



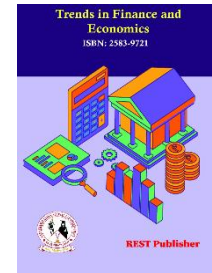
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# Cultural and Economic Factors in International Entrepreneurship: An Analysis Using the TOPSIS Method

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**Abstract:** This study explores the intricate dynamics of international entrepreneurship, emphasizing the importance of psychological, social, and economic factors within national boundaries. Amidst a growing global interest in entrepreneurship, this research highlights cultural influences on entrepreneurial theory, drawing on a cross-national study of approximately 1800 fourth-year university students from nine countries. By examining students' attitudes towards free markets, competition, and the role of entrepreneurship in economic growth, the study provides critical insights into the entrepreneurial mindset across diverse cultures. Utilizing integrated entropy weighting and the TOPSIS method, this research systematically evaluates and ranks entrepreneurship attributes, including Leadership, Growth Orientation, Opportunity, Risk-taking, and Market Knowledge. The findings reveal Leadership as the highest-ranked attribute, reflecting its robust performance across key criteria such as Innovation, Profit Margin, Regulatory Compliance, and Customer Satisfaction, while Market Knowledge is identified as needing significant improvement. The study posits a strong link between culture and industry in shaping entrepreneurial motivation, suggesting that both cultural and industrial factors substantially influence individuals' drive to pursue entrepreneurship. By examining the relationship between entrepreneurial motivation and four general personality traits, the research reveals how these traits manifest differently across cultures, underscoring the necessity for a nuanced approach in international entrepreneurship studies. Advancing the fields of entrepreneurial motivation, culture, and career development, this study addresses the challenges faced by international entrepreneurs and highlights the critical need for supportive global policies. It raises significant questions about the relationship between culture, industry, and entrepreneurial activity, potentially stimulating further discussions and research. The study also introduces new principles in the economics of entrepreneurship, such as bounded rationality, rule-following, institutions, cognition, and evolution, enriching our understanding of entrepreneurial behavior and decision-making. This comprehensive framework provides valuable insights for scholars, policymakers, and educators, aiming to foster a more balanced and effective entrepreneurial landscape worldwide.

**Keywords:** International Entrepreneurship, Entrepreneurial Motivation, Cultural Influence, TOPSIS Method, Economic Development, Innovation and Regulation.

## 1. INTRODUCTION

Governmental policymakers worldwide increasingly rely on international comparative research, especially in the context of rising interest in entrepreneurship among business leaders. This research focuses on national boundaries and the factors influencing the creation of new businesses, including psychological, social, and economic elements. Recently, the international aspect of this research has become vital for studies in international entrepreneurship. The tendency toward entrepreneurship in various societies highlights the significant role culture plays in entrepreneurship theory. A cross-national study involving around 1800 fourth-year university students from nine countries served as the sample for this research. The survey aimed to gauge students' attitudes and opinions on free markets, competition, and the role of entrepreneurship in economic growth. The study employs integrated entropy weighting to choose information systems and suggests using the TOPSIS method. This thesis helps triangulate the research findings. Culture and Industry The thesis posits a link between culture and industry in terms of entrepreneurial motivation, suggesting that both cultural factors and industry characteristics can influence an individual's drive to become an entrepreneur. General Personality Traits: The research explores

