H7: Knowledge creation mediates the relationship between the perceived entrepreneurial orientation of the department and research ambidexterity.

2.8 Knowledge Creation and Research Ambidexterity as Mediator

This hypothesis investigates the relationship between reported organizational innovation and academic entrepreneurial aspirations among Pakistani university faculty, with the mediating influence of knowledge creation and research ambidexterity. Relevant literature from past studies has been taken to support this claim, which is described below:

An organization's competence to be versatile in utilizing and exploring knowledge determines its commercial efficiency (Mehrabi et al., 2019). They went on to discuss the value of knowledge production and exploitation and the need for organizational flexibility to stay relevant in a changing context. To improve research proficiency, entrepreneurial orientation enables and empowers researchers to work in difficult working conditions to stay competitive (Morselli, 2017). The importance of entrepreneurial orientation with the coupling of research dynamic capabilities and knowledge creation has been described to have the researchers' goals towards entrepreneurship.

Their study is to understand the distinction between organizations that pursue entrepreneurship working in work practices and those that do not, looking at the differences between organizations that pursue entrepreneurship working in work practices (Davey & Galan-Muros, 2020). They explored several roadblocks that could deter academics from taking entrepreneurial actions. Administrative structure, an organizational climate that is not conducive to research or a lack of financial rewards or funds to launch new projects are examples of these challenges or roadblocks (Shaffer et al., 2016; Liu, et al., 2020).

As a result, the orientation includes thorough preparation to address these difficulties. The motivation of researchers, who are the primary source of entrepreneurship, can be enhanced by providing them with incentives and appreciation and proper guidance to increase their knowledge donations and provide them with a path toward starting new ventures for technological advances (Sjöö & Hellström, 2019).

H8: Knowledge creation and research ambidexterity mediate the relationship between the perceived entrepreneurial orientation of the department and academic entrepreneurship intention.

2.9 Entrepreneurial Climate as Moderator

The criteria for assessing the effects of these variables are based on the three university operations (teaching, research, and entrepreneurship) in terms of generating potential employees, fostering an entrepreneurial environment, publishing functional implications articles, generating enterprises, and transmitting information through patents, licenses, and spin-offs (Liu, et al., 2020). According to the research assessment, the atmosphere of domestic and foreign organizations tends to affect the

operations of the undertaking universities. Similarly, these techniques impact entrepreneurial university production to meet university teaching, science, and outreach goals (Qureshi, Hassan, & Mian, 2021). As a result, determining the balance of these goals with the support of the internal organizational climate and the external environment assists the entrepreneurial institution in becoming an effective driver of social and economic transformation (Taber, 2018).

As a result, future research should concentrate on the cultural background inside the university or country. The majority of the publications in the literature to far have been documented in developed economies; thus, future research will need to investigate developing countries to fill in the gaps and provide data from developing countries (Guerrero, Urbano, & Fayolle, 2016; Bergmann, Geissler, Hundt, & Grave, 2018). Furthermore, while the literature on academic entrepreneurship at the organizational level has previously discussed exploration and exploitation, literature on innovation and entrepreneurship at the individual level has failed to consider the role of research ambidexterity, which includes exploitation and exploration, so future studies will need to look at the role of enslavement and discovery at the individual faculty member level. Exploitation can be integrated as research ambidexterity and studied at the individual level (Do & Dadvari, 2017).

Centobelli, Cerchione, Esposito, and Shashi (2019) analyze how universities will handle a growing requirement that carries on the university's traditional definition of internal organization. They see the need to solve the following major issues, such as expanding the use of the intellectual property and establishing new learning methods. Kirs, Karo, and Lumi (2017) demonstrate the importance of learning-centered activities for learners to enhance their entrepreneurial behavior in the future.

It is believed that when entrepreneurship is incorporated into reward programs, the impact on academic exploitative behavior is multiplied (Siegel & wright 2015). According to Baglieri, Baldi, and Tucci (2018), perceptions of entrepreneurial organizational atmosphere serve as a moderator in the relationship between individual teacher abilities and knowledge production behavior (Kalar & Antoncic, 2015). As a result, the current study proposed that entrepreneurial climate is a moderator between research ambidexterity and academic entrepreneurial intentions.

H9: The entrepreneurial climate significantly moderates the association between perceived entrepreneurial orientation and knowledge creation behavior.

