Global Journal of Management and Business Research: B
Economics and Commerce
Volume 25 Issue 1 Version 1.0 Year 2025
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

The Effect of Entrepreneurial Orientation on Entrepreneurial Intention

By Mohamed Abo Zaid, Dr. Shymaa Farid, Mohamed A. Ragheb
& Prof. Dr. Alaa El-Gharbawy
Alexandria University

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Design/methodology/approach: Primary data were collected using questionnaires. This study analyzed 445 valid responses from Egyptian enterprises. The hypotheses were analyzed through correlation and structural equation modeling.

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Keywords: *entrepreneurial orientation, entrepreneurial intention, family business involvement, personal attitude, social norm, perceived behavioral control.*

GJMBR-B Classification: *LCC Code: HB615*

Strictly as per the compliance and regulations of:

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Implications: The findings suggest that fostering these traits can significantly boost entrepreneurial intentions. Policymakers and educators should focus on promoting these qualities to strengthen the entrepreneurial ecosystem.

Funding Statement: The study was supported by a grant from the Arab Academy for Science, Technology, and Maritime Transport (AASTMT), Alexandria branch of the Foundation of Basic Research. This work was carried out under the research program Graduate School of Business of the Arab Academy for Science, Technology, and Maritime Transport (AASTMT) in Egypt.

Ethical Compliance: All procedures performed in studies involving human participants followed the ethical standards of the institutional and national research committee and with the Arab Academy for Science, Technology, and Maritime Transport (AASTMT) and its later amendments or comparable ethical standards.

Plain Language Summary: This paper used proofreading techniques to ensure clarity of the text, which in turn provided clarity regarding the topic of the paper. Grammarly was also used to refine grammar, spelling, and style, enhancing the overall quality of writing.

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Author σ: e-mail: S.farid@dau.edu.sa
Author ρ: Dean of Cardiff Programs, AAST.
e-mail: raghebmm@aast.edu
Author ω: Professor of Marketing, Alexandria University.

I. Introduction

Entrepreneurship is expected to play a significant role in propelling economic growth in an unsteady industrial world. Entrepreneurship fosters knowledge sharing, the creation of new jobs, the provision of a wide range of innovative goods and services, and a rise in market competition (Selim, 2021). Therefore, investing in the education, coaching, and training of aspiring entrepreneurs is essential for fostering sustainable community development, job creation, and economic progress (Galvão et al., 2020). Similarly, young people are always interested in entrepreneurship as a professional path, but they still want education and practical skills to assist them in preparing for any obstacle (Efrata et al., 2021).

Advancements in technology, operations, and regulations impact corporate growth and competitiveness (Kubitskyi et al., 2024). Entrepreneurial Orientation, in particular, continues to find family-owned enterprises desirable, despite these shifts both domestically and internationally (Upadhyay et al., 2023). The impact of family company engagement on entrepreneurial inclinations has been the subject of several studies, as it is referred to as the nursery for future entrepreneurs (Wang et al., 2018). Arzubiaga et al. (2018) confirmed that the link between entrepreneurial orientation (EO) and performance is stronger in firms with lower levels of family involvement and higher levels of gender diversity by collecting data from 230 family firms in Spain using a questionnaire. Glowka et al. (2021) proved that CEO tenure and family involvement in Austrian Small and Medium Family Enterprises significantly mediate the relationship between risk management and performance. Similarly, Kalali (2022) found that long-term orientation positively influenced innovativeness and pro-activeness, but negatively affected risk-taking, suggesting that a long-term perspective benefits EO in family businesses from a stewardship standpoint in Iran's science and technology parks. However, Dos Santos et al. (2022) proved EO's impact on family involvement through a literature review.

Moreno-Menéndez et al. (2022) examined whether family enterprises' EO remains unaltered, strengthens, or diminishes following a crisis. Based on an evaluation of a database of 151 family businesses gathered between 2004 and 2017, the findings show that compared to enterprises with higher pre-crisis EO levels, those with lower levels had greater growth post-crisis. In contrast to the latter group, the former could sustain pre-crisis levels, even after the crisis. Similarly, Jocic et al. (2023) discovered support for the mediated model, with the underlying characteristics of families varying in their effect on EO, which in turn influences a range of innovative outcomes, using a worldwide sample of family enterprises. Moreover, Keen et al. (2024) proved that family businesses with greater levels of entrepreneurship are more likely to recognize and seize international business prospects. The moderating influence of family social suggests that this relational family-specific asset promotes organizational performance and stability. In a similar context, Sultan et al. (2024) show that the performance of Palestinian family owned enterprises in 2022 is significantly improved by risk-taking, inventiveness, and pro activeness.

Other important factors that could affect entrepreneurial intention are personal attitude, social norms, and perceived behavioral control (Dinc and Budic, 2016). Several previous literature discussed the relationship between these variables in different contexts. Ekpe and Mat (2012) collected the primary data by surveying female students in the final year of three University Business Schools in Nigeria. The results indicate a significant positive relationship between EO and social norms, besides, the significance of social norms as moderators in this relationship. Conversely, Awang et al. (2016) proved that proactive personality and risk-taking have a significant impact on PBC and social norms among students at a public university in Malaysia. The results also showed that PBC and social norms can be used as moderators in the relationship between EO and EI. The survey conducted by Munir et al. (2019), to collect data from seven universities in China and nine universities in Pakistan, showed that the effect of TPB was positive in both countries. The results also showed a stronger influence of personality traits (risk-taking propensity, proactive personality, and internal locus of control) among Chinese students when personality traits were used as antecedents of TPB. Finally, the results proved that personality traits significantly impact entrepreneurial behavior.

Zollo et al. (2021) indicated that Entrepreneurial passion is a substantial predictor of EO, which has a considerable effect on strategic entrepreneurship behavior. Furthermore, entrepreneurs' linear thinking style moderates the association between EO and strategic entrepreneurship behavior, but not the link between passion and EO. However, a nonlinear thinking style positively moderates the association between passion and EO, but not between EO and strategic entrepreneurship activity. Similarly, Hwang et al. (2021) highlighted the significant positive effect of innovativeness on personal attitudes within the context of 321 food delivery service companies in Korea. By conducting a quantitative method, with questionnaires distributed to five universities in Indonesia, Bagis (2022) proved that a spiritual workplace might counter-productively regulate students' intentions to develop EO. Subjective standards appear to have the most significant impact on students' intentions. Furthermore, Perez et al. (2024) demonstrated that innovativeness, proactivity, and risk-taking were fostered by entrepreneurship education programs among 1,423 undergraduate students from Ecuador and Colombia.

Regarding the relationship between Family Involvement and Entrepreneurial Intentions, Wang et al. (2018) gathered secondary data from business family offspring businesses in China in 2010. The findings supported that perceived parental entrepreneurial rewards are positively related to EI, and this relationship is partially mediated by entrepreneurial self-efficacy and family business involvement weakens the positive impact of perceived parental entrepreneurial rewards on entrepreneurial intentions but strengthens the effect of entrepreneurial self-efficacy. On the contrary, Zaman et al. (2020) claim that family business involvement did not have a direct effect on EI by surveying 367 university students in Pakistan. Still, it had an indirect effect through the full mediating role of institutional forces between them.

Using the idea of planned behavior, Onjewu et al. (2022) analyzed several variables of family exposure on entrepreneurial implementation intention in Nigeria. Data were collected from five public Nigerian universities. The findings indicate that entrepreneurial exposure in the form of parents, family members, and job engagement has different and significant effects on implementation intention, to the degree that entrepreneurial self-efficacy, attitudes, and subjective norms are differentially influenced. Similarly, Xu et al. (2023) collected data from 202 business oriented students at a prominent institution in eastern China. Affective family-work enrichment is favorably associated with EI through the mediating influence of ESE. Individuals with lower degrees of work-home segmentation preferences have a substantially stronger link. Similarly, Chaudhuri et al. (2023) found that gender moderated the association between government assistance, technology use, and EI in family businesses by incorporating both the resource-based perspective and the dynamic capability view theory, as well as the literature on family business entrepreneurship.