the relationship between entrepreneurial motivation and four general personality traits, which are crucial for understanding what motivates individuals to pursue entrepreneurial ventures. **Variations Across Cultures** The thesis indicates that these personality traits may manifest differently in individuals from various cultures, implying that cultural differences play a role in shaping how these traits influence entrepreneurial motivation. **Relevance to International Entrepreneurship** The findings underscore the importance of international entrepreneurship research in understanding these dynamics. This may illuminate how cultural and industrial factors influence international entrepreneurs and their motivations. **Frontiers of Research** this study aims to advance research in the areas of entrepreneurial motivation, culture, and career development, contributing to a deeper understanding of these dynamics. **Overcoming Barriers** the research addresses the challenges faced by international entrepreneurs, offering insights into the obstacles they encounter. **Raising Important Questions** The study raises significant questions about the relationship between culture, industry, and entrepreneurial activity, potentially stimulating further research and discussions in this field. **Growing Interest** there is increasing interest in international entrepreneurship and the development of entrepreneurial activities across different countries and regions. This highlights the critical need for creating and enacting policies that support entrepreneurship across various global regions. As anticipated, the study raises more questions than it answers about the similarities and differences among entrepreneurs worldwide. Importantly, it addresses essential aspects and defining traits of entrepreneurship, probing whether these are viewed through an ethnic perspective. In social science, a conceptual framework should not merely describe or predict empirical phenomena but should offer a comprehensive structure that elucidates and forecasts a specific set of phenomena. This is particularly lacking in the field of entrepreneurship. The term "entrepreneurship" has evolved into a broad category, covering a wide array of research activities undertaken by diverse individuals. It's crucial to recognize that entrepreneurial behavior is not a fixed characteristic distinguishing some people from others in all contexts. Instead, it involves certain individuals' propensity to respond to situational opportunities. We contend that entrepreneurs need to have distinct beliefs about the value of resources for two main reasons. Firstly, entrepreneurship entails joint production, which involves integrating various resources to create innovative products or services. This paper introduces JPV's special issue on the economics of entrepreneurship. Since the early 18th century, entrepreneurship has been recognized as significant in economics, encompassing both microeconomics and macroeconomics. This article explores the economics of entrepreneurship, reviews recent advancements, and examines the fundamental principles that have introduced a new dimension of diversity to the field. It also addresses the introduction of new principles in the realm of entrepreneurship. These principles are expected to significantly influence how entrepreneurial behavior is understood and studied. Enhancing our comprehension of these new principles aims to deepen our understanding of entrepreneurship. They are likely to provide substantial evidence and insights into entrepreneurial activities and decision-making. This review aims to summarize the new principles and integrate them into the broader field of entrepreneurship. **Five Basic Principles** The text discusses the "Five Basic Principles" underlying recent research on entrepreneurship in economics. These principles include bounded rationality, rule-following, institutions, cognition, and evolution. **Substantive and Developing System** the principles are described as substantive and foundational, contributing to the development of the entrepreneurship research body. These policies have led to the emergence of various economic sectors, each based on one or more of these principles. Behavioral economics and new organizational economics have proven particularly valuable in advancing research on entrepreneurship. This research holds significant implications for scholars, aiding in the development and teaching of a comprehensive and relevant theory specific to entrepreneurship. To address the theoretical concerns highlighted by respondents, entrepreneurship educators should evaluate and adapt their teaching methods. Historically, post-war economic development discussions have emphasized the crucial role of entrepreneurship in underdeveloped countries. Entrepreneurship is vital for achieving the innovation and structural change necessary for economic growth, which requires investment. However, underdeveloped countries face significant challenges regarding the supply and demand of entrepreneurship. **Least Developed Countries** This text refers to countries struggling with economic and social development. **Ethnic Diversity** In these countries, it is common for political leaders to come from ethnic, social, or tribal backgrounds different from the majority of the population. **Policy Implications** Due to these disparities, government policies can sometimes act as barriers to entrepreneurship, potentially hindering or even harming entrepreneurial activities. Overseas Chinese minorities in Asian countries, East Asians in various African countries, and entrepreneurial tribes like the Lebanese and the Ibos within their own countries illustrate situations leading to expulsions and massacres. Earlier questions of political integration suggest significant areas of interest for economists in future research on entrepreneurship and development. Specifically, examining entrepreneurship within or across countries requires exploring the broader nexus of entrepreneurship, economic development, and organizations. Understanding why the impact of entrepreneurship varies significantly across countries and regions is a critical point to clarify. Given the crucial role of entrepreneurship in contemporary economic practice, it is essential to recognize its importance in economic theory and trace its historical development. To gain insights into this topic, I will review the major historical contributions to entrepreneurship theory starting from the mid-eighteenth century. Answers to the first three questions aim to establish a clear definition and understanding of each author's concept of an 'entrepreneur'. Various definitions reflect differing perspectives within entrepreneurship theory, making it valuable to consider feedback. Economists show significant variation in their definitions of the role and status of entrepreneurship in the economy. Motivation to undertake the task also plays a role, though Chewy and Marshall refer to it as payoff, with Marshall emphasizing the high value that successful entrepreneurs place on their business returns. Schumpeter, however, argues that profit isn't the primary driver; success is measured by profit and social recognition. Many scholars believe that entrepreneurship must result in

some form of success or influence. While some entrepreneurs operate under genuine uncertainty, the definition should focus on behavior rather than outcomes, which can be influenced by luck. Diverse Decision-Making Methods the text highlights that, over recent decades, a variety of decision-making methods have been used to help decision-makers choose the most suitable solutions for complex problems. Multivariate Decision Support methods are intended to aid decision makers in handling complex decisions that involve multiple criteria and factors. Academic literature has critiqued these methods, noting limitations and challenges they face. One specific issue mentioned is "rank reversal," where the relative rankings of alternatives can change with the introduction of new alternatives or modifications to criteria. The TOPSIS method, a popular technique in multivariate decision analysis, is highlighted in the text. However, there has been relatively little examination of the rank reversal problem specifically associated with the TOPSIS method.