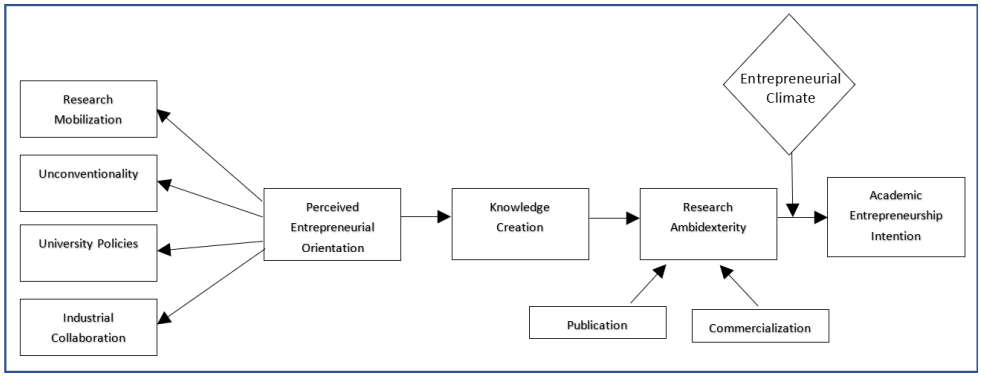

Figure 1: Theoretical Framework

3. METHODOLOGY

This study used a survey-based methodology, which is appropriate given the study's correlational descriptive character (Hernndez Sampieri, Fernndez Collado, & Baptista Lucio, 2006). Based on the nature and scope of the research, sample size and sampling techniques are dependent on the size of the population and the target population, which can be an individual, group, or an organization (Sekaran & Bougie, 2016). The target population of this study is the public and private universities

of Pakistan. The data will be collected from the individual faculty members of public and private universities through survey-based questionnaires. Approximately 35% of total public and private universities were operating in Punjab, Pakistan. Data from the Higher Education Commission of Pakistan also indicate that more than 14,000 full-time faculty members are currently working in Public and private universities of Punjab, Pakistan (HEC, 2021). Hence, the current study considered the public and private universities of Punjab, Pakistan, as the current study 's population.

Cohen (1988) indicated that the G*Power 3.1.9.2 program was used to calculate the minimum sample size based on multiple linear regression with the effect size 0.15, power (1-err prob) 0.99, and err prob 0.05. Based on a priori calculations, a minimum sample of 175 is required to validate the findings. However, according to (Krejcie & Morgan, 1970) total of 378 samples is sufficient to validate the findings. In the current study, 700 questionnaires were given, and a self-administration questionnaire was used. A total of 410 replies were received, with 389 deemed suitable for study. The current study had a response rate of around 53%. We decided based on the study of Mirani & Yusof, 2016, that 40% of professors from public university are taking part in entrepreneurial activities, once 40 % of the data was received from public universities, we stopped the data collection process. Table 1 reports the measurement scale and measurement. One construct Research Ambidexterity was treated as formative construct, since this construct is conceptualized as a composite of its multiple dimensions (Gibson and Birkinshaw, 2004). As Podsakoff et al. (2006) explain, unless this approach is adopted, the higher-order construct (ambidexterity) fails to capture the total variance in its dimensions (exploration and exploitation) and will reflect only the variance that is common to its dimensions. Rest all the construct are reflective.

Table 1: Measurement of Latent Constructs

Construct		**No. of items**	**Reported reliability**
Entrepreneurial Academic Intentions (Johnson et al., 2017)			
Entrepreneurship Intention		8 items	0.897
Perceived Entrepreneurial Orientation (Kalar and Antoncic, 2015)			
Unconventionality		7 items	0.896
Research Mobilization		6 items	0.899
Industrial Collaboration		6 items	0.874
University Policies		3 items	0.749
Knowledge Creation (Chang et al., 2016)			
Knowledge Creation	6 items	0.860	
Research Ambidexterity (Chang et al., 2016)			
Research Ambidexterity Commercialization		7 items	0.894
Research Ambidexterity Publication		4 items	0.825
Entrepreneurial Climate (Van Dam, Oreg, and Schyns ,2008)			
Entrepreneurial Climate	8 items	0.898	

4. RESULTS AND ANALYSIS

To examine the credibility of the results using two criteria: firstly, measurement model assessment, and second, structural equation assessment. The evaluation of a model fit is based on two criteria: convergence reliability and validity and discriminant validity. The testing of hypotheses was part of the structural model evaluation.