Over the last decade, female entrepreneurship played an important role in economic growth. In this regard, Dinc and Budic (2016) showed a positive impact of perceived behavioral control and personal attitude on

EI of women in the Federation of Bosnia and Herzegovina by distributing a questionnaire to two large cities in Bosnia. By collecting the primary data using a questionnaire of participants from the region of Catalonia in northeastern Spain, Miralles et al. (2017) showed a positive relationship between entrepreneurial behavior and EI, but only when the individual's age was considered. Saeed et al. (2019) showed that both PBC and social norms had a statistically significant relationship with EI among undergraduate students in Yemen, however, Personal attitude had no significant relationship with entrepreneurial intention. Additionally, EI has a strong positive correlation with PA, PBC, and social norms. Similarly, Al-Jubari et al. (2019) investigated the relationship between entrepreneurial behavior (PA, social norms, and PBC) and EI by gathering primary data from 600 students from four public Malaysian universities. The findings show a significant relationship between entrepreneurial behavior and entrepreneurial intention. The findings also show that both TPB and SDT provide complementary explanations for entrepreneurial motivational processes.

Moreover, Gieure et al. (2020) gathered primary data by distributing questionnaires among 74 universities in 34 countries for fourth-year students with a master's degree in business and management. The results proved that there is a significant relationship between entrepreneurial behavior (PA and social norms) and EI. These results were consistent with the results of Jena (2020) which confirmed that PA has a positive effect on EI in 509 business management students in the higher education sector in India. Similarly, Zovko et al. (2020) surveyed 160 students at the Faculty of Economics, Business, and Tourism, University of Split, Croatia. The results showed that attitudes had a positive effect on EI. However, behavioral control and social norms failed to produce a significant effect on EI. Regarding university students in Indonesia, Kusumawardhany and Dwiarta (2020) proved that PA had a positive effect on EI examined the impact of PA on EI. Additionally, Cynthia et al. (2020) revealed that PBC has a substantial influence on the intention to become an entrepreneur at selected postsecondary institutions in Kogi. Vamvaka et al. (2020), on the contrary, proved the link between attitude, perceived behavioral control, and EI using a cross-sectional investigation included 441 Greek tertiary education undergraduate computer technology students. The same results were concluded by Tausif et al. (2021) by conducting a comparative study between two countries: Saudi Arabia and India. The findings showed that attitude and PBC had a significant effect on EI in both countries. However, social norms were significant in explaining EI only in India.

Previous literature focused also on the relationship between entrepreneurial orientation and entrepreneurial intention. Mandongwe and Jaravaza (2020) show that innovativeness and risk taking have a significant relationship with EI by distributing questionnaires to prospective women entrepreneurs in the rural markets of Manicaland Province, Zimbabwe. However, there was no significant relationship between pro-activeness and EI. Additionally, Wathanakom et al. (2020) confirmed that innovativeness can effectively predict EI among undergraduate students, by conducting a survey targeting 330 undergraduate students from public universities. In the same context, Chafloque-Cespedes et al. (2021) revealed that variables such as the entrepreneur's position, employment status, country, and gender significantly moderated the relationship between entrepreneurial attitude and EI among university students from Latin American business schools using an inductive quantitative method via questionnaires.

In the Egyptian context, Hassan et al. (2021) confirm that entrepreneurship education promotes both individual EO and entrepreneurial motives, as well as has a favorable relationship with EI. Additionally, Efrata et al. (2021) surveyed 255 management and university business students who completed an entrepreneurship education program. The results found that only innovativeness significantly predicted EI, whereas personal pro-activeness and risk-taking showed no significant impact. However, Twum et al. (2021) conducted a study investigated how Entrepreneurial Orientation (EO) dimensions (innovativeness, pro-activeness, and risk-taking) affect Entrepreneurial Intention (EI) among students from private and public universities in Ghana. Using data collected through an online survey of 720 participants, they found significant influences of all three EO dimensions on EI. Singh and Mehdi (2022) surveyed students studying entrepreneurship in northern Indian academic institutions. The research focused on the interaction between openness to experience and EO, demonstrating significant impacts on EI.

Despite extensive research on the impact of entrepreneurial orientation on business outcomes, there is a notable gap in evaluating the relationship between Entrepreneurial Orientation elements on Entrepreneurial Intention through Family Business Involvement, Personal Attitude, Social Norms, and Perceived Behavioral Control in Egypt, as there is no model found to study these variables together in the previous studies. Therefore, the current study addresses these gaps by examining these relationships and mediations, focusing on how innovativeness, pro-activeness, and risk-taking influence these variables. The objectives include providing insights and recommendations for policy-makers and educators to foster a robust entrepreneurial ecosystem in Egypt. Additionally, this study presents a comprehensive study of a group of the most important variables that affect the field of family business in Egypt, which has a great impact on the development of this

sector in the Egyptian economy, as no previous study has examined these variables in the Arab Republic of Egypt.

II. Methods

The methodology of this study depends on positivism philosophy because positivism is based on evaluating assumed causal relationships in phenomena and utilizes a deductive method of research design. The main processes are precisely depicted in the observation and experimentation stages, followed by the formulation of hypotheses regarding various relationships. Accordingly, quantitative approaches are widely used in research. This technique uses numerical data collection and analysis to quantify relationships, patterns, and trends. Statistical techniques are often used to analyze data and draw conclusions. Collecting original data directly from the source is known as primary data collection. Surveys are often used to gather information from a large group of respondents (Smith, 2018). Therefore, quantitative data were collected through questionnaires to test the impact of innovativeness, pro-activeness, risk-taking and family business involvement, personal attitude, social norms, and perceived behavioral control on entrepreneurial intention as follows:

Dependent variable: Entrepreneurial Intention.

Independent variable: Entrepreneurial Orientation Dimensions.

Mediator: Family Business Involvement, Personal Attitude, Social Norm and Perceived Behavioral Control.