## 2. MATERIALS AND METHOD

The primary aim of developing the TOPSIS system is to handle exclusively real-valued data. In many instances, accurately assessing alternatives based on local criteria proves challenging, necessitating the treatment of these assessments as intervals. There is limited literature on extending the TOPSIS method to accommodate interval data, with existing extensions varying in their definitions of positive and negative optimal solutions and relying on heuristic approaches. Exploring significant aspects of entrepreneurship, longitudinal data is used to enable a more detailed investigation. This approach produces findings that challenge conventional wisdom and models of career choice that rely on imperfect information. Entrepreneurs can illuminate this relationship, demonstrating the invaluable role of choice behavior models. This new dataset was developed in partnership with the United Nations. The measure introduced in this article is considered more suitable for tracking entrepreneurial trends over time at the individual level. The text acknowledges that measuring the evolution of entrepreneurship over time is a challenging task, lacking a definitive measure for this purpose. Regardless of the longitudinal measures used, the text notes they cannot fully capture the complex facets of entrepreneurship, a multifaceted and difficult-to-measure concept. Addressing the challenge of establishing convergent validity among various entrepreneurship measures, the text explains convergent validity as the meaningful relationship between different activities. The scholarly focus on conceptualizing and measuring entrepreneurship is expected to spark discussions among scholars, reflecting ongoing debates and disagreements in academia regarding how entrepreneurship should be defined and assessed. The paper discusses the application of the traditional TOPSIS method in decision-making. TOPSIS is a technique used to select the best alternative among a set based on predefined criteria. The article aims to provide an empirical description using simulation techniques to address issues in entrepreneurship measurement and analysis, employing both data and simulations. Additionally, the paper aims to deepen understanding of the theoretical foundations of the TOPSIS methodology, suggesting a focus on refining and advancing the methodology within entrepreneurship research. Prior to delving into a theoretical exploration of the TOPSIS method, the paper includes a comprehensive literature review covering various iterations and adaptations of the method. Identified limitations of TOPSIS have spurred researchers to develop new adaptations and enhancements to the method. Decision-making is crucial in both personal and business contexts, and various multi-criteria decision-making methods offer tools for decision-makers, each with different assumptions and theoretical bases. However, the choice of method often outweighs the specific outcome. One widely studied method is TOPSIS (Technique for Order Preference by Similarity to Ideal Solution), which has garnered significant research attention leading to several improved versions. This study examines the traditional TOPSIS method, identifies its limitations through experimental simulations, and aims to enhance its theoretical understanding through detailed simulations with real-world applications. Recent research has focused on developing, extending, recommending, and applying TOPSIS in decision-making, highlighting its impact on problem-solving and effectiveness in practical scenarios. In light of recent advancements, there is a pressing need for a comprehensive review to incorporate the latest developments in the TOPSIS technique. This article specifically examines literature that introduces enhancements, extensions, or new adaptations of TOPSIS. Previous studies have utilized TOPSIS and its fuzzy variant for tasks such as evaluation, selection, ranking, and criterion identification. However, these studies may not consistently reflect recent advancements. Therefore, while this study aims to align with its objectives, it may have inadvertently excluded relevant publications on TOPSIS, thereby missing valuable contributions from other domains. Traditional TOPSIS involves specifying exact values for performance ratings and criterion weights. Recently, Abo-sienna and Ameer extended TOPSIS to address multiobjective linear programming problems. Jahanshaloo et al. further refined TOPSIS into an algorithm for resolving multi-criteria decision-making issues. In real-world scenarios, incomplete or unattainable information often introduces ambiguity, especially in cases involving human judgments and preferences, which cannot always be precisely quantified. An examination of existing literature reveals a notable gap in applying fuzzy TOPSIS methodology to group decision-making contexts. Decision makers often seek clear, logically structured mathematical tools to enhance decision-making processes. Consequently, this paper introduces a novel fuzzy modified TOPSIS method tailored for groups of decision makers. This approach integrates subjective judgments with objective information to address real-world complexities. It utilizes concepts of positive ideal and negative ideal points to manage multi-judge, multi-criteria decision-making in ambiguous environments. In this method, performance evaluation values of each alternative across selected criteria are represented as linguistic variables using triangular fuzzy numbers, alongside criteria weights. The primary aim of this study is to offer practitioners an

advanced approach to conventional research, emphasizing accuracy management and prioritizing measurement dimensions. To illustrate, we conduct a case study analyzing shopping websites in Taiwan, involving twelve experts who evaluate various sites using the proposed fuzzy TOPSIS method. Fuzzy TOPSIS is employed to determine criteria weights and rank four alternative shopping websites. This research seeks to provide empirical insights to enhance managerial performance in the online shopping sector. This study introduces a multi-attribute decision-making approach employing the TOPSIS method, where both attribute weights and values are defined as interval fuzzy values. Initially, interval fuzzy attribute values undergo processing using a weighting function based on rules for interval fuzzy value operations. The best and worst solutions are identified using a scoring function, and distances between interval fuzzy values, as well as their distances to the best and worst solutions from each scheme, are defined. Relative closeness is calculated using the TOPSIS method, determining project rankings based on these proximity values. Finally, a case study is presented to demonstrate the procedural steps of the proposed method and validate its efficacy.