4.1 Reliabilty and Validity

The reliability and validity assessment are reported in table 2 .

The loading results for respective constructs show that the loading values of perceived entrepreneurial orientation (unconventionality, research mobilization, industrial collaboration, and university policy), knowledge creation, research ambidexterity (commercialization and publication), entrepreneurial climate, and academic entrepreneurial intentions meet the value of 0.50 (Tzeng, Chiang, & Li, 2007). To evaluate internal consistency, Cronbach alpha and composite reliability with the cut-off value of 0.70 was used. The average variance extract (AVE) assesses convergent validity (Ab Hamid, Sami, & Sidek, 2017).

Table 2: Assessment of Second-order Measurement

Latent Construct	Items	Loadings	CA	CR	AVE
Perceived Entrepreneurial orientation	Industrial Collaboration	0.927	0.932	0.943	0.830
	Research Mobilization	0.927			
	Unconventionality	0.909			
	University Policies	0.881			
Knowledge creation	KC1	0.775	0.862	0.896	0.590
	KC2	0.796			
	KC3	0.760			
	KC4	0.749			
	KC5	0.707			
	KC6	0.816			
Research Ambidexterity	Research Ambidexterity Commercialization				
	Research Ambidexterity Publication				
Entrepreneurial Climate	ECL1	0.754	0.898	0.911	0.582
	ECL2	0.796			
	ECL3	0.765			
	ECL4	0.732			
	ECL5	0.800			
	ECL6	0.687			
	ECL7	0.778			
	ECL8	0.785			
Academic Entrepreneurship Intention	AEI1	0.823	0.897	0.911	0.582
	AEI2	0.723			
	AEI3	0.747			
	AEI4	0.795			
	AEI5	0.734			
	AEI6	0.784			
	AEI7	0.727			
	AEI8	0.733			

4.2 Discriminant Validity

The discriminant validity was evaluated using Fornell-Larcker and Heterotrait-Monotrait (HTMT) (Al-Maroof & Al-Emran, 2018). The results of discriminant validity were reported in table 4, 5, 6 and table 7. Under the Fornell-Larcker technique, the diagonal value of each latent contract must be higher than the respective values reported against each other latent variable. According to the HTMT, the threshold value of 0.85 must not be exceeded (Kline, 2011), while another school of thought proposed a cut-off value of 0.90 to test discriminant validity. The validity of formative construct

Research Ambidexterity are is also within the threshold limit. The variance inflation factor (VIF) was estimated to examine multicollinearity. The ViF values and outer weights are within the cut of values. The Vif values should be between 5-10 (Mason and Perreault, 1991). All the values were within the range (see table 3, 4, 5 and 6)

Table 3: Assessment of discriminant validity (Fornell-Larcker Criterion) 2nd Order

	AEI	ECL	KC	PEO
AEI	0.763			
ECL	0.229	0.763		
KC	0.281	0.085	0.768	
PEO	0.33	-0.04	0.473	0.911

Table 4: Assessment of Discriminant validity (HTMT) 2nd order

	AEI	ECL	KC	PEO
AEI				
ECL	0.241			
KC	0.313	0.113		
PEO	0.349	0.083	0.517	

Table 5: Assessment of reliability and validity for the Formative Construct

Variation Inflation Factor

	VIF 2nd order
RAC	1.602
RAP	1.602

Table 6: Significance Level of Outer Weights

	Original sample (O)	T statistics (|O/STDEV|)	P values
RAC -> RA	0.573	5.656	0
RAP -> RA	0.54	5.125	0

5. FINDINGS

5.1 Overview

The structural and measurement models in Smartpls4 were prepared and reported as figures 2, 4,5 and 6. First of all we conducted first order analysis and then second order tests were performed.