The current research conceptual framework is illustrated in Figure 1,

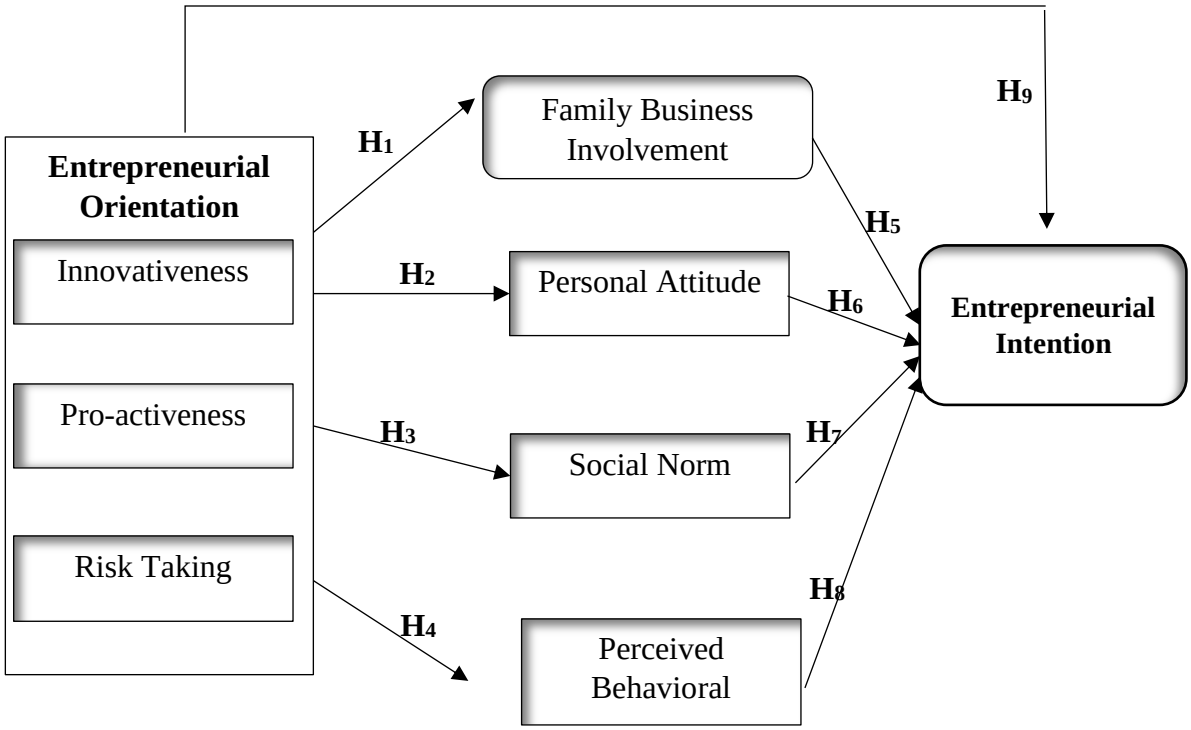

Figure 1: Research Framework

According to Figure 1, the research hypotheses are stated as follows:

H1: There is a significant relationship between Entrepreneurial Orientation and Family Business Involvement.

H2: There is a significant relationship between Entrepreneurial Orientation and Personal Attitude.

H3: There is a significant relationship between Entrepreneurial Orientation and Social Norm.

H4: There is a significant relationship between Entrepreneurial Orientation and Perceived Behavioral Control.

H5: There is a significant relationship between Family Business Involvement and Entrepreneurial Intention.

H6: There is a significant relationship between Personal Attitude and Entrepreneurial Intention.

H7: There is a significant relationship between Social Norm and Entrepreneurial Intention.

H8: There is a significant relationship between Perceived Behavioral Control and Entrepreneurial Intention.

H9: There is a significant relationship between Entrepreneurial Orientation and Entrepreneurial Intention.

H10: Family Business Involvement significantly mediates the relationship between Entrepreneurial Orientation and Entrepreneurial Intention.

H11: Personal Attitude significantly mediates the relationship between Entrepreneurial Orientation and Entrepreneurial Intention.

H12: Social Norm significantly mediates the relationship between Entrepreneurial Orientation and Entrepreneurial Intention.

H13: Perceived Behavior Control significantly mediates the relationship between Entrepreneurial Orientation and Entrepreneurial Intention.

According to the above research framework and hypotheses, the research variables were measured according to a questionnaire adopted from the studies of Miralles et al. (2016), Hooi et al. (2016), and Wang et al. (2018), using a 5-point Likert scale, where participants were asked to rate their agreement or disagreement with each statement using a five-point scale, as shown in Table 1.

Table 1: Research Variables Operationalization

Conceptual Definition	Operational Definition	Statements
Innovativeness (Hooi et al., 2016)		
The capacity of a company to promote novel concepts, try new things, launch novel goods, and engage in creative processes is referred to as innovative-ness (Hernández-Perlines et al., 2020).	It is measured by the levels of development in the company's products and services, as well as the levels of R&D and technology leadership within it.	My company has many new lines of products or services.
		My company changes in product or service lines have usually been quite dramatic.
		My company strong emphasis on R&D, technological leadership, and innovations.
Pro-activeness (Hooi et al., 2016)		
It is the capacity of businesses to devote resources to the introduction of new goods and services before rivals (Hernández-Perlines et al., 2020).	It is measured by the company's priority in introducing new products /services, management methods, and operating technologies, to ensure the company's competitive-ness.	My company is often the first business to introduce new products/services, administrative techniques, operating technologies, etc.
		My company typically adopts a very competitive, "undo-the competitors" posture.
Risk taking (Hooi et al., 2016)		
Risk-taking entails the development of audacious acts employing significant resources that are most suitable (Hernández Perlines et al., 2020).	It is measured by how a company engages in new projects and bold, large-scale decisions in order to achieve its goals	My company has a strong proclivity for high-risk projects (with chances of very high returns).
		My company believes that, owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.
Conceptual Definition	**Operational Definition**	**Statements**
		My company typically adopts a bold, aggressive posture to maximize the probability of exploiting potential opportunities.
Family Business Involvement (Wang et al., 2018)		
In these studies, family involvement in the company is	It is measured by the levels of involvement of family	My family used to take me to work with them.

defined in terms of ownership (e.g., the proportion of family stock), governance (e.g., family members on the board of directors), management (e.g., a family member serving as CEO), and succession (e.g., the number of generations of family members working for the company) (Garcia-Castro and Aguilera, 2014).	members of company owners in managing the company and making decisions.	My family used to take me to business meetings.
		My family used to teach me about managing a business.
		My family used to discuss work/business with me.
		My family used to encourage me to get to know their employees and partners.
Personal Attitude (Miralles et al., 2016)		
Before making choices that have an impact on one's behavior, people have attitudes regarding the world around them and the situation they find themselves in. People's attitudes are essentially shaped by their underlying values and beliefs (Yildiz et al., 2022).	It is measured by the attitude of the businessman towards their work.	Being an entrepreneur implies more advantages than disadvantages to me
		A career as entrepreneur is attractive for me
		Among various options, I would rather be an entrepreneur
Social Norm (Miralles et al., 2016)		
Social norms are accepted standards of conduct among various social groupings. Both explicit	It is measured by the levels of support for entrepreneurship initiatives in your close	I perceive support for entrepreneurial initiatives in your close environment from your close family
Conceptual Definition	**Operational Definition**	**Statements**
rules and laws as well as informal understandings that direct social conduct are examples of social norms (Sinclair and Agerström, 2023).	environment of close family, friends, and colleagues.	I perceive support for entrepreneurial initiatives in your close environment from your friends
		I perceive support for entrepreneurial initiatives in your close environment from your colleagues
		I perceive a positive perception towards entrepreneurial initiatives in your close environment from your close family
		I perceive a positive perception towards entrepreneurial initiatives in your close environment from your friends
		I perceive a positive perception towards entrepreneurial initiatives in your close environment from your colleagues
Perceived Behavioral Control (Miralles et al., 2016)		
A person's expectation that he or she has control over how an	It is measured by the level of awareness of the processes	I can control the creation process of a new firm

action is performed is known as perceived behavioral control. Three factors affect intentions in different ways (Hagger et al., 2022).	necessary to start and develop a company, and its success rates.	I know the necessary practical details to start a firm
		I know how to develop an entrepreneurial project
		If I tried to start a firm, I would have a high probability of succeeding.
		I can control the creation process of a new firm
Entrepreneurial Intention (Miralles et al., 2016)		
Entrepreneurial intents may be characterized as a	It is measured by entrepreneurs' intentions to	I intend to start a business in the future.
Conceptual Definition	**Operational Definition**	**Statements**
desire to start a firm or work for oneself. As personal inclinations that might result in the formation of businesses, entrepreneurial intents are also taken into consideration (Halizah and Mardikaningsih, 2022).	start a new business, their levels of development in the field of entrepreneurship.	I am obtaining the knowledge and skills needed to start a business.
		I am considering a business plan.

Regarding the study population, the researcher targeted Egyptian enterprises, where the sample size was chosen according to the Saunders equation. The Saunders equation depends on a 95% confidence level, in which the sample size should not be less than 385 respondents (Saunders et al., 2016). After developing the questionnaire, 800 questionnaires were distributed, and 520 respondents received a response rate of 65%. From the collected responses, only 445 completed questionnaires were valid for the analysis.