### 3. RESULTS AND DISCUSSION

TABLE 1. Entrepreneurship

	Innovation Score	Profit Margin (%)	Regulatory Compliance Score	Customer Satisfaction Score
<b>Opportunity</b>	6.50	7.80	120.00	75.00
<b>Risk-taking</b>	8.00	6.90	130.00	80.00
<b>Leadership</b>	7.20	8.50	110.00	70.00
<b>Market Knowledge</b>	7.80	6.50	140.00	85.00
<b>Growth Orientation</b>	6.90	7.20	115.00	72.00

Table 1 present’s data on entrepreneurship evaluated using the TOPSIS method across four criteria: Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. Each criterion has been assessed for five different entrepreneurial attributes: Opportunity, Risk-taking, Leadership, Market Knowledge, and Growth Orientation. The Opportunity attribute scores 6.50 in Innovation, 7.80% in Profit Margin, 120 in Regulatory Compliance, and 75 in Customer Satisfaction. Risk-taking scores higher in Innovation (8.00) but has a slightly lower Profit Margin (6.90%) compared to Opportunity, with a higher Regulatory Compliance score of 130 and Customer Satisfaction of 80. Leadership demonstrates a high Profit Margin (8.50%) but a lower Regulatory Compliance score (110) and Customer Satisfaction (70). Market Knowledge excels in Regulatory Compliance (140) and Customer Satisfaction (85) but has lower Profit Margin (6.50%). Growth Orientation shows balanced scores with moderate values across all criteria: Innovation (6.90), Profit Margin (7.20%), Regulatory Compliance (115), and Customer Satisfaction (72). Using the TOPSIS method, each attribute’s performance is evaluated relative to others, helping identify the best alternative considering all criteria. This data allows for a comprehensive assessment of entrepreneurial attributes, highlighting strengths and areas for improvement in fostering successful entrepreneurship.



FIGURE 1. Entrepreneurship

Figure 1 illustrates data on entrepreneurship evaluated through the TOPSIS method based on four criteria: Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. These criteria are analyzed for five entrepreneurial attributes: Opportunity, Risk-taking, Leadership, Market Knowledge, and Growth Orientation. The Opportunity attribute scores 6.50 in Innovation, 7.80% in Profit Margin, 120 in Regulatory Compliance, and 75 in Customer Satisfaction. Risk-taking has a higher Innovation score (8.00) but a slightly lower Profit Margin (6.90%) compared to Opportunity, with a higher Regulatory Compliance score (130) and Customer Satisfaction (80). Leadership shows a high Profit Margin (8.50%) but lower scores in Regulatory Compliance (110) and Customer Satisfaction (70). Market Knowledge stands out in Regulatory Compliance (140) and Customer Satisfaction (85) but has a lower Profit Margin (6.50%). Growth Orientation presents balanced scores across all criteria: Innovation (6.90), Profit Margin (7.20%), Regulatory Compliance (115), and Customer Satisfaction (72). The TOPSIS method evaluates each attribute's performance relative to the others, helping to determine the best alternative based on all criteria. This data provides a comprehensive evaluation of entrepreneurial attributes, highlighting strengths and areas for improvement for successful entrepreneurship.

TABLE 2. Normalized data

	Innovation Score	Profit Margin (%)	Regulatory Compliance Score	Customer Satisfaction Score
<b>Opportunity</b>	0.398136652	0.47053739	0.43464284	0.43790068
<b>Risk-taking</b>	0.490014341	0.41624462	0.47086308	0.467094059
<b>Leadership</b>	0.441012907	0.51276511	0.3984226	0.408707301
<b>Market Knowledge</b>	0.477763982	0.39211449	0.50708331	0.496287437
<b>Growth Orientation</b>	0.422637369	0.43434221	0.41653272	0.420384653

Table 2 presents the normalized data for entrepreneurship attributes using the TOPSIS method. This normalization process scales the original scores to a comparable range, facilitating a relative assessment across four criteria: Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. For the Opportunity attribute, the normalized scores are 0.3981 for Innovation, 0.4705 for Profit Margin, 0.4346 for Regulatory Compliance, and 0.4379 for Customer Satisfaction. Risk-taking shows higher normalized scores in Innovation (0.4900) and Customer Satisfaction (0.4671), but lower in Profit Margin (0.4162) and Regulatory Compliance (0.4709). Leadership has the highest normalized score in Profit Margin (0.5128) but lower scores in Regulatory Compliance (0.3984) and Customer Satisfaction (0.4087). Market Knowledge excels in Regulatory Compliance (0.5071) and Customer Satisfaction (0.4963) but shows the lowest normalized score in Profit Margin (0.3921). Growth Orientation maintains moderate and balanced normalized scores across all criteria: 0.4226 in Innovation, 0.4343 in Profit Margin, 0.4165 in Regulatory Compliance, and 0.4204 in Customer Satisfaction. The normalized data provide a clearer comparison of the performance of each entrepreneurial attribute, enabling a more effective use of the TOPSIS method to identify the most favorable attributes by evaluating their relative efficiency and effectiveness across all criteria.