The present study used the PLS-SEM to evaluate the association among the latent constructs. The significant association in case of direct relation indicate that PEO has positive and significant association with AEI (β = 0.095, *p <0.05*), with KC (β = 0.473, *p <0.05*), with RA (β = 0.294, *p <0.05*). Furthermore, KC indicate a positive and significant association with AEI (β = 0.201, *p <0.05*), with RA (β = 0.622, *p <0.05*). However, RA indicates a significant association with AEI at a 5 percent level of significance (β = 0.323, *p <0.05*). In the case of an indirect association, KC significantly mediates the association between PEO and RA (β = 0.201, *p <0.05*). Furthermore, KC and RA significantly mediate the association between PEO and AEI (β = 0.095, *p <0.05*) at a 5 percent significance level. The entrepreneurial climate moderate the association between research RA and AEI (β = 0.151, *p <0.05*). Chin (1998) recommended R2 values for endogenous latent variables based on: 0.67 (substantial),

0.33 (moderate), 0.19 (weak). A Q2 above 0 shows that the model has predictive relevance refer to the table 7. All the values of Q2 are above 0. Figure 5 shows the steeper line is the line above the mean standard deviation hence a positive moderation is observed.

Table 7: Results

Sr.		Coeff.	SD	T-Value	P-Values
H1	PEO -> AEI	0.095	0.022	4.284	0.000
H2	PEO -> KC	0.473	0.048	9.953	0.000
H3	KC -> AEI	0.201	0.037	5.369	0.000
H4	PEO -> RA	0.294	0.039	7.636	0.000
H5	RA -> AEI	0.323	0.052	6.262	0.000
H6	KC -> RA	0.622	0.038	16.246	0.000
H8	PEO -> KC -> RA	0.201	0.037	5.369	0.000
H10	PEO -> KC -> RA -> AEI	0.095	0.022	4.284	0.000
H11	RA*EC -> AEI	0.151	0.034	4.494	0.000