III. Results and Findings

The current section presents the empirical analysis and its main findings, which are presented in the following six sub-sections:

a) Validity and Reliability Analysis

In the examination of the validity of this research, two pivotal metrics were considered. The first metric, Average Variance Extracted (AVE), serves as an indicator of the average shared variance among the latent factors. Meeting or exceeding the 0.5 threshold in AVE is considered acceptable validity (Hair et al., 2016). The second metric involves examining the factor loadings, with a minimum requirement of 0.4 or higher for adequate validity (Yong and Pearce, 2013). Conversely, the assessment of reliability relies on the evaluation of the stability and consistency of each factor by the application of Cronbach's alpha. Falling within a scale of 0 to 1, higher Cronbach's alpha coefficients signify a greater degree of reliability, with coefficients equal to or exceeding 0.7 indicating satisfactory reliability (Taber, 2018).

Table 2 illustrates the validity and reliability tests conducted for the research variables. According to the results, the research variables (innovativeness, pro-activeness, risk-taking, family business involvement, personal attitude, social norm, perceived behavioral control, and entrepreneurial intention) were demonstrated to be valid, as the AVE values were above 50% (85.161, 87.097, 84.428, 84.989, 86.293, 82.402, 85.198, and 84.798 respectively). Regarding the KMO values are higher than 0.4 (0.759, 0.500, 0.757, 0.920, 0.761, 0.941, 0.870, and 0.756 respectively). Furthermore, the research variables were reliable as Cronbach's Alpha value exceeded 0.7 indicating satisfactory reliability (0.913, 0.852, 0.908, 0.956, 0.920, 0.957, 0.942, 0.910 respectively).

Table 2: Reliability and Validity Table

Variables	KMO	AVE %	Cronbach's α	Items	Factor Loading
Innovativeness	.759	85.161	.913	INN1	.849
				INN2	.852
				INN3	.854
Pro-activeness	.500	87.097	.852	PAC1	.871
				PAC2	.871
Risk-taking	.757	84.428	.908	RT1	.841
				RT2	.851
				RT3	.841
Family Business Involvement	.920	84.989	.956	FBIN1	.858
				FBIN2	.836
				FBIN3	.850
				FBIN4	.846
				FBIN5	.860
Personal Attitude	.761	86.293	.920	PAT1	.876
				PAT2	.859
				PAT3	.854
Social Norm	.941	82.402	.957	SN1	.825
				SN2	.809
				SN3	.837
				SN4	.833
				SN5	.815
				SN6	.825
Perceived Behavioral Control	.870	85.198	.942	PBC1	.851
				PBC2	.854
				PBC3	.847
				PBC4	.856
Entrepreneurial Intention	.756	84.798	.910	EIN1	.845
				EIN2	.864
				EIN3	.835

Figure 2 shows the Average Variance Extracted (AVE) percentage of all research variables. As mentioned before, all the AVEs are more than 50% and are considered to have acceptable validity.

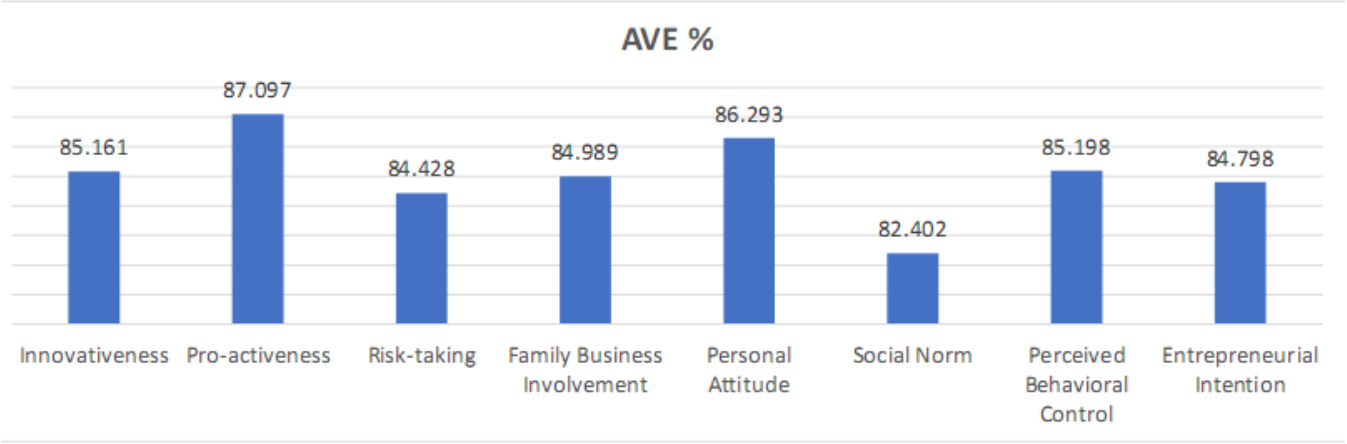

Figure 2: Average Variance Extracted Percentage of the Research Variables

b) Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) precedes the application of structural equation modeling (SEM), it is executed using AMOS 24 software, utilizing the Maximum Likelihood (ML) estimation method to determine factor loadings and assess the overall model fit. The fit indices provide a comprehensive assessment of how well the measurement model aligns with the observed data. The Chi-square/df ratio of 1.106 indicates that the model fits the data reasonably well, especially considering that values close to 1 are desirable. The associated p-value of 0.000 suggests that the model's fit is statistically significant. The Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit Index (AGFI) both exceeded 0.90, demonstrating that the model fits the data well, with a GFI of 0.944 and an AGFI of 0.930. These indices measure the proportion of variance in the observed data accounted for by a model.

The Normed Fit Index (NFI), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) values, all above 0.90, signify excellent fit. These indices assessed how well the model reproduced the observed covariance structure, with NFI = 0.975, TLI = 0.997, and CFI = 0.998. The Root Mean Square Residual (RMR) of 0.020 indicates a small discrepancy between the observed and predicted covariance matrices, supporting the overall accuracy of the model. The Root Mean Square Error of Approximation (RMSEA) of 0.015, falling below the commonly accepted threshold of 0.05, indicates a close fit of the model to the population covariance matrix. In summary, these fit indices collectively suggest that the measurement model is well-suited to the observed data, demonstrating good overall fit, statistical significance, and accurate reproduction of the covariance structure, Table 3 in this study provides detailed insights.

Table 3: Thresholds and Fit Indices for the Measurement Model

Measure	Results	Threshold
Chi-square/df	1.106	< 2 excellent; < 3 good; < 5 sometimes permissible
P-value	0.000	> 0.05
GFI	0.944	> 0.90
AGFI	0.930	> 0.90
NFI	0.975	> 0.90
TLI	0.997	> 0.95
CFI	0.998	> 0.90
RMR	0.020	< 0.08
RMSEA	0.015	< 0.05

Figure 3 shows the results of the Fit Indices for the Measurement Model, indicating that the measurement model is well-suited to the observed data, demonstrating good overall.

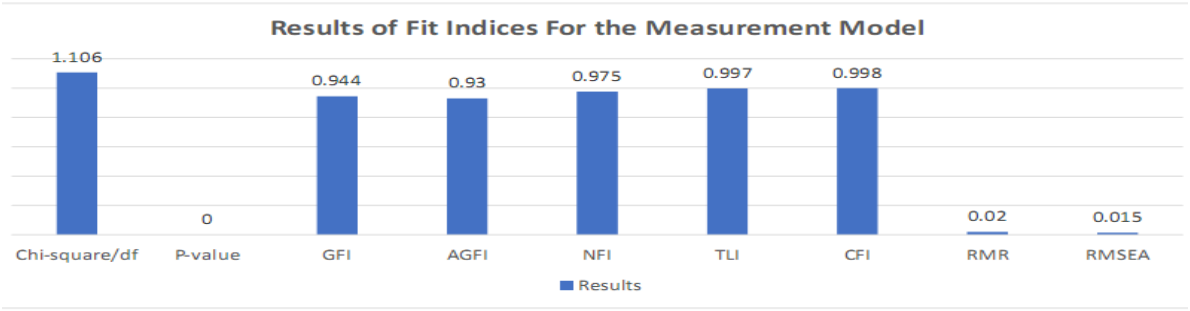

Figure 3: The Results of Fit Indices for the Measurement Model

Figure 4 illustrates the execution of the confirmatory factor analysis, portraying the factor loadings through prominent arrows. The arrows signify strong factor loadings, with values exceeding the 0.4 threshold.

