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Designing a Model of Factors Affecting Organizational Entrepreneurship Based on a Strategic Human Resource Management Approach

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ABSTRACT

This study aimed to design a model of the factors affecting organizational entrepreneurship based on a strategic human resource management approach. In terms of purpose, the present study was applied, and in terms of nature and method, it was descriptive-survey research conducted in two qualitative and quantitative phases. In the qualitative phase, the statistical population consisted of managers, leaders, and senior experts in human resource management and entrepreneurship working in companies operating in science and technology parks in Tehran. Purposive sampling continued until theoretical saturation was reached. Data were collected in this phase through in-depth interviews using a thematic analysis approach. In the quantitative phase, the statistical population consisted of employees and managers of organizations and knowledge-based companies located in science and technology parks in Tehran, and the sample size was determined using statistical formulas and stratified random sampling. The data collection instrument in the quantitative phase was a researcher-developed questionnaire based on a five-point Likert scale. Qualitative data were analyzed using MAXQDA software and thematic analysis, whereas quantitative data were analyzed using SPSS and AMOS. The results of confirmatory factor analysis indicated that the proposed model demonstrated a satisfactory fit. Examination of the relationships among the variables showed that the factors identified through thematic analysis, including leadership and managerial support, entrepreneurial organizational culture, strategic alignment of human resources with organizational strategy, strategic human resource recruitment and selection systems, employee training, empowerment, and development, motivation and reward systems, supportive human resource structures and policies, knowledge management and intellectual capital, and environmental and institutional factors affecting organizational entrepreneurship, all had significant effects on organizational entrepreneurship. Accordingly, a practical model based on strategic human resource management was designed to enhance the factors affecting organizational entrepreneurship.

Keywords: Organizational Entrepreneurship, Strategic Human Resource Management, Model Design, Science and Technology Parks, Innovation

Introduction

Organizations today operate in environments characterized by rapid technological change, intensifying competition, shorter product and service life cycles, increasing customer expectations, and continuous shifts in institutional and market conditions. Under such circumstances, organizational survival and sustainable growth increasingly depend on the ability to identify emerging opportunities, mobilize resources, generate novel ideas, and

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transform those ideas into new products, services, processes, and business models. Organizational entrepreneurship has therefore become an important strategic mechanism through which established organizations renew themselves, respond proactively to environmental changes, and develop new sources of competitive advantage. Rather than being limited to the creation of new ventures, organizational entrepreneurship encompasses opportunity recognition, innovation, proactive behavior, calculated risk-taking, strategic renewal, and the development of entrepreneurial initiatives within existing organizational boundaries. Earlier research on entrepreneurial orientation has demonstrated that learning orientation and entrepreneurial orientation are closely associated with organizational performance and the ability of firms to respond effectively to changing competitive conditions (1). Similarly, research in service-sector organizations has indicated that innovation capability and entrepreneurial orientation can substantially contribute to organizational performance (2). These findings indicate that entrepreneurship within established organizations should be understood as an organizational capability embedded in managerial systems, strategic priorities, organizational culture, and human behavior rather than as a set of isolated innovative activities.

The development of organizational entrepreneurship depends fundamentally on employees because entrepreneurial opportunities must ultimately be recognized, interpreted, developed, and implemented by organizational members. Human resources are therefore central to the creation of an entrepreneurial organization. Employees with creativity, initiative, opportunity-seeking behavior, tolerance for ambiguity, problem-solving abilities, and willingness to assume calculated risks can contribute substantially to organizational innovation, but the presence of such employees alone does not guarantee entrepreneurial outcomes. Organizations must create human resource systems that attract entrepreneurial talent, develop relevant competencies, empower individuals to act, encourage experimentation, and reward innovative contributions. Research has shown that human resource subsystems can facilitate organizational entrepreneurship by shaping the attitudes and behaviors required for entrepreneurial action (3). Likewise, innovative human resource management strategies have been found to exert meaningful effects on organizational entrepreneurship, demonstrating that recruitment, development, appraisal, compensation, and other HR practices can collectively create an environment supportive of entrepreneurial behavior (4). From this perspective, human resource management is not merely an administrative support function; it is a strategic infrastructure through which organizations can build and sustain entrepreneurial capabilities.

This perspective becomes particularly important when human resource management is examined through the lens of strategic human resource management. Strategic human resource management emphasizes the systematic alignment of human resource policies and practices with the long-term strategic objectives of the organization. It requires organizations to move beyond fragmented HR interventions and develop internally coherent bundles of practices that support strategic priorities. The strategic reference-points perspective similarly highlights the importance of designing human resource strategies according to organizational goals, environmental conditions, and desired strategic orientations (5). When entrepreneurship is regarded as a strategic organizational priority, HR practices should consequently be designed to cultivate entrepreneurial competencies, support innovative behavior, facilitate collaboration, and align individual performance with organizational innovation objectives. Evidence from Iranian organizations indicates that human resource management can significantly contribute to the development of corporate entrepreneurship (6), while findings from large Iranian industrial companies also demonstrate a meaningful relationship between human resource management and corporate entrepreneurship (7). These studies reinforce the proposition that the entrepreneurial capacity of an organization is closely linked to how its human resources are strategically managed.

Contemporary research further suggests that the relationship between strategic human resource management and organizational entrepreneurship should be understood as multidimensional. Strategic HRM can influence entrepreneurship through recruitment and selection, training and development, empowerment, performance appraisal, compensation, career development, employee involvement, and leadership development. At the recruitment stage, organizations seeking entrepreneurial outcomes need mechanisms for identifying applicants with creativity, initiative, opportunity-recognition ability, and tolerance for uncertainty. Recent research emphasizes that strategic entrepreneurship can contribute to the development of strategic human capital resources by strengthening employee recruitment and retention, thereby improving the organization's capacity to acquire and preserve valuable talent (8). In entrepreneurial settings, human resource management can also shape the entrepreneurial process by influencing employee motivation, team formation, organizational commitment, and the utilization of knowledge and skills (9). Evidence from small and medium-sized enterprises likewise suggests that HRM practices can enhance both innovation and entrepreneurship by creating the human and organizational conditions required for opportunity exploitation (10). Therefore, recruitment and retention should be considered integral components of an organizational entrepreneurship model rather than independent administrative processes.