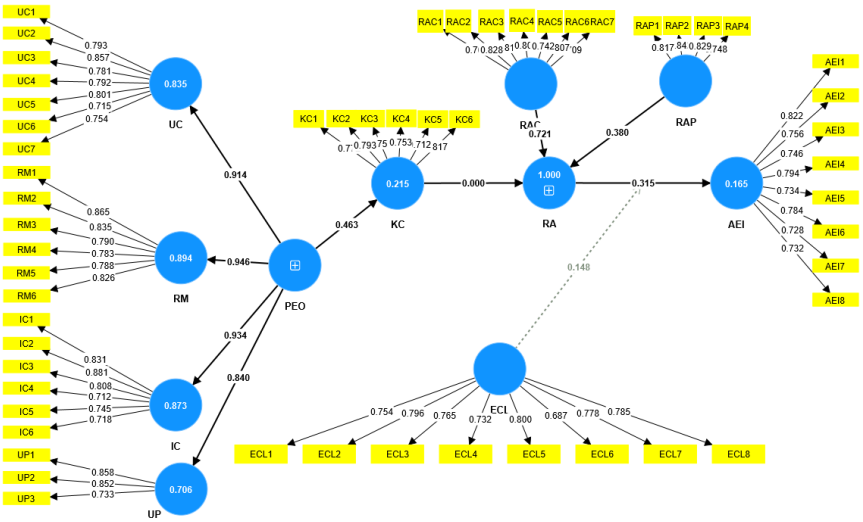

Figure 2: Assessment of First-order Measurement Model

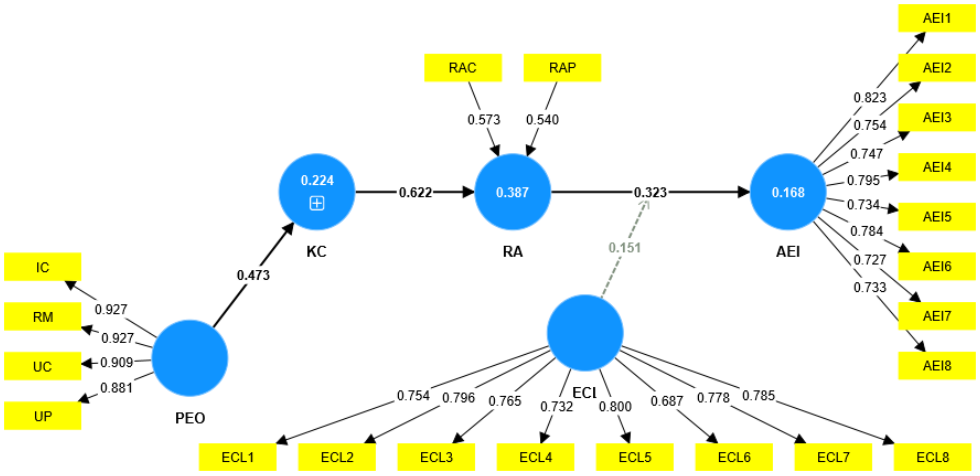

Figure 3: Assessment of Second-order Measurement Model

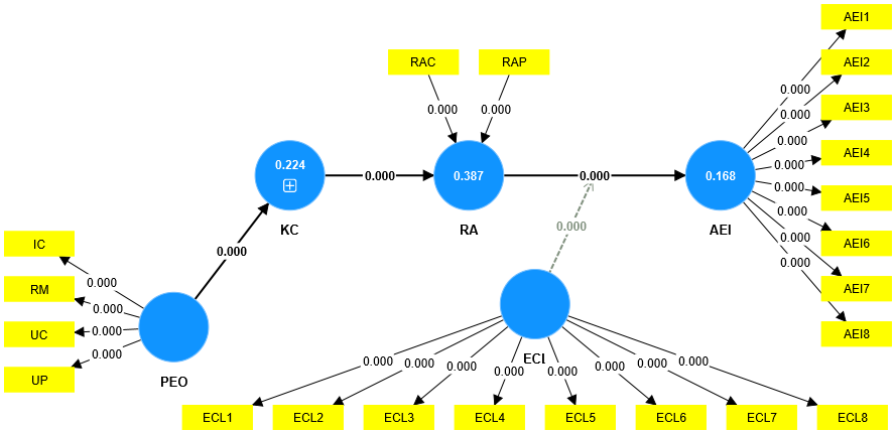

Figure 4: Assessment of Second-order Structural Model

Table 8: Model fit

	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
AEI1	0.075	0.904	0.617	0.868	0.636
AEI2	0.026	1.061	0.798	1.049	0.812
AEI3	0.072	0.946	0.753	0.939	0.725
AEI4	0.067	0.932	0.668	0.924	0.658
AEI5	0.039	1.05	0.813	1.049	0.83

5.2 Predictive Relevance

Q2 above 0 shows that the model has predictive relevance (table 11)

Table 9: Predictive relevance of the model

	Q^2predict	RMSE	MAE
AEI	0.094	0.981	0.638
KC	0.214	0.893	0.662
RA	0.241	0.877	0.68

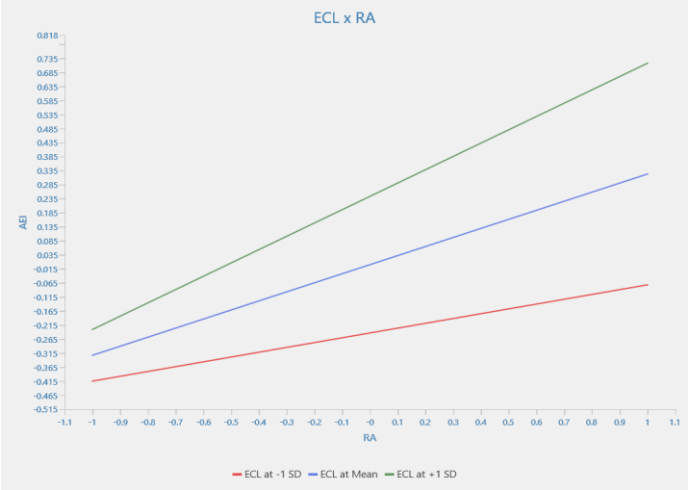

Figure 5: Moderation Analysis

6. DISCUSSION

The present study considered the psychological climate theory to evaluate how environment inspires individuals to take ambidextrous tasks. The present study considered the factors perceived entrepreneurial orientation as a second-order construct based on four dimensions: unconventionality, research mobilization, industrial collaboration, and university policy. The present study considered the knowledge creation of individuals and research ambidexterity (commercialization and publication) as mediating variables between the perceived entrepreneurial orientation and academic entrepreneurial intentions. Furthermore, the present study considered the entrepreneurial climate as moderating factor between the research ambidexterity and academic entrepreneurial orientation.

The present study's findings indicate that perceived entrepreneurial orientation is positively and significantly associated with knowledge creation, research ambidexterity, and academic entrepreneurial intentions. Moreover, the knowledge creation behavior indicates a positive and significant association with the research ambidexterity and academic entrepreneurial intentions. However, research ambidexterity indicates a negative and insignificant association with academic entrepreneurial intentions.