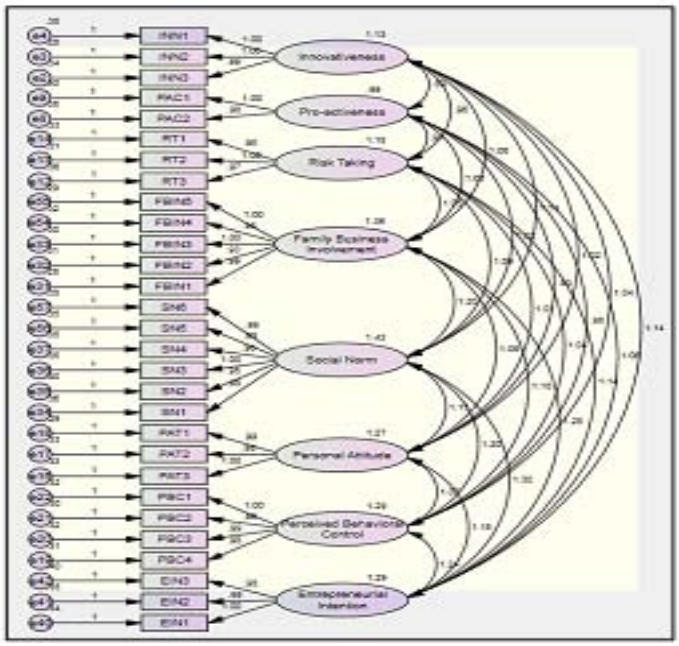

Figure 4: CFA for the Measurement Model

c) *Descriptive Analysis*

Descriptive statistics is a tool that clarifies and provides a clear overview of the characteristics of a particular data collection by providing concise summaries of the samples and information on how to quantify the data (Vetter, 2017). This section presents a descriptive analysis of the respondents' profiles and research variables.

i. *Descriptive Analysis of Respondent Profile*

The respondent profile provided valuable insights into the demographics and characteristics of the study participants (Table 5). The respondent profile provides insights into key demographic characteristics, with the results sorted from high to low percentages. In terms of company age, the majority of respondents had a business tenure of five to less than 10 years (42.7%), followed by 15 years or more (18.9%). The largest proportion of business volume operates in large companies (44.9%), followed by medium (37.3%), and small companies (17.8%). Employee count revealed a distribution with 1000 - Less than 3000 employees being the most dominant (41.3%), followed by Less than 1000 employees (18.7%).

In terms of age distribution, the largest group falls within the 40–less than 50 age range (32.4%), followed by 22–less than 30 (19.6%), and 50–less than 60 (19.6%). The gender distribution indicates a higher percentage of male respondents (58.0%) than female respondents (42.0%). In terms of education, a significant percentage held a bachelor's degree (49.7%), followed by a master's degree (32.1%), while individuals with a doctoral degree constituted a smaller proportion (7.0%). Those with "other" educational backgrounds comprised 11.2% of the respondents.

Table 4: Respondent Profile

	Frequency (n=445)	Percent %
Company Age		
Less than one year	38	8.5
One – less than Five years	91	20.4
Five – less than 10 years	190	42.7
10 – less than 15 years	42	9.4
15 years or more	84	18.9
Business Volume		
Small	79	17.8
Medium	166	37.3
Large	200	44.9
Employee Count		
Less than 1000	83	18.7
1000 – Less than 3000	184	41.3
3000 – Less than 5000	92	20.7
5000 – Less than 10000	56	12.6
10000 or more	30	6.7
Age		
22 - Less than 30	87	19.6
30- Less than 40	83	18.7
40- Less than 50	144	32.4
50- Less than 60	87	19.6
60 or older	44	9.9
Gender		
Male	258	58.0
	Frequency (n=445)	**Percent %**
Female	187	42.0
Education		
Bachelor's degree	221	49.7
Master's degree	143	32.1
Doctorate degree	31	7.0
Other	50	11.2

ii. *Descriptive Analysis of Research Variables*

The descriptive results for the research variable offer valuable insights into the central tendencies and variations within the dataset, as shown in Table 6. For "innovativeness" the mean was 3.0854, with a standard deviation of 1.20318. "Pro-activeness" has a mean of 3.1551 and a standard deviation of 1.13731. Similarly, "Risk-taking" had a mean of 3.1236, with a standard deviation of 1.14903. "Family Business Involvement" has a mean of 3.3079 and a standard deviation of 1.30213. "Personal Attitude" shows a mean of 2.9933 with a standard deviation of 1.21827, while "Social Norm" had a mean of 3.0854 and a standard deviation of 1.31069. "Perceived Behavioral Control" has a mean of 2.9910 and a standard deviation of 1.27869. Lastly, "Entrepreneurial Intention" has a mean of 3.4584 with a standard deviation of 1.21411.

Table 5: Descriptive Analysis for the Research Variables

Research Variable	N	Mean	Std. Deviation	Frequency				
				1	2	3	4	5
Innovativeness	445	3.0854	1.20318	60	79	114	147	45
Pro-activeness	445	3.1551	1.13731	48	73	127	156	41
Risk-taking	445	3.1236	1.14903	47	84	125	145	44
Family Business Involvement	445	3.3079	1.30213	51	88	67	151	88
Personal Attitude	445	2.9933	1.21827	67	84	125	123	46
Social Norm	445	3.0854	1.31069	58	115	78	119	75
Perceived Behavioral Control	445	2.9910	1.27869	74	96	82	146	47
Entrepreneurial Intention	445	3.4584	1.21411	13	121	72	127	112

Figure 5 shows the descriptive statistics for the research variables, represented as mean and standard deviation.

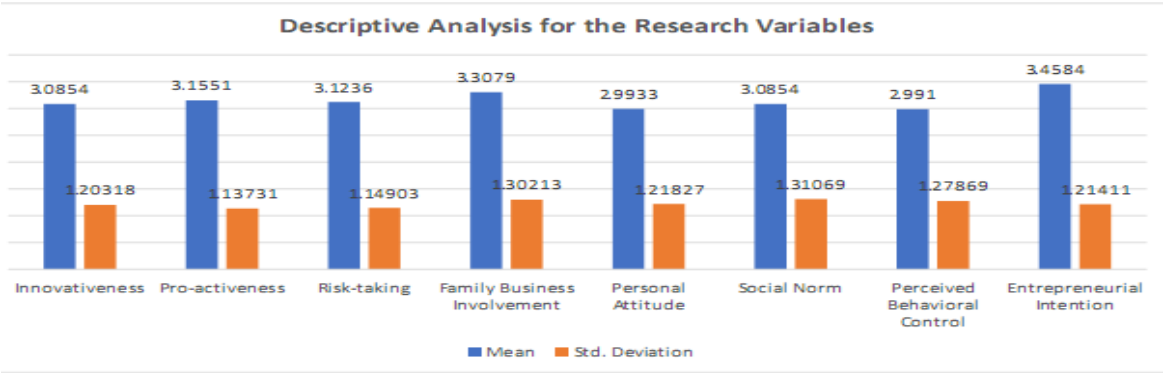

Figure 5: Descriptive Statistics for he Research Variables

d) *Normality Testing for the Research Variables*

Confirming the normality of the data is a prerequisite before conducting inferential analyses, influencing the choice between parametric and non-parametric tests for hypothesis testing (Demir, 2022). A widely employed method for assessing normality is the Kolmogorov-Smirnov test, which is especially suited for sample sizes exceeding 50 observations in Table 6. A P-value surpassing the 0.05 threshold indicates the dataset conforms to a normal distribution. This

meticulous evaluation of normalcy is a key aspect of the research process, steering the selection of appropriate statistical tests for hypothesis testing, thereby fortifying the reliability and validity of the research outcomes.