Employee training, empowerment, and development represent another major mechanism through which strategic HRM can support organizational entrepreneurship. Entrepreneurial behavior often requires employees to acquire knowledge beyond routine job requirements, develop creative problem-solving capabilities, learn from experimentation, and participate in cross-functional initiatives. Organizations that invest in continuous learning and empower employees to make decisions can create conditions in which entrepreneurial ideas are more likely to emerge and be implemented. Research on strategic HRM and entrepreneurial orientation indicates that these mechanisms can contribute to dynamic capabilities and innovation, particularly in small and medium-sized enterprises (11). Moreover, the relationship among human resource practices, entrepreneurial orientation, and radical innovation has been highlighted in knowledge-based companies, where HR strategies and systems may strengthen innovation by facilitating an entrepreneurial orientation (12). Longitudinal perspectives on human resource strategy also emphasize the importance of sustained human capital development and supportive institutional arrangements in fostering entrepreneurship and social value creation (13). Accordingly, training and development should not be restricted to technical skill acquisition but should include opportunity recognition, creativity, innovation management, teamwork, experimentation, and entrepreneurial decision-making.

Organizational culture and leadership are equally important because human resource systems operate within a broader social and managerial context. An entrepreneurial culture encourages employees to challenge established assumptions, exchange ideas, learn from failure, experiment with alternative approaches, and view change as an opportunity rather than a threat. Strategic human resource management can reinforce such a culture by institutionalizing innovation-oriented values in recruitment criteria, performance expectations, promotion decisions, and reward mechanisms. Empirical evidence has demonstrated that organizational culture and strategic human resource management can jointly facilitate entrepreneurship by creating organizational conditions favorable to innovation and proactive behavior (14). Leadership style is similarly influential because leaders communicate strategic priorities, allocate resources, legitimize risk-taking, and determine whether employees perceive innovative behavior as supported or discouraged. Research in high-technology industries indicates that leadership styles and human resource strategies can substantially influence organizational innovation (15). Studies of employee entrepreneurial attitudes have also shown that organizational and managerial practices can foster stronger entrepreneurial orientations among employees, including within large state-owned organizations (16). Consequently, leadership and managerial support should be regarded as core antecedents of organizational entrepreneurship.

Motivation and reward systems further determine whether employees are willing to invest effort in uncertain entrepreneurial activities. Innovation frequently involves additional responsibilities, delayed outcomes, potential failure, and challenges to established routines. If employees perceive that unsuccessful experimentation will be punished or that innovative contributions will not be recognized, they may avoid entrepreneurial initiatives even when they possess relevant competencies. In contrast, financial and nonfinancial rewards, recognition, career opportunities, participation in project outcomes, and constructive responses to reasonable failure can signal that entrepreneurship is organizationally valued. Human resource practices can therefore influence entrepreneurial behavior by shaping perceptions of risk and expected returns. Studies examining organizational entrepreneurship have repeatedly emphasized the importance of supportive HR systems and organizational conditions in encouraging employees to engage in entrepreneurial behavior (3, 4). Research on quality management and innovative performance also illustrates more broadly that formal organizational practices and managerial systems can shape innovation outcomes when practices are integrated around continuous improvement and performance enhancement (17). Thus, incentive systems should be aligned with entrepreneurial objectives rather than exclusively emphasizing short-term efficiency and compliance.

Knowledge management and intellectual capital constitute another critical dimension of the relationship between strategic HRM and organizational entrepreneurship. Entrepreneurial opportunities often emerge from the recombination of existing knowledge, interaction among employees with different expertise, and access to information about markets, technologies, customers, and organizational processes. The ability to create, transfer, retain, and apply knowledge therefore affects the capacity of an organization to generate and commercialize innovative ideas. Research conducted in Iranian industrial contexts has identified a meaningful relationship between knowledge management and organizational entrepreneurship (18). Similar findings have been reported regarding the organizational factors of knowledge management and organizational entrepreneurship in the National Iranian Oil Company (19), while research evaluating knowledge management as an antecedent of organizational entrepreneurship has likewise emphasized its developmental role (20). These findings suggest that knowledge-sharing platforms, cross-functional networks, documentation of project experiences, mentoring, succession planning, and intellectual-capital development should be integrated into strategic HRM systems designed to promote organizational entrepreneurship.

Structural and procedural conditions must also support entrepreneurial human resource practices. Employees may possess entrepreneurial competencies and receive organizational encouragement, yet rigid hierarchies, centralized decision-making, bureaucratic approval procedures, restricted access to resources, and excessive formalization can prevent innovative ideas from progressing toward implementation. Earlier research on barriers to organizational entrepreneurship identified organizational constraints that may inhibit entrepreneurial behavior and limit employees' ability to pursue opportunities (21). Organizational entrepreneurship has also been examined as a mechanism for developing new markets and expanding business activities, indicating that entrepreneurial outcomes depend on the organization's capacity to convert internal initiatives into strategic growth opportunities (22).

Accordingly, supportive structures may include decentralized decision-making, flexible work arrangements, project-based teams, cross-functional collaboration, dedicated innovation budgets, internal entrepreneurship programs, innovation laboratories, and accelerated processes for evaluating new ideas. Strategic HRM contributes to these arrangements by determining job design, authority relationships, teamwork mechanisms, developmental opportunities, and policies governing employee participation in innovation.