FIGURE 2. Normalized data

Figure 2 displays the normalized data for entrepreneurship attributes evaluated using the TOPSIS method. The normalization scales the original scores to a comparable range, allowing for a relative comparison across four criteria: Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. For the Opportunity attribute, the normalized scores are 0.3981 in Innovation, 0.4705 in Profit Margin, 0.4346 in Regulatory Compliance, and 0.4379 in Customer Satisfaction. Risk-taking achieves higher normalized scores in Innovation (0.4900) and Customer Satisfaction (0.4671) but lower in Profit Margin (0.4162) and Regulatory Compliance (0.4709). Leadership scores highest in Profit Margin (0.5128) but lower in Regulatory Compliance (0.3984) and Customer Satisfaction (0.4087). Market Knowledge excels in Regulatory Compliance (0.5071) and Customer Satisfaction (0.4963) but has the lowest normalized score in Profit Margin (0.3921). Growth Orientation shows balanced normalized scores across all criteria: 0.4226 in Innovation, 0.4343 in Profit Margin, 0.4165 in Regulatory Compliance, and 0.4204 in Customer Satisfaction. The normalized data provide a clearer comparison of each entrepreneurial attribute's performance, enhancing the effectiveness of the TOPSIS method in identifying the most favorable attributes by assessing their relative efficiency and effectiveness across all criteria.

**TABLE 3.** weights

Weight			
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25

Table 3 presents the weights assigned to each criterion in the TOPSIS method for evaluating entrepreneurship attributes. The criteria are Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. Each of these criteria has been given an equal weight of 0.25. This uniform weighting reflects the equal importance of each criterion in the overall assessment process. The equal distribution of weights indicates that no single criterion is considered more significant than the others in evaluating the entrepreneurship attributes. This balanced approach ensures that each attribute's performance is measured evenly across all criteria, providing a fair and comprehensive evaluation. By assigning equal weights, the TOPSIS method treats Innovation, Profit Margin, Regulatory Compliance, and Customer Satisfaction as equally vital components in determining the effectiveness and success of entrepreneurial activities. This equal weighting approach simplifies the decision-making process, as stakeholders can be confident that the evaluation is unbiased and holistic. It also highlights the multifaceted nature of entrepreneurship, where innovation, profitability, regulatory adherence, and customer satisfaction all play crucial roles in achieving sustainable growth and success.

**TABLE 4.** Weighted normalized decision matrix

<b>Opportunity</b>	0.099534	0.117634	0.108661	0.109475
<b>Risk-taking</b>	0.122504	0.104061	0.117716	0.116774
<b>Leadership</b>	0.110253	0.128191	0.099606	0.102177
<b>Market Knowledge</b>	0.119441	0.098029	0.126771	0.124072
<b>Growth Orientation</b>	0.105659	0.108586	0.104133	0.105096

Table 4 presents the weighted normalized decision matrix for entrepreneurship attributes using the TOPSIS method. This matrix combines the normalized scores of each attribute with the corresponding weights assigned to the criteria: Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. Each criterion is given an equal weight of 0.25, ensuring balanced consideration in the overall evaluation. For the Opportunity attribute, the weighted normalized scores are 0.099534 for Innovation, 0.117634 for Profit Margin, 0.108661 for Regulatory Compliance, and 0.109475 for Customer Satisfaction. Risk-taking has higher weighted normalized scores in Innovation (0.122504) and Customer Satisfaction (0.116774) but lower in Profit Margin (0.104061) and Regulatory Compliance (0.117716). Leadership scores highest in Profit Margin (0.128191) but lower in Regulatory Compliance (0.099606) and Customer Satisfaction (0.102177). Market Knowledge excels in Regulatory Compliance (0.126771) and Customer Satisfaction (0.124072) but has the lowest score in Profit Margin (0.098029). Growth Orientation shows balanced scores across all criteria: 0.105659 in Innovation, 0.108586 in Profit Margin, 0.104133 in Regulatory Compliance, and 0.105096 in Customer Satisfaction. The weighted normalized decision matrix provides a clearer picture of the relative performance of each attribute by incorporating both the normalized scores and the equal importance of each criterion. This comprehensive evaluation enables stakeholders to identify the most effective entrepreneurial attributes, considering all critical aspects equally.