Table 6: Formal Testing of Normality

Research Variables	Kolmogorov-Smirnov[a]		
	Statistic	Df	Sig.
Innovativeness	.208	445	.000
Pro-activeness	.214	445	.000
Risk-taking	.202	445	.000
Family Business Involvement	.240	445	.000
Personal Attitude	.175	445	.000
Social Norm	.193	445	.000
Perceived Behavioral Control	.219	445	.000
Entrepreneurial Intention	.209	445	.000

Given the outcomes of the formal tests signaling a departure from a normal distribution in the dataset in Table 7, a supplementary informal assessment was employed to gauge the data's approximate normality. As illustrated in Table 7, this informal evaluation revealed that both the skewness and kurtosis values exceeded the acceptable range of ±1. Consequently, non-parametric tests are considered appropriate for elucidating the relationships among the research variables.

Table 1: Informal Testing of Normality

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Innovativeness	445	-.282	.116	-.894	.231
Pro-activeness	445	-.372	.116	-.674	.231
Risk-taking	445	-.270	.116	-.767	.231
Family Business Involvement	445	-.358	.116	-1.066	.231
Personal Attitude	445	-.145	.116	-.936	.231
Social Norm	445	-.056	.116	-1.204	.231
Perceived Behavioral Control	445	-.158	.116	-1.165	.231
Entrepreneurial Intention	445	-.183	.116	-1.267	.231

e) Testing Multicollinearity Assumption

The examination of Variance Inflation Factors (VIFs), detailed in Table 8, for the independent variables in the research model, yields crucial insights into the state of multicollinearity. The results revealed that all VIFs corresponding to the research variables remained below the predetermined threshold of 5. This observation indicates the absence of noticeable multicollinearity among the independent variables in this analysis, thereby reinforcing the robustness and reliability of the research model.

Table 2: VIF values for Research Variables

Independent Variables	VIF
Innovativeness	3.007
Pro-activeness	2.659
Risk-taking	2.985

f) Testing Research Hypotheses

Within this segment, meticulous scrutiny of the research hypotheses transpires through the utilization of correlation analysis and path analysis within the structural equation modeling (SEM) framework. Given the non-normal distribution inherent in the dataset, the preferred analytical method was Spearman's correlation. Table 9 presents the correlation matrix for the variables examined in this study.

Innovativeness is strongly and positively correlated with Family Business Involvement ($r = 0.850$, $p < 0.001$), Personal Attitude ($r = 0.806$, $p < 0.001$), social norms ($r = 0.862$, $p < 0.001$), Perceived Behavioral Control ($r = 0.826$, $p < 0.001$), and Entrepreneurial Intention ($r = 0.898$, $p < 0.001$). Similarly, pro-activeness showed a strong positive correlation with Family Business Involvement ($r = 0.843$, $p < 0.001$), Personal Attitude ($r = 0.781$, $p < 0.001$), social norms ($r = 0.823$, $p < 0.001$), Perceived Behavioral Control ($r = 0.822$, $p < 0.001$), and Entrepreneurial Intention ($r = 0.880$, $p < 0.001$). Moreover, risk taking was significantly positively correlated with Family Business Involvement ($r = 0.829$, $p < 0.001$), Personal Attitude ($r = 0.804$, $p < 0.001$), social norms ($r = 0.827$, $p < 0.001$), Perceived Behavioral Control ($r = 0.827$, $p < 0.001$), and Entrepreneurial Intention ($r = 0.884$, $p < 0.001$).

Family Business Involvement shows a strong positive correlation with Entrepreneurial Intention ($r = 0.943$, $p < 0.001$). Moreover, Personal Attitude revealed a robust positive correlation with Entrepreneurial Intention ($r = 0.885$, $p < 0.001$). Furthermore, social norms revealed robust positive correlations with Entrepreneurial Intention ($r = 0.927$, $p < 0.001$). Additionally, Perceived Behavioral Control revealed a robust positive correlation with Entrepreneurial Intention ($r = 0.919$, $p < 0.001$).

Table 3: Correlation Matrix for the Research Variables

			1.	2.	3.	4.	5.	6.	7.	8.
Spearman's rho	1. Innovativeness	R	1.000							
		Sig.	.							
		N	445							
	2. Pro-activeness	R	.776**	1.000						
		Sig.	.000	.						
		N	445	445						
	3. Risk-taking	R	.806**	.777**	1.000					
		Sig.	.000	.000	.					
		N	445	445	445					
	4. Family Business Involvement	R	.850**	.843**	.829**	1.000				
		Sig.	.000	.000	.000	.				
		N	445	445	445	445				
		R	.806**	.781**	.804**	.834**	1.000			

			1.	2.	3.	4.	5.	6.	7.	8.
	1. Personal Attitude	Sig.	.000	.000	.000	.000	.			
		N	445	445	445	445	445			
	2. Social Norm	R	.862**	.823**	.827**	.879**	.837**	1.000		
		Sig.	.000	.000	.000	.000	.000	.		
		N	445	445	445	445	445	445		
	3. Perceived Behavioral Control	R	.826**	.822**	.827**	.883**	.821**	.867**	1.000	
		Sig.	.000	.000	.000	.000	.000	.000	.	
		N	445	445	445	445	445	445	445	
	4. Entrepreneurial Intention	R	.898**	.880**	.884**	.943**	.885**	.927**	.919**	1.000
		Sig.	.000	.000	.000	.000	.000	.000	.000	.
		N	445	445	445	445	445	445	445	445

Structural equation Modeling (SEM) analysis was used to evaluate the influence of the research variables in Table 10. The SEM results, outlined below, provide valuable insights into the relationships between the variables.

Hypothesis 1, which posits a relationship between Entrepreneurial Orientation and Family Business Involvement, Innovativeness (estimate = 0.337, $p < 0.000$), and pro-activeness (estimate = 0.739, $p < 0.000$), demonstrated a significant positive effect on Family Business Involvement as the P-values were less than 0.05, while, Risk Taking (estimate = 0.053, $p = 0.513$) showed an insignificant effect on Family Business Involvement as the P-value was more than 0.05. The coefficient of determination (R-square) for the dependent variable "Family Business Involvement" was 0.867. This value indicates that approximately 86.7% of the variability in Family Business Involvement can be explained by independent variables in the model.

For Hypothesis 2, which posits a relationship between Entrepreneurial Orientation and Personal Attitude, Innovativeness (estimate = 0.369, $p < 0.000$), pro-activeness (estimate = 0.497, $p < 0.000$), and risk-taking (estimate = 0.177, $p < 0.036$) demonstrated a significant positive effect on Personal Attitude as the P-values were less than 0.05. The coefficient of determination (R square) for the dependent variable "Personal Attitude" was 0.807. This value indicates that approximately 80.7% of the variability in personal attitudes can be explained by the independent variables in the model.

Hypothesis 3, which posits a relationship between entrepreneurial orientation and social norms, innovativeness (estimate = 0.503, $p < 0.000$), and pro-activeness (estimate = 0.562, $p < 0.000$), demonstrates a significant positive effect on social norms as the P-values are less than 0.05, while, Risk Taking (estimate = 0.083, $p = 0.513$) shows an insignificant effect on social norms as the P-value is more than 0.05. The coefficient of determination (R-square) for the dependent variable "Social Norm" was 0.868. This value indicates that approximately 86.8% of the variability in the Social Norm can be explained by the independent variables in the model.