The increasing digitalization of human resource management introduces another important dimension. Electronic human resource management systems can facilitate faster access to employee information, support data-driven recruitment and performance management, expand learning opportunities, and increase organizational responsiveness. Recent Iranian studies have examined the contribution of electronic HRM to corporate entrepreneurship and suggest that digital HR practices can enhance entrepreneurial outcomes, particularly when accompanied by organizational agility (23). Similar evidence has been reported regarding the effect of electronic human resource management on corporate entrepreneurship among organizational employees (24). These developments imply that strategic HRM should increasingly be understood as a digitally enabled system capable of integrating employee data, learning systems, knowledge platforms, performance indicators, communication channels, and innovation processes. Digital HR infrastructure may therefore strengthen organizational entrepreneurship not only through efficiency gains but also by facilitating connectivity, agility, knowledge exchange, and rapid mobilization of human resources around emerging opportunities.

Environmental and institutional conditions also shape the effectiveness of internal entrepreneurial systems. Competitive intensity, technological development, market uncertainty, government regulations, access to external knowledge, stakeholder relationships, and institutional support can either stimulate or constrain organizational entrepreneurship. Firms operating in rapidly changing environments face stronger incentives to develop entrepreneurial capabilities because established routines may quickly become obsolete. Green human resource management research has further broadened this perspective by linking HR practices to entrepreneurial ecosystems and showing that the scope of human resource management increasingly extends to environmental and sustainability-related strategic priorities (25). Entrepreneurial organizations must therefore develop external networks with universities, research centers, industry partners, consultants, and government institutions while simultaneously monitoring technological and market trends. This outward-looking orientation is particularly important for knowledge-based firms, whose competitive advantage frequently depends on rapid access to specialized knowledge, emerging technologies, and collaborative innovation networks. The strategic management of human resources can facilitate these external relationships by developing boundary-spanning competencies, supporting networking, and encouraging knowledge acquisition from sources beyond the organization.

Despite the growing body of research, several conceptual and practical gaps remain. A substantial proportion of previous studies has examined individual relationships between selected HR practices and organizational entrepreneurship rather than developing integrated models that simultaneously consider leadership, culture, strategic alignment, recruitment, development, rewards, supportive structures, knowledge management, and environmental conditions. Moreover, existing evidence has emerged from heterogeneous settings, including startups (9), SMEs (10, 11), industrial companies (7), knowledge-based companies (12), state-owned enterprises (16), and service-sector organizations (2). Although this diversity strengthens the general proposition that human resource systems matter for entrepreneurial outcomes, it also indicates a need for context-sensitive models capable of explaining how multiple organizational mechanisms operate together. In addition, some adjacent management research emphasizes accountability, formal reporting, and expectation alignment rather than entrepreneurship itself; for example, research on the audit expectation gap illustrates how organizational outcomes can be affected by the clarity of institutional mechanisms and stakeholder expectations (26). Such insights indirectly reinforce the broader importance of coherent organizational systems and clearly defined roles when organizations seek to institutionalize complex strategic priorities such as entrepreneurship.

This need is particularly salient in science and technology parks and knowledge-based companies, where innovation, specialized human capital, rapid learning, and commercialization of knowledge are central to organizational competitiveness. These organizations often employ highly skilled professionals whose entrepreneurial potential cannot be effectively mobilized through conventional personnel administration alone. They require integrated human resource systems capable of identifying entrepreneurial talent, supporting experimentation, facilitating knowledge exchange, aligning individual and organizational objectives, and creating credible incentives for innovation. Iranian research has increasingly emphasized the contribution of human resource management to organizational entrepreneurship (6, 7), the role of innovative HR strategies (4), and the importance of knowledge management (19, 20). However, the fragmented treatment of these dimensions limits the ability of managers to determine which factors should be prioritized and how they should be configured as an integrated strategic system. A comprehensive model is therefore needed to bring together the principal organizational, human resource, managerial, knowledge-related, and environmental factors that collectively shape organizational entrepreneurship.

Accordingly, integrating strategic human resource management with organizational entrepreneurship provides a theoretically and practically useful framework for explaining how organizations can institutionalize entrepreneurial behavior rather than relying on occasional or individual acts of innovation. Such an approach recognizes that entrepreneurship is produced through a system of mutually reinforcing mechanisms, including supportive leadership, entrepreneurial culture, strategic HR alignment, entrepreneurial recruitment and selection, employee training and empowerment, innovation-oriented rewards, flexible structures, knowledge and intellectual-capital management, and responsiveness to environmental and institutional conditions. When these mechanisms are strategically aligned, organizations are better positioned to transform human capital into innovative capabilities and entrepreneurial outcomes. Conversely, inconsistencies among HR practices, organizational structures, managerial priorities, and environmental demands may weaken the entrepreneurial process even when individual employees possess substantial creative potential. The accumulated evidence across strategic HRM, entrepreneurial orientation, innovation, knowledge management, digital HRM, and organizational entrepreneurship therefore points toward the need for an integrated empirical model capable of identifying and validating the most influential dimensions in a knowledge-intensive organizational context (1, 8, 14, 15).

Therefore, the present study aimed to design and validate a model of the factors affecting organizational entrepreneurship based on a strategic human resource management approach.

Methods and Materials

From the perspective of its purpose, this study is of considerable applied significance because its findings can be used by professionals and practitioners in the fields of human resources and entrepreneurship. To achieve this objective, thematic analysis is used in the qualitative phase to extract the general factors. This method helps provide a comprehensive model. Accordingly, the present study can be classified as exploratory research.