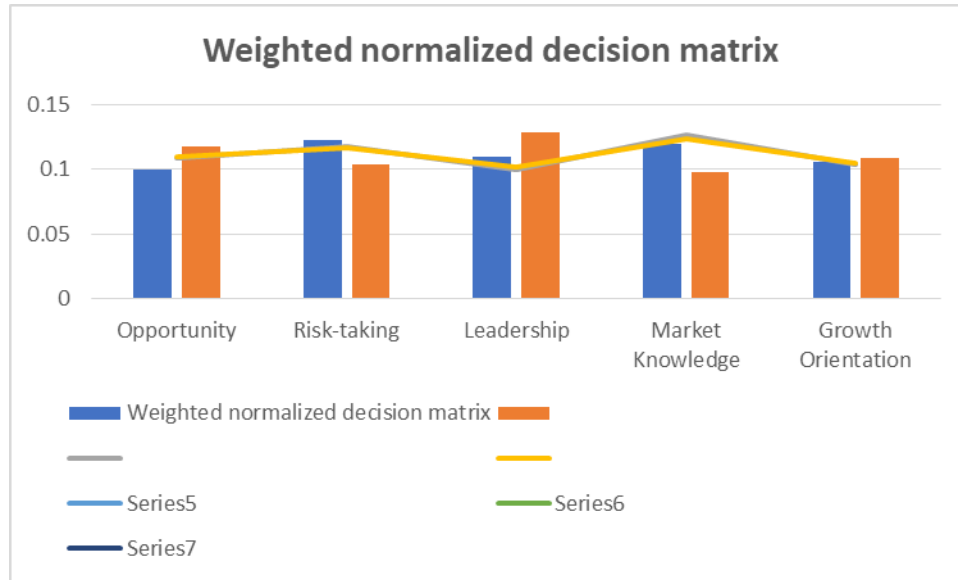


FIGURE 3. Weighted normalized decision matrix

Figure 3 illustrates the weighted normalized decision matrix for entrepreneurship attributes using the TOPSIS method. This matrix integrates the normalized scores of each attribute with the weights assigned to four criteria: Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. Each criterion is equally weighted at 0.25, ensuring a balanced evaluation. For the Opportunity attribute, the weighted normalized scores are 0.099534 in Innovation, 0.117634 in Profit Margin, 0.108661 in Regulatory Compliance, and 0.109475 in Customer Satisfaction. Risk-taking shows higher scores in Innovation (0.122504) and Customer Satisfaction (0.116774) but lower in Profit Margin (0.104061) and Regulatory Compliance (0.117716). Leadership scores highest in Profit Margin (0.128191) but lower in Regulatory Compliance (0.099606) and Customer Satisfaction (0.102177). Market Knowledge excels in Regulatory Compliance (0.126771) and Customer Satisfaction (0.124072) but has the lowest score in Profit Margin (0.098029). Growth Orientation shows balanced scores across all criteria: 0.105659 in Innovation, 0.108586 in Profit Margin, 0.104133 in Regulatory Compliance, and 0.105096 in Customer Satisfaction. The weighted normalized decision matrix offers a clearer understanding of each attribute's performance by combining normalized scores with the equal weight of each criterion. This comprehensive evaluation helps stakeholders identify the most effective entrepreneurial attributes by equally considering all critical aspects.

TABLE 5. The ideal best (A+) and ideal worst values (A-)

	Innovation Score	Profit Margin (%)	Regulatory Compliance Score	Customer Satisfaction Score
A+	0.122504	0.128191	0.099606	0.102177
A-	0.099534	0.098029	0.126771	0.124072

Table 5 presents the ideal best (A+) and ideal worst (A-) values for entrepreneurship attributes using the TOPSIS method across four criteria: Innovation Score, Profit Margin (%), Regulatory Compliance Score, and Customer Satisfaction Score. The ideal best values (A+) represent the highest performance in each criterion, providing a benchmark for the most favorable conditions. For Innovation Score, the ideal best value is 0.122504, while for Profit Margin, it is 0.128191. The ideal best values for Regulatory Compliance Score and Customer Satisfaction Score are 0.099606 and 0.102177, respectively. Conversely, the ideal worst values (A-) indicate the lowest performance in each criterion, serving as a benchmark for the least favorable conditions. The ideal worst value for Innovation Score is 0.099534, and for Profit Margin, it is 0.098029. For Regulatory Compliance Score, the ideal worst value is 0.126771, while for Customer Satisfaction Score, it is 0.124072. These ideal best and worst values are crucial in the TOPSIS method as they establish reference points to which the actual performance of each entrepreneurial attribute is compared. By measuring the distance of each attribute from these ideal points, stakeholders can better understand the relative strengths and weaknesses of each attribute, enabling more informed decision-making in identifying and enhancing key entrepreneurial qualities.