Hypothesis 4, which posits a relationship between Entrepreneurial Orientation and Perceived Behavioral Control, Innovativeness (estimate = 0.276, $p < 0.000$), and pro-activeness (estimate = 0.745, $p < 0.000$), demonstrates a significant positive effect on Perceived Behavioral Control as the P-values are less than 0.05, while, Risk Taking (estimate = 0.092, $p = 0.247$) showed an insignificant effect on Perceived Behavioral Control as the P-value was more than 0.05. The coefficient of determination (R-square) for the dependent variable "Perceived Behavioral Control" was 0.878. This value indicates that approximately 87.8% of

the variability in Perceived Behavioral Control can be explained by the independent variables in the model.

For Hypothesis 5, which posits a relationship between Family Business Involvement and Entrepreneurial Intention, it could be noted that Family Business Involvement (estimate = 0.277, $p < 0.000$), demonstrates a significant positive effect on Entrepreneurial Intention as the P-value is less than 0.05.

For Hypothesis 6, which posits a relationship between Personal Attitude and Entrepreneurial Intention, it can be noted that Personal Attitude (estimate = 0.108, $p < 0.011$), demonstrates a significant positive effect on Entrepreneurial Intention as the P-value is less than 0.05.

For Hypothesis 7, which posits a relationship between social norms and entrepreneurial intention, it could be noted that social norms (estimate = 0.130, $p < 0.009$), demonstrate a significant positive effect on Entrepreneurial Intention as the P-value is less than 0.05. For Hypothesis 8, which posits a relationship between Perceived Behavioral Control and Entrepreneurial Intention, it could be noted that Perceived Behavioral Control (estimate = 0.107, $p = 0.080$) shows an insignificant effect on Entrepreneurial Intention as the P-value is more than 0.05.

Hypothesis 9, which posits a relationship between Entrepreneurial Orientation and Entrepreneurial Intention, Innovativeness (estimate = 0.503, $p < 0.000$), and risk-taking (estimate = 0.142, $p < 0.022$), demonstrates a significant positive effect on Entrepreneurial Intention as the P-values are less than 0.05, while pro-activeness (estimate = 0.181, $p = 0.176$) shows an insignificant effect on Entrepreneurial Intention as the P-value is more than 0.05. The coefficient of determination (R-square) for the dependent variable "Entrepreneurial Intention" is 0.990. This value indicates that approximately 99% of the variability in Entrepreneurial Intention can be explained by the independent variables in the model.

According to previous findings, family business involvement, social norms, and personal attitudes exert a substantial influence on Entrepreneurial Intention. This implies that family business involvement, social norms, and personal attitudes have a direct impact on entrepreneurial intention. On the other hand, there is a lack of a significant effect of Perceived Behavioral Control on Entrepreneurial Intention, indicating the absence of a direct relationship between behavioral control and Entrepreneurial Intention.

Hypothesis 10, Family Business Involvement mediates the relationship between entrepreneurial orientation and intention. Based on the previous results, it can be noted that there is a significant effect of Innovativeness, and Pro-activeness on Family Business Involvement, which means that Family Business Involvement could mediate the relationship between Innovativeness, Pro-activeness, and Entrepreneurial Intention.

It could be observed that Family Business Involvement partially mediate the relationship between Innovativeness and Entrepreneurial Intention as the effect still significant at the presence of Family Business Involvement. Moreover, it could be observed that Family Business Involvement fully mediate the relationship between Pro-activeness and Entrepreneurial Intention as the effect turned to be insignificant at the presence of Family Business Involvement.

Hypothesis 11, Personal Attitude mediated the relationship between Entrepreneurial Orientation and Entrepreneurial Intention. Based on the previous results, it could be noted that there is a significant effect of Innovativeness, and Pro-activeness on Personal Attitude, which means that Personal Attitude could mediate the relationship between Innovativeness, Pro activeness, and Entrepreneurial Intention.

It could be observed that Personal Attitude partially mediate the relationship between Innovativeness, Risk Taking, and Entrepreneurial Intention as the effect still significant at the presence of Personal Attitude. Moreover, it could be observed that Personal Attitude fully mediate the relationship between Pro-activeness and Entrepreneurial Intention as the effect turned to be insignificant at the presence of Personal Attitude.

Hypothesis 12, social norms mediate the relationship between Entrepreneurial Orientation and Entrepreneurial Intention. Based on the previous results, it can be noted that there is a significant effect of innovativeness, and pro-activeness on social norms, which means that social norms could mediate the relationship between Innovativeness, Pro-activeness, and Entrepreneurial Intention.

It could be observed that Social Norm partially mediate the relationship between Innovativeness and Entrepreneurial Intention as the effect still significant at the presence of Social Norm. Moreover, it could be observed that Social Norm fully mediate the relationship between Pro-activeness and Entrepreneurial Intention as the effect turned to be insignificant at the presence of Social Norm.

For Hypothesis 12, Perceived Behavioral Control mediates the relationship between Entrepreneurial Orientation and Entrepreneurial Intention. Based on the previous results, it could be noted that there is no direct effect of Perceived Behavioral Control on entrepreneurial intention; therefore, Perceived Behavioral Control could not mediate the relationship between Entrepreneurial Orientation and Entrepreneurial Intention.

Table 4: SEM Analysis for the Research Variables

			Estimate	P	R^2
Family Business Involvement	<---	Innovativeness	.337	***	.867
Family Business Involvement	<---	Pro-activeness	.739	***	
Family Business Involvement	<---	Risk Taking	.053	.513	
Social Norm	<---	Innovativeness	.503	***	.868
Social Norm	<---	Pro-activeness	.562	***	
Social Norm	<---	Risk Taking	.083	.282	
Personal Attitude	<---	Innovativeness	.369	***	.807
Personal Attitude	<---	Pro-activeness	.497	***	
Personal Attitude	<---	Risk Taking	.177	.036	
Perceived Behavioral Control	<---	Innovativeness	.276	***	.878
Perceived Behavioral Control	<---	Pro-activeness	.745	***	
Perceived Behavioral Control	<---	Risk Taking	.092	.247	
Entrepreneurial Intention	<---	Innovativeness	.142	.022	.990
Entrepreneurial Intention	<---	Pro-activeness	.181	.176	
Entrepreneurial Intention	<---	Risk Taking	.162	***	
Entrepreneurial Intention	<---	Family Business Involvement	.277	***	
Entrepreneurial Intention	<---	Social Norm	.130	.009	
Entrepreneurial Intention	<---	Personal Attitude	.108	.011	
Entrepreneurial Intention	<---	Perceived Behavioral Control	.107	.080	

The model fit indices, including CMIN/DF (1.189), GFI (0.938), CFI (0.996), AGFI (0.924), and RMSEA (0.021), all fell within the acceptable ranges. Figure 6 shows the SEM employed to analyze the impact of the research model.