Subsequently, confirmatory factor analysis is employed to validate the extracted exploratory model, allowing quantitative analysis to be performed on the data. This method enables an assessment of the adequacy and validity of the exploratory model. Overall, given the aforementioned considerations and the use of both qualitative and quantitative methods, this study can be regarded as mixed-methods research.

The use of qualitative and quantitative methods in this study offers several advantages. Thematic analysis enables the identification of general patterns and requirements through the extraction of overarching indicators. Confirmatory factor analysis is also used to examine and validate the foundational model. The application of these methods allows the study to adopt a comprehensive approach that integrates qualitative and quantitative methodologies.

Consequently, as a mixed-methods study, the present research can address the intended needs and objectives. Through the qualitative method, a deeper understanding of the concepts and general indicators can be achieved, while the quantitative method enables refinement of the model and assessment of its validity. This combination of methods makes it possible to obtain precise and generalizable findings regarding the subject under investigation.

Ultimately, the use of qualitative and quantitative methods in this study facilitates the achievement of comprehensive and reliable findings. These methods enable researchers to address their research questions with greater precision and rigor and facilitate the generation of reliable and acceptable findings for the entrepreneurship and human resource functions of organizations. In summary, this study uses qualitative and quantitative methods in combination to provide a comprehensive investigation of entrepreneurship and human resource management.

In the qualitative phase of this study, the theoretical foundations and relevant research background are examined using library-based research and thematic analysis. In the quantitative phase, a field research method and a questionnaire are used to collect data. Initially, thematic analysis is conducted based on the identified indicators. In the final phase, a questionnaire based on a five-point Likert scale is used to assess model fit. The questionnaire used in this phase is researcher-developed.

In this study, thematic analysis is used to develop the qualitative model, and confirmatory factor analysis within a structural equation modeling framework and the partial least squares method are used to validate the proposed qualitative model. MAXQDA is the software used in the qualitative phase.

In the quantitative phase, the descriptive statistical methods include frequencies, means, percentages, standard deviations, tables, and charts. The inferential statistical methods include confirmatory factor analysis and its associated models. SPSS 22 and AMOS are used for the statistical analyses.

In the qualitative phase of the study, the statistical population consists of managers, leaders, and senior experts in human resource management and entrepreneurship working in companies operating in science and technology parks in Tehran. Due to their extensive experience and knowledge in the fields of human resource management and entrepreneurship, these individuals are capable of providing in-depth and valuable perspectives that can contribute to identifying patterns and factors affecting entrepreneurship. The inclusion criteria were as follows:

- Human resource managers with at least 5 years of experience in strategic human resource management.
- Senior managers or business leaders who have played a role in developing entrepreneurship and innovation within organizations.
- Human resource management and entrepreneurship experts and consultants with experience in projects related to innovation and human resource strategies.

Sampling continues until theoretical saturation is achieved; that is, until newly collected data no longer add new patterns to the previously obtained information.

In the quantitative phase of the study, the statistical population consists of employees and managers of organizations and knowledge-based companies located in science and technology parks in Tehran in which human resource strategies and entrepreneurial activities are actively implemented. These organizations may operate in various economic sectors, including manufacturing industries, information technology, services, and other fields. The inclusion criteria for the quantitative phase were as follows:

- Companies and organizations with strategic human resource management programs.
- Organizations engaged in continuous innovation and entrepreneurial activities.
- Employees and managers with at least 2 years of work experience in the organization.

To obtain generalizable findings, stratified random sampling was used to ensure appropriate representation of the main statistical population.

The statistical populations in both the qualitative and quantitative phases of the study were selected carefully and according to specified criteria. In the qualitative phase, the focus is on obtaining in-depth qualitative information from managers and experts, whereas in the quantitative phase, the objective is to examine the relationships among variables and generalize the findings to a broader statistical population. This combination enables the researcher to examine the dynamics of the factors affecting entrepreneurship and strategic human resource management from a comprehensive and multidimensional perspective.

Findings and Results

The primary objective of this study was to identify the main themes and subthemes of a model of factors affecting organizational entrepreneurship based on a strategic human resource management approach. Accordingly, the six-phase procedure of Braun and Clarke was employed to identify the main themes and subthemes. Ultimately, 41 subthemes and 9 main themes were identified.

Table 1. Themes Extracted from the Conceptual Categories

Main Theme	Subtheme	Conceptual Category
Leadership and Managerial Support	Top management support and commitment	Allocation of financial and human resources to innovative initiatives
		Formal declaration of entrepreneurship as a priority in strategic documents
	Transformational and entrepreneurial leadership	Articulation of an inspiring vision for innovation
		Encouragement of creative thinking and challenging the status quo
		Employee empowerment and trust
	Support for new ideas	Establishment of a formal suggestion mechanism
		Provision of prompt and constructive feedback on ideas
	Managerial participation in entrepreneurship development	Participation in innovation teams
		Employee coaching and mentoring
		Facilitation of cross-functional communication
Entrepreneurial Organizational Culture	Entrepreneurial organizational culture	Formal recognition of innovation and creativity as organizational values
		Role modeling based on successful internal entrepreneurs