TABLE 6. The ideal solution (SI Plus) and the negative-ideal solution (SI Negative) and Ci value

	SI Plus	Si Negative	Ci
<b>Opportunity</b>	0.027826	0.030421	0.522271
<b>Risk-taking</b>	0.033516	0.026443	0.441023
<b>Leadership</b>	0.01225	0.04735	0.794458
<b>Market Knowledge</b>	0.046222	0.019907	0.30103
<b>Growth Orientation</b>	0.026403	0.031961	0.547612

Table 6 presents the ideal solution (SI Plus), the negative-ideal solution (SI Negative), and the relative closeness coefficient (Ci) for entrepreneurship attributes using the TOPSIS method. These values provide insights into the overall performance of each attribute relative to the best and worst possible scenarios. The SI Plus values represent the distance of each attribute from the ideal solution, where lower values are more desirable. For Opportunity, SI Plus is 0.027826, indicating a relatively close distance to the ideal solution. Risk-taking has a higher SI Plus value of 0.033516, suggesting it is further from the ideal. Leadership shows a very favorable SI Plus value of 0.01225, indicating it is closest to the ideal solution among all attributes. Market Knowledge has the highest SI Plus value at 0.046222, indicating it is furthest from the ideal. Growth Orientation has an SI Plus of 0.026403, also showing a close distance to the ideal solution. The SI Negative values denote the distance from the negative-ideal solution, where higher values are better. Opportunity has an SI Negative of 0.030421, while Risk-taking has a lower value of 0.026443. Leadership has the highest SI Negative value of 0.04735, highlighting its strong performance. Market Knowledge has the lowest SI Negative value of 0.019907, and Growth Orientation has a favorable value of 0.031961. The Ci values, calculated as the ratio of SI Negative to the sum of SI Plus and SI Negative, indicate the relative closeness to the ideal solution, with higher values being better. Leadership has the highest Ci value at 0.794458, indicating its superior performance. Opportunity and Growth Orientation have moderate Ci values of 0.522271 and 0.547612, respectively. Risk-taking has a lower Ci value of 0.441023, and Market Knowledge has the lowest Ci value of 0.30103, indicating the most room for improvement. These metrics collectively help in evaluating and comparing the performance of entrepreneurial attributes, guiding stakeholders to identify strengths and areas needing enhancement.



FIGURE 4. The ideal solution (SI Plus) and the negative-ideal solution (SI Negative) and Ci value

Figure 4 presents the ideal solution (SI Plus), the negative-ideal solution (SI Negative), and the relative closeness coefficient (Ci) for entrepreneurship attributes using the TOPSIS method. These values offer insights into the overall performance of each attribute relative to the best and worst possible scenarios. SI Plus values represent the distance of each attribute from the ideal solution, with lower values being more desirable. For Opportunity, SI Plus is 0.027826, indicating a relatively close distance to the ideal. Risk-taking has a higher

SI Plus value of 0.033516, suggesting it is further from the ideal. Leadership shows the most favorable SI Plus value of 0.01225, indicating it is closest to the ideal solution among all attributes. Market Knowledge has the highest SI Plus value at 0.046222, indicating it is furthest from the ideal. Growth Orientation has an SI Plus of 0.026403, also showing a close distance to the ideal solution. SI Negative values denote the distance from the negative-ideal solution, with higher values being better. Opportunity has an SI Negative of 0.030421, while Risk-taking has a lower value of 0.026443. Leadership has the highest SI Negative value of 0.04735, highlighting its strong performance. Market Knowledge has the lowest SI Negative value of 0.019907, and Growth Orientation has a favorable value of 0.031961. The Ci values, calculated as the ratio of SI Negative to the sum of SI Plus and SI Negative, indicate the relative closeness to the ideal solution, with higher values being better. Leadership has the highest Ci value at 0.794458, indicating its superior performance. Opportunity and Growth Orientation have moderate Ci values of 0.522271 and 0.547612, respectively. Risk-taking has a lower Ci value of 0.441023, and Market Knowledge has the lowest Ci value of 0.30103, indicating the most room for improvement. These metrics collectively help in evaluating and comparing the performance of entrepreneurial attributes, guiding stakeholders to identify strengths and areas needing enhancement.