Furthermore, knowledge creation indicates a positive and significant association between perceived entrepreneurial orientation and academic entrepreneurial intentions and research ambidexterity. At the same time, research ambidexterity significantly mediate the association between perceived entrepreneurial orientation and academic entrepreneurial intentions. However, the knowledge creation behavior and research ambidexterity positively and significantly mediate the association between perceived entrepreneurial orientation and academic entrepreneurial intentions at a 5 percent significance level. The findings indicate that the entrepreneurial climate moderate the association between research ambidexterity and academic entrepreneurial intentions in the Pakistan context.

In addition, the earlier literature in the context of developing countries like Pakistan reported that perceived entrepreneurial orientation is positively and significantly linked with academic entrepreneurial intentions (Wibowo, Purwana, & Wibowo, 2020). Furthermore, the literature also indicates that unconventionality, research mobilization, industrial collaboration, and university policy are vital components of measuring the perceived entrepreneurial orientation (Abidi, Nimer, Bani-Mustafa , & Toglaw, 2022).

The earlier literature validates the present study's findings that perceived entrepreneurial orientation is positively and significantly linked with knowledge creation behavior (Chang et al.,2016). In addition, that literature also validates the present study's findings that knowledge creation behavior is positively and significantly linked with academic entrepreneurial intentions (Senelwa, 2017; Weerakoon, McMurray, Rametse, & Arenius, Knowledge creation theory of entrepreneurial orientation in social enterprises, 2020). The earlier literature claims that research ambidexterity for commercial and publication is significantly linked with the perceived entrepreneurial orientation. The present findings align well with the existing literature (Enkel et al., 2017; Ghantous & Alnawas, 2020). Furthermore, literature also claims that research ambidexterity is positive and significantly predicts academic entrepreneurial intentions (Blair & Shaver, 2020). Furthermore, the entrepreneurial climate indicates a positive association with academic entrepreneurial orientation however fails to moderate the association between research ambidexterity and academic entrepreneurial intentions. This research ambidexterity the positive and significant association with academic entrepreneurial intentions that is the underlying reason that entrepreneurial climate does influence if the faculty members are not interested in publications or commercial research is available.

7. CONCLUSION

The present study empirically evaluates the role of perceived entrepreneurial orientation towards academic entrepreneurial intentions. The present study proposed the mediating role of knowledge creation and research ambidexterity between the perceived entrepreneurial orientation and academic intentions. Furthermore, to evaluate the supportive role of the university, the present study considered the entrepreneurial climate as moderating factor between the research ambidexterity and academic entrepreneurial intentions. The findings of the present study are well aligned with existing literature. They reveal that perceived entrepreneurial orientation is significantly linked to knowledge creation behavior and research ambidexterity of individual faculty members.

Furthermore, the findings reveal that knowledge creation behavior of individual faculty members positively and significantly predicts the academic entrepreneurial intentions; however, research ambidexterity indicates a negative and insignificant association with academic entrepreneurial intentions. The present study results indicate that knowledge creation behavior positively and significantly mediates the association between perceived entrepreneurial orientation and academic entrepreneurial intentions. The present study's findings significantly contribute to the existing literature in the domain of academic entrepreneurship. The present study's findings significantly contribute to the psychological climate theory by documenting the empirical relationship between perceived entrepreneurial orientation and academic entrepreneurial intentions and knowledge creation mediate the association while research ambidexterity is significantly linked with the academic entrepreneurial intentions.

Key Contributions

The findings of the present study provide the guidelines for academic institutions, individual faculty members, the corporate sector, policymakers, and regulatory authorities like the Higher Education Commission of Pakistan to consider the role of factors considered in the present study to predict the academic entrepreneurial intentions among the individual faculty members. Furthermore, future studies need to consider other factors like the entrepreneurial competencies of individual faculty members as a predictor of academic entrepreneurial intentions. Furthermore, future studies can also consider the role of the entrepreneurial culture of academic institutions as moderating factor for a better explanation of the model.

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COMPLIANCE WITH ETHICAL STANDARDS

Conflict of Interest

The authors declare that they have no conflicts of interest.

Ethics Statement

This research was in accordance with the ethical standards of the Department of Management, Faculty of Business and Economics, University of Malaya.

Informed Consent Statement

All participants provided informed consent prior to completing this study.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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