	Acceptance of risk-taking	Definition of an acceptable risk framework
		Support for pilot projects with the possibility of failure
		Opportunity-oriented evaluation of decisions
	Valuing idea generation	Allocation of time for creative thinking
		Formal system for recording and tracking ideas
		Rewards for proposing and developing suggestions
Strategic Alignment of Human Resources with Organizational Strategy	Alignment of HR policies with entrepreneurial objectives	Development of innovation-oriented recruitment policies
		Design of entrepreneurial career paths
		HR performance indicators based on innovation objectives
	Integration of entrepreneurship into organizational strategy	Incorporation of entrepreneurial objectives into the strategic plan
		Identification of priority innovative projects
		Continuous monitoring of the achievement of innovation objectives
	Strategic human resource planning	Forecasting future skill requirements for innovation
		Analysis of entrepreneurial competency gaps
		Development of innovative human capital
	Long-term orientation toward entrepreneurship development	Continuous investment in entrepreneurship training
		Development of a sustainable and experiential learning culture
		Development of a long-term roadmap for organizational innovation
	Alignment of individual and organizational objectives	Alignment of individual objectives with organizational innovation objectives
		Performance evaluation based on strategic innovation objectives
		Compensation system aligned with innovative achievements
Strategic Human Resource Recruitment and Selection Systems	Recruitment and hiring of entrepreneurial individuals	Use of creativity and innovation assessment tests
		Interviews based on entrepreneurial competencies
		Recruitment through innovation and startup networks
	Identification of entrepreneurial competencies	Development of an entrepreneurship-specific competency model
		Assessment of opportunity-seeking orientation and initiative
		Assessment of problem-solving ability and risk-taking
	Selection based on creativity and innovation	Use of practical and challenging projects during the recruitment process
		Assessment of divergent thinking and generation of novel ideas
	Workforce diversity and diversity of thought	Recruitment from diverse academic disciplines and professional backgrounds
		Promotion of equal opportunities and inclusion
		Management of constructive conflict and use of diverse perspectives
	Entrepreneurial employer branding	Positioning the organization as a prominent supporter of innovation
		Showcasing internal entrepreneurial achievements
		Active participation in innovation events and exhibitions

Employee Training, Empowerment, and Development	Training and development of entrepreneurial skills	Specialized entrepreneurship and innovation training courses
		Practical workshops and simulations
		Coaching and mentoring by successful entrepreneurs
	Employee empowerment	Granting authority and responsibility in innovative projects
		Provision of necessary resources and tools
		Delegation of authority in operational decision-making
	Development of creativity and problem-solving skills	Training in creativity techniques, such as brainstorming
		Organization of innovation challenges and competitions
	Continuous learning	Establishment of knowledge and experience management systems
		Encouragement of self-directed learning and personal development
		Access to online and offline educational resources
	Individual and professional development programs	Design of flexible career paths
		Regular performance and development evaluations
		Succession-planning programs with an entrepreneurial orientation
Motivation and Reward Systems	Entrepreneurial reward and motivation system	Direct financial incentives for successful ideas
		Nonfinancial rewards, including recognition and promotion
		Employee participation in the benefits generated by new projects
	Innovation-based performance evaluation	Inclusion of innovation indicators in performance appraisal
		Team evaluation based on innovative outputs
		360-degree feedback with an emphasis on creativity
	Recognition of new ideas	Annual innovation awards and recognition ceremonies
		Public recognition of idea generators and teams
		Opportunities to present ideas to senior managers
	Rewards for constructive risk-taking	No punishment for reasonable and learning-oriented failures
		Rewards for efforts in high-risk projects, even when unsuccessful
		Development of a positive culture toward risk-taking experiences
Supportive Human Resource Structures and Policies	Employee discretion and autonomy	Delegation of authority in selecting work methods
		Setting broad objectives instead of detailed instructions
		Independent decision-making within projects
	Flexible and organic organizational structure	Matrix or project-based organizational structures
		Reduction of hierarchical layers
		Cross-functional and self-managed teams
	Allocation of time and resources for innovation	Allocation of designated time to innovative projects (e.g., 20% of working time)
		Access to necessary equipment and tools
		Dedicated budget for internal research and development

	Internal entrepreneurship programs	Establishment of innovation laboratories or internal accelerators
		Organization of hackathons and ideation challenges
	Supportive policies for innovation	Establishment of innovation and R&D committees
		Simple and rapid processes for project approval
		Legal and intellectual support for registered ideas
Knowledge Management and Intellectual Capital	Internal networking and interdepartmental collaboration	Joint meetings and workshops
		Establishment of internal knowledge-sharing platforms
		Encouragement of job rotation across organizational units
	Organizational knowledge sharing	Development of a knowledge database
		Culture of experience sharing
		Use of content management systems
	Management of ideas and experiences	Formal system for recording, evaluating, and tracking ideas
		Database of successful and unsuccessful projects
		Formal process for transforming ideas into products
	Human capital development	Succession-planning programs for innovation-related positions
		Investment in specialized training
		Development of thought leaders and key experts
	Organizational learning	Documentation of project processes and outcomes
		Adaptation and updating of processes based on organizational learning
Environmental and Institutional Factors Affecting Organizational Entrepreneurship	Environmental and market conditions	Continuous analysis of market and customer needs
		Identification of competitive opportunities and threats
		Monitoring changes in consumer preferences
	Legal and institutional support	Laws and regulations supporting entrepreneurship
		Access to government facilities and support programs
	Competitive pressure	Intensity of competition within the industry
		Need for differentiation and innovation for survival
		Market dynamism and rapid change
	Technological developments	Rate of technological advancement within the industry
		Access to new technologies
		Need for continuous updating of technical knowledge
	Relationships with stakeholders and external networks	Collaboration with universities and research centers
		Participation in industry consortia
		Use of external expert consultancy

Subsequently, field data were used to examine the study model through confirmatory factor analysis. The structural model associated with the dimensions of the study variables is presented in the following figure:

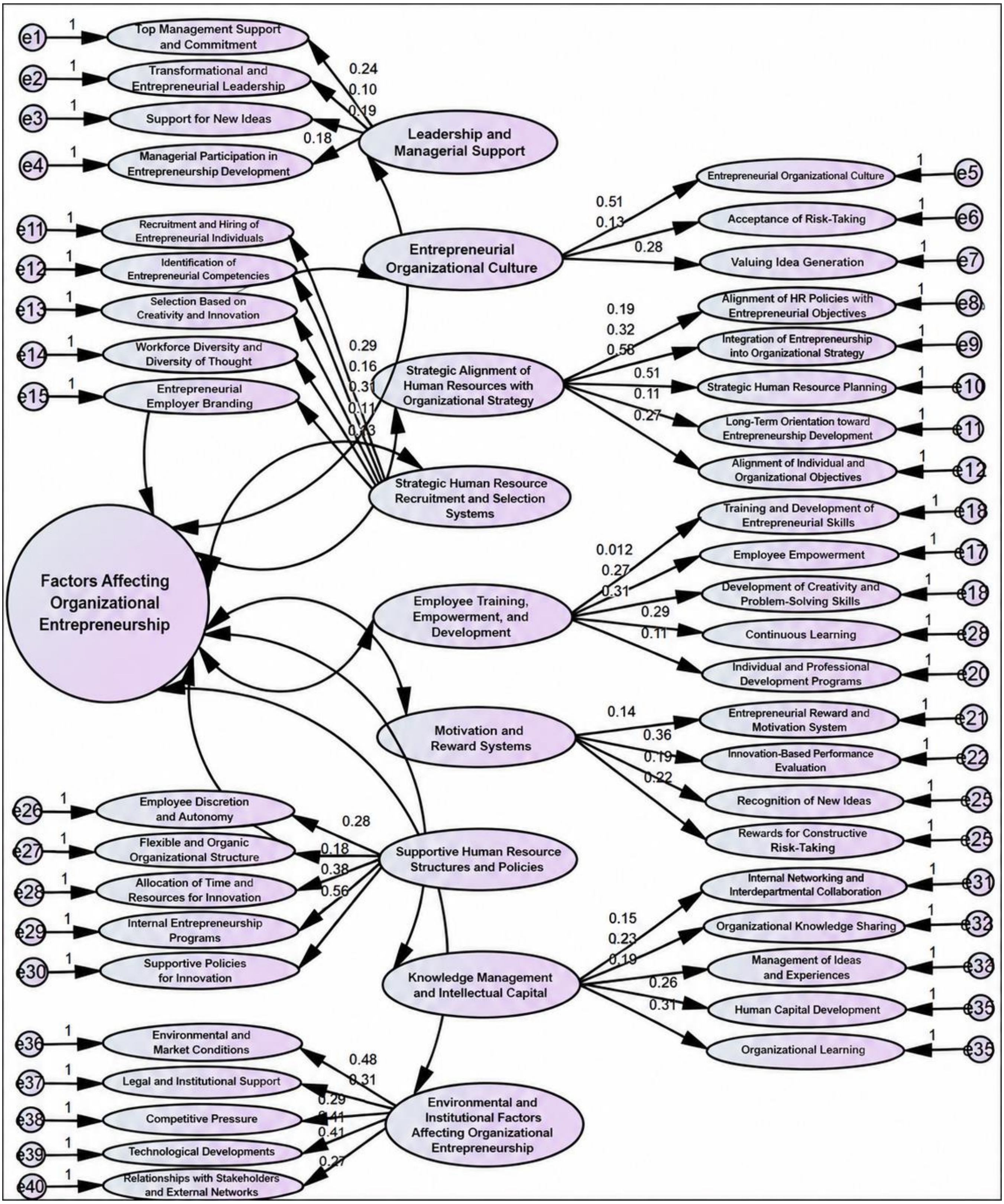

Figure 1. Structural Model

The following table presents the goodness-of-fit indices used to evaluate the confirmatory factor analysis model for the relevant variables.

Table 2. Goodness-of-Fit Indices for Confirmation of the Structural Model

Index	Obtained Value	Acceptable Value	Status
GFI	0.93	GFI > 0.90	Accepted
CFI	0.95	0.90 < CFI < 1	Accepted
CMIN/df	1.85	< 3	Accepted
RMSEA	0.046	RMSEA < 0.08	Accepted

As shown in the table above, all indices examined to assess the fit of the confirmatory factor model fall within the acceptable ranges. Accordingly, it can be concluded that the proposed model demonstrates a satisfactory fit.

In this section, to examine the relationships among the variables, the measurement model was first depicted as shown in the following figure, and the relationships among the study variables were subsequently evaluated accordingly:

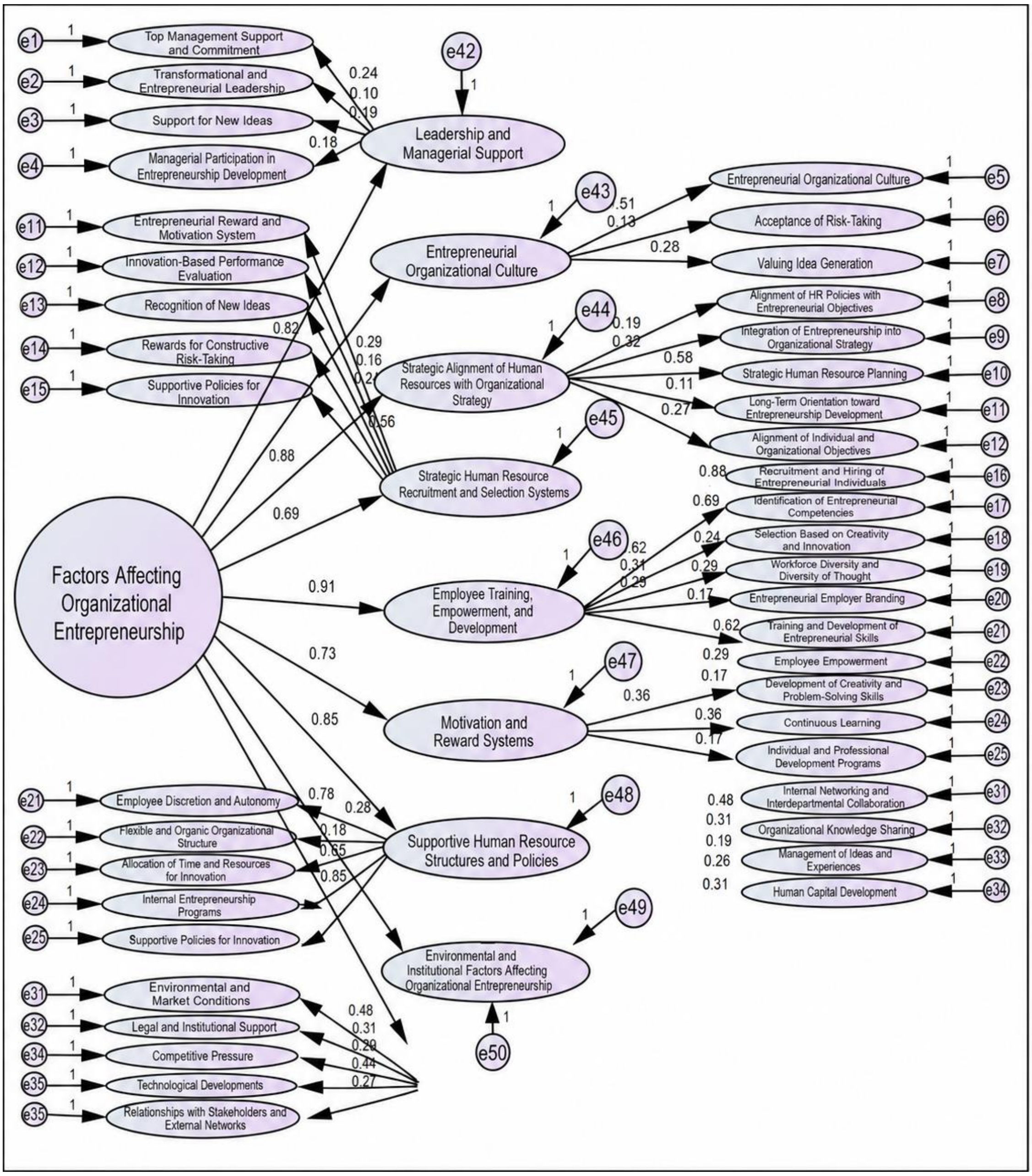

Figure 2. Relationships Among the Variables

Table 3. Relationships Among the Variables

Identified Variable	C.R.	Estimate	Decision
Leadership and managerial support	6.74	0.82	Confirmed
Entrepreneurial organizational culture	5.98	0.76	Confirmed
Strategic alignment of human resources with organizational strategy	7.21	0.88	Confirmed
Strategic human resource recruitment and selection systems	4.87	0.69	Confirmed
Employee training, empowerment, and development	8.15	0.91	Confirmed
Motivation and reward systems	5.42	0.73	Confirmed
Supportive human resource structures and policies	6.63	0.85	Confirmed
Knowledge management and intellectual capital	5.76	0.78	Confirmed
Environmental and institutional factors affecting organizational entrepreneurship	4.54	0.67	Confirmed

Discussion and Conclusion

The present study aimed to design and validate a model of the factors affecting organizational entrepreneurship based on a strategic human resource management approach. The qualitative phase identified nine principal dimensions comprising leadership and managerial support, entrepreneurial organizational culture, strategic alignment of human resources with organizational strategy, strategic human resource recruitment and selection systems, employee training, empowerment, and development, motivation and reward systems, supportive human resource structures and policies, knowledge management and intellectual capital, and environmental and institutional factors affecting organizational entrepreneurship. The confirmatory factor analysis further demonstrated that the proposed model had a satisfactory fit, as indicated by GFI = 0.93, CFI = 0.95, CMIN/df = 1.85, and RMSEA = 0.046. Moreover, all nine identified dimensions had meaningful positive relationships with organizational entrepreneurship. Among them, employee training, empowerment, and development showed the highest estimate (0.91), followed by strategic alignment of human resources with organizational strategy (0.88), supportive human resource structures and policies (0.85), leadership and managerial support (0.82), knowledge management and intellectual capital (0.78), entrepreneurial organizational culture (0.76), motivation and reward systems (0.73), strategic recruitment and selection systems (0.69), and environmental and institutional factors (0.67). Collectively, these findings demonstrate that organizational entrepreneurship is a multidimensional phenomenon whose development depends on an interconnected system of strategic HRM practices and organizational conditions rather than on a single managerial intervention.

The strongest relationship in the proposed model was observed for employee training, empowerment, and development. This finding suggests that organizations seeking to enhance entrepreneurial activity must develop employees' competencies while simultaneously providing them with sufficient autonomy, resources, and opportunities to transform acquired knowledge into innovative action. Entrepreneurial behavior requires more than technical expertise; it involves creativity, opportunity recognition, problem solving, initiative, tolerance for uncertainty, and the confidence to act beyond established routines. Training can develop these competencies, while empowerment provides the discretion necessary to apply them. This result is consistent with research emphasizing the role of human resource management in building organizational entrepreneurship through employee development and capability enhancement (6). It also aligns with evidence suggesting that HRM practices contribute to innovation and entrepreneurship by developing the capabilities needed to recognize and exploit opportunities (10). Similarly, strategic HRM and entrepreneurial orientation have been shown to contribute to dynamic capabilities and innovation, suggesting that employee development becomes particularly valuable when it is linked directly to strategic entrepreneurial objectives (11). The finding can therefore be explained by the fact that employees are the primary agents through whom organizational entrepreneurial intentions are translated into actual innovative initiatives.