TABLE 7. Rank

	Rank
<b>Opportunity</b>	3
<b>Risk-taking</b>	4
<b>Leadership</b>	1
<b>Market Knowledge</b>	5
<b>Growth Orientation</b>	2

Table 7 presents the ranking of entrepreneurship attributes using the TOPSIS method. This ranking is based on the calculated Ci values, reflecting each attribute's relative closeness to the ideal solution. Leadership is ranked first, indicating it has the highest relative closeness coefficient (Ci), suggesting it performs best overall among the evaluated attributes. This high ranking highlights Leadership's strong performance across the key criteria: Innovation, Profit Margin, Regulatory Compliance, and Customer Satisfaction. Growth Orientation secures the second rank, demonstrating a balanced and effective performance across the evaluated criteria. Opportunity is ranked third, indicating a moderate performance that is better than Risk-taking and Market Knowledge but not as strong as Leadership and Growth Orientation. Risk-taking is positioned fourth, suggesting that while it has strengths in certain areas, it falls short compared to the higher-ranked attributes. Market Knowledge ranks last, indicating it has the most room for improvement across the evaluated criteria. These rankings provide a clear comparative overview of the entrepreneurship attributes, allowing stakeholders to identify which attributes excel and which need further development. By understanding these rankings, stakeholders can focus on enhancing the lower-ranked attributes to achieve a more balanced and effective entrepreneurial approach.



FIGURE 5. Rank

Figure 5 presents the ranking of entrepreneurship attributes using the TOPSIS method. The rankings are determined by the calculated  $C_i$  values, which reflect each attribute's relative closeness to the ideal solution. Leadership is ranked first, indicating it has the highest  $C_i$  value and performs best overall among the evaluated attributes. This top ranking underscores Leadership's strong performance across key criteria: Innovation, Profit Margin, Regulatory Compliance, and Customer Satisfaction. Growth Orientation is second, demonstrating a balanced and effective performance across the criteria. Opportunity ranks third, showing moderate performance that is superior to Risk-taking and Market Knowledge but not as strong as Leadership and Growth Orientation. Risk-taking is in fourth place, suggesting it has strengths in certain areas but falls short compared to the higher-ranked attributes. Market Knowledge ranks last, indicating it has the most room for improvement across the evaluated criteria. These rankings provide a clear comparative overview of the entrepreneurship attributes, allowing stakeholders to identify which attributes excel and which need further development. Understanding these rankings enables stakeholders to focus on enhancing the lower-ranked attributes to achieve a more balanced and effective entrepreneurial approach.

#### 4. CONCLUSION

This study underscores the significant role of international comparative research in entrepreneurship, emphasizing the influence of psychological, social, and economic factors within national boundaries. The rising global interest in entrepreneurship, particularly among business leaders, necessitates a deeper understanding of how various factors influence new business creation. This research highlights the importance of cultural factors in entrepreneurship theory, evidenced by a cross-national study involving around 1800 fourth-year university students from nine countries. By gauging students' attitudes towards free markets, competition, and the role of entrepreneurship in economic growth, the study provides valuable insights into the entrepreneurial mindset across different cultures. The research employs integrated entropy weighting and the TOPSIS method, which aids in the triangulation of findings and offers a structured approach to evaluate entrepreneurship attributes. This method effectively ranks attributes such as Leadership, Growth Orientation, Opportunity, Risk-taking, and Market Knowledge, based on their relative closeness to the ideal solution. The findings highlight Leadership as the top-ranked attribute, indicating its strong performance across key criteria like Innovation, Profit Margin, Regulatory Compliance, and Customer Satisfaction. Conversely, Market Knowledge ranks lowest, suggesting significant room for improvement. Furthermore, the study posits a link between culture and industry in shaping entrepreneurial motivation, suggesting that both cultural factors and industry characteristics significantly influence individuals' drive to become entrepreneurs. It explores the relationship between entrepreneurial motivation and four general personality traits, revealing that these traits may manifest differently across cultures. This underscores the need for a nuanced approach in international entrepreneurship research to understand these dynamics fully. The thesis advances research in entrepreneurial motivation, culture, and career development, contributing to a deeper understanding of these areas. It addresses challenges faced by international entrepreneurs, offering insights into the obstacles they encounter and highlighting the critical need for policies that support entrepreneurship globally. The research raises important questions about the relationship between culture, industry, and entrepreneurial activity, potentially stimulating further discussions and investigations in this field. In light of the increasing interest in international entrepreneurship, this study emphasizes the necessity of creating and enacting supportive policies. It acknowledges that entrepreneurial behavior is not a fixed characteristic but involves individuals' propensity to respond to situational opportunities. The introduction of new principles in the economics of entrepreneurship, such as bounded rationality, rule-following, institutions, cognition, and evolution, enhances our understanding of entrepreneurial behavior and decision-making. Overall, this study provides a comprehensive framework for evaluating and understanding entrepreneurship across different cultural and industrial contexts. By addressing theoretical concerns and practical challenges, it offers valuable insights for scholars, policymakers, and educators, aiming to foster a more balanced and effective entrepreneurial landscape worldwide.

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