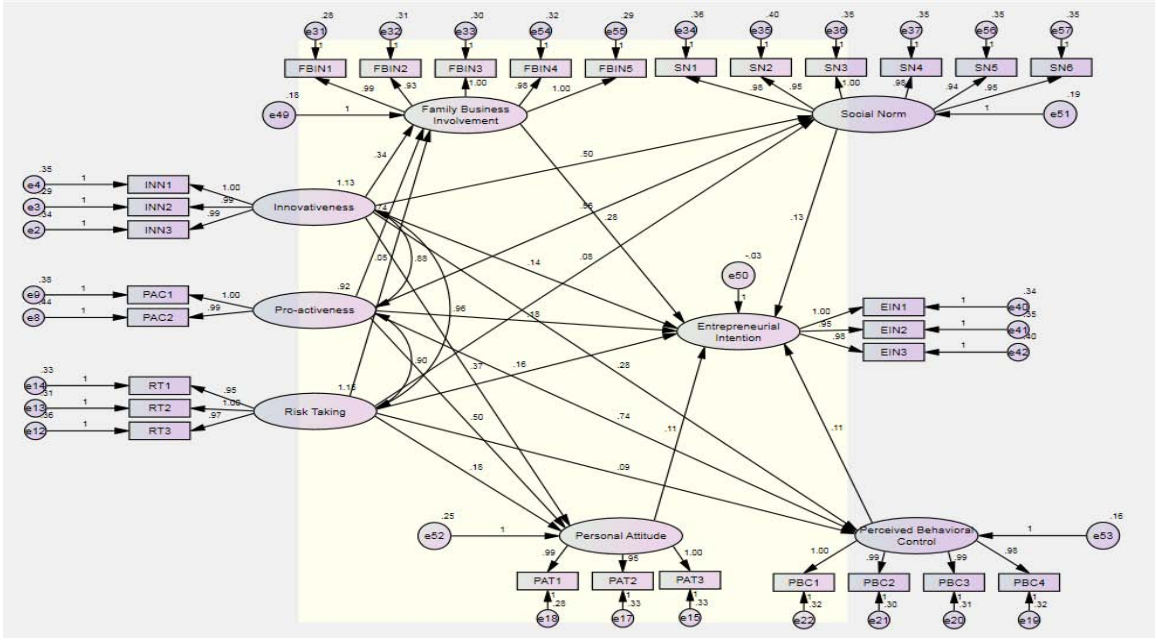

Figure 6: SEM for the Research Variables

IV. Research Discussion and Conclusion

In this section, the results of the hypotheses tested using a correlation matrix and Structural Equation Modeling (SEM) are discussed.

a) Research Discussion

The results of the first hypothesis reveal that innovativeness and pro-activeness have significant positive effects on family business involvement, therefore, the first hypothesis is partially supported. These results are consistent with those of Arzubiaga et al. (2018), Glowka et al. (2021), Dos Santos et al. (2022), Kalali (2022), Moreno-Menéndez et al. (2022), and Jocic et al. (2023). Otherwise, the results of the second hypothesis proved that all three dimensions had significant positive effects on personal attitudes, therefore, the second hypothesis is fully supported. These results align with those of Zollo et al. (2021) and Hwang et al. (2021). The findings of the third hypothesis clarify that innovativeness and pro-activeness have significant positive effects on social norms, accordingly, the third hypothesis is partially supported. The results are consistent with those of Ekpe and Mat (2012) and Bagis (2022), but inconsistent with those of Awang et al. (2016).

Moreover, the results of the fourth hypothesis proved that innovativeness and pro activeness had significant positive effects on perceived behavioral control, therefore, the fourth hypothesis is partially supported. The results are consistent with Munir et al. (2019), but inconsistent with those of Awang et al. (2016). While the findings of the fifth hypothesis illustrate that family business involvement had a significant positive effect on entrepreneurial intention, hence, the fifth hypothesis is fully supported. The results align with those of Wang et al. (2018), Onjewu et al. (2022), Xu et al. (2022), and Chaudhuri et al. (2023), but are inconsistent with those of Zaman et al. (2020). By examining the sixth hypothesis, the results indicate that Personal attitude has a significant positive effect on entrepreneurial intention, therefore, the sixth hypothesis is fully supported. The results are consistent with those of Miralles et al. (2016), Dinc and Budic (2016), Al-Jubari et al. (2019), Gieure et al. (2020), Jena (2020), Zovko et al. (2020), Kusumawardhany and Dwiarta (2020), Vamvaka et al. (2020), and Tausif et al. (2021), but inconsistent with those of Saeed et al. (2019).

The results of the seventh hypothesis proved that social norms had a significant positive effect on entrepreneurial intention, hence, the seventh hypothesis is fully supported. The results are consistent with those of Al-Jubari et al. (2019), Saeed et al. (2019), Gieure et al. (2020), Vamvaka et al. (2020), and Tausif et al. (2021), but inconsistent with those of Zovko et al. (2020).

Regarding testing the eighth hypothesis, the results indicate that perceived behavioral control had an insignificant positive effect on entrepreneurial intention, therefore, the eighth hypothesis is not supported. The results are consistent with Zovko et al. (2020), but inconsistent with Miralles et al. (2016), Dinc and Budic (2016), Al-Jubari et al. (2019), Saeed et al. (2019), Cynthia (2020), and Tausif et al. (2021). On the other hand, the findings of the ninth hypothesis revealed that innovativeness and risk-taking had significant positive effects on entrepreneurial intention, hence, the ninth hypothesis is partially supported. The results are

consistent with those of Mandongwe and Jaravaza (2020), Wathanakom et al. (2020), Chafloque-Cespedes et al. (2021), Hassan et al. (2021), and Singh and Mehdi (2022), but inconsistent with those of Efrata et al. (2021) and Twum et al. (2021).

The findings of the tenth hypothesis find that family business involvement partially mediates the relationship between innovativeness and entrepreneurial intention and fully mediates the relationship between pro-activeness and entrepreneurial intention, therefore, the tenth hypothesis is partially supported. The results of the eleventh hypothesis indicate that personal attitude partially mediates the relationship between innovativeness, risk-taking, and entrepreneurial intention, and fully mediates the relationship between pro-activeness and entrepreneurial intention. However, the findings of the twelfth hypothesis indicate that social norms partially mediate the relationship between innovativeness and entrepreneurial intention, and fully mediate the relationship between pro-activeness and entrepreneurial intention. Finally, testing the thirteenth hypothesis revealed that perceived behavioral control did not mediate the relationship between entrepreneurial orientation and entrepreneurial intention.

b) Research Recommendations and Limitations

This research provides detailed recommendations for various stakeholders and future research. For decision-makers and enterprise owners, it is recommended to prioritize innovativeness and pro activeness, as these dimensions significantly influence family involvement within businesses, social norms, and perceived behavioral control. Additionally, focusing on all three dimensions of entrepreneurial orientation (including risk-taking) is crucial because they collectively have a strong impact on personal attitudes. To enhance entrepreneurial intentions among potential entrepreneurs, especially within family enterprises, these elements should be integrated into business strategies and organizational cultures.

Academic institutions and educators of entrepreneurship should develop clear and comprehensive curricula that thoroughly explain the concepts of family business involvement, personal attitudes, and social norms. These concepts are critical because they significantly affect entrepreneurial intention. Proper education on these variables equips students with the knowledge and skills needed to successfully engage in entrepreneurial activities and make informed decisions when starting their businesses.

This research suggests focusing more on the independent variables of EO (innovativeness, pro-activeness, and risk-taking) as key factors influencing entrepreneurial intention. Researchers should investigate additional EO dimensions of entrepreneurial orientation to provide a broader understanding of its impact. Future research should apply similar studies in other developing countries to compare results and gain a global perspective on the factors influencing entrepreneurial intention. Comparative studies between developed and developing countries are also recommended to understand the differences and similarities in entrepreneurial orientation and intention across different economic contexts. Extending the study duration and increasing the sample size will help obtain more generalized and robust results. Additionally, future research should explore other potential mediators and moderators that could influence the relationship between entrepreneurial orientation and entrepreneurial intention, such as cultural factors, economic conditions, and policy environments.

Several limitations were identified in this research. The timing of data collection was limited, suggesting that future research should include a longer period to capture more comprehensive data. The study sample, consisting of 445 respondents from Egypt, may not be representative of other contexts, indicating the need for a larger and more diverse sample in future studies. The focus on Egypt as the sole case study also limited the generalizability of the findings. Comparative studies involving multiple developing countries and those that compare developed and developing countries are recommended to provide a holistic understanding of the phenomena under investigation.

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