The second strongest factor was the strategic alignment of human resources with organizational strategy. This finding demonstrates that entrepreneurship is more likely to become institutionalized when human resource policies are explicitly aligned with the organization's strategic innovation and entrepreneurial objectives. If entrepreneurship is formally identified as a strategic priority but recruitment, development, appraisal, promotion, and compensation continue to reward conventional or risk-averse behavior, a strategic inconsistency emerges that may inhibit entrepreneurial action. The present result supports the strategic HRM perspective, according to which human resource systems should be developed in accordance with organizational strategy and strategic reference points (5). It is also consistent with evidence showing that organizational culture and strategic HRM can jointly facilitate entrepreneurship when HR policies reinforce strategic priorities related to innovation (14). Research in knowledge-based companies likewise indicates that HRM strategies and systems influence radical innovation partly through entrepreneurial orientation (12). Thus, the relatively strong estimate for strategic alignment can be understood as evidence that organizational entrepreneurship becomes sustainable when human resource practices are vertically integrated with organizational strategy and mutually reinforce the organization's entrepreneurial orientation.

Supportive human resource structures and policies represented the third strongest dimension. This finding indicates that entrepreneurial employees require organizational structures that provide discretion, flexibility, time, resources, rapid decision-making channels, and institutional support for experimentation. Employees may possess strong entrepreneurial competencies, but these competencies are unlikely to generate outcomes when they operate within excessively centralized, bureaucratic, and rigid structures. Previous research on barriers to organizational entrepreneurship has similarly highlighted organizational and structural constraints as impediments to entrepreneurial behavior (21). The current finding is also compatible with research emphasizing the contribution of innovative HRM strategies to organizational entrepreneurship (4). In addition, organizational entrepreneurship has been linked to the ability of firms to expand into new opportunities and markets, which requires internal arrangements capable of supporting experimentation and commercialization (22). Consequently, structural flexibility, employee autonomy, internal entrepreneurship programs, innovation committees, and dedicated resources can be interpreted as enabling mechanisms through which entrepreneurial intentions are converted into organizational initiatives.

Leadership and managerial support also demonstrated a strong relationship with organizational entrepreneurship. Senior managers shape entrepreneurial behavior by allocating resources, defining priorities, communicating the legitimacy of innovation, and influencing employees' perceptions regarding whether experimentation and risk-taking are truly supported. Transformational and entrepreneurial leaders can create an inspiring innovation-oriented vision, encourage employees to question established routines, and provide psychological and material support for entrepreneurial initiatives. This finding accords with research demonstrating that leadership styles and HR strategies influence organizational innovation in high-technology environments (15). It is also consistent with evidence that organizational practices and managerial support can promote entrepreneurial attitudes among employees (16). From a strategic HRM perspective, leadership support is particularly important because many HR policies require managerial enactment. A formal policy encouraging innovation will have limited impact if line managers discourage experimentation or penalize failure. Therefore, leadership appears to function as an activating mechanism that transforms formal HR practices into employees' lived experiences of organizational support for entrepreneurship.

Knowledge management and intellectual capital also had a substantial positive relationship with organizational entrepreneurship. This finding suggests that entrepreneurial activity depends heavily on the organization's ability to create, acquire, exchange, combine, preserve, and apply knowledge. New entrepreneurial opportunities frequently arise through the recombination of existing knowledge or interaction among employees with different expertise. Internal networking, cross-functional collaboration, idea management, documentation of previous projects, and development of key specialists can therefore enhance the organization's capacity to innovate. The finding is directly consistent with previous studies reporting positive relationships between knowledge management and organizational entrepreneurship (18). Similar evidence has been obtained regarding knowledge management factors and entrepreneurship in large industrial organizations (19), while other research has emphasized the effect of knowledge management on the development of organizational entrepreneurship (20). These findings collectively suggest that intellectual capital becomes strategically valuable when organizations establish mechanisms that allow employee knowledge to circulate across organizational boundaries and be converted into entrepreneurial ideas and implementable projects.

Entrepreneurial organizational culture was another significant dimension of the model. A culture that values innovation, tolerates reasonable failure, encourages idea generation, and accepts calculated risk-taking establishes shared expectations regarding appropriate entrepreneurial behavior. Culture is particularly important because employees interpret formal organizational policies through prevailing norms and assumptions. Even generous innovation budgets or reward systems may be ineffective when employees believe that failure will damage their careers or that challenging existing practices is unwelcome. The finding is consistent with research demonstrating that organizational culture, in conjunction with strategic HRM, can facilitate entrepreneurship (14). It also supports studies linking entrepreneurial orientation with learning and performance, which suggest that organizations benefit when entrepreneurial values are combined with learning-oriented behaviors (1). Evidence from innovation research further indicates that organizational systems oriented toward improvement and innovation can contribute to innovative performance (17). Accordingly, entrepreneurial culture can be regarded as the social context within which strategic HRM practices acquire meaning and encourage employees to behave entrepreneurially.

Motivation and reward systems also significantly affected organizational entrepreneurship. Entrepreneurial initiatives frequently involve uncertainty, additional effort, experimentation, and a possibility of failure. Employees are therefore more likely to undertake entrepreneurial activities when they perceive that innovative contributions, creative problem solving, and constructive risk-taking are recognized and rewarded. Both financial and nonfinancial incentives may be relevant, including bonuses, promotions, recognition, participation in project benefits, opportunities to present ideas to senior management, and explicit protection from punitive responses to reasonable failure. This result supports previous evidence that HR subsystems influence organizational entrepreneurship (3) and that innovative HRM strategies can foster entrepreneurial outcomes (4). Research examining HRM within entrepreneurial processes has likewise emphasized the importance of practices that motivate and retain individuals who contribute to entrepreneurial activities (9). The present finding therefore reinforces the importance of designing performance and reward systems around both outcomes and entrepreneurial behaviors rather than evaluating employees exclusively according to routine operational targets.

Strategic human resource recruitment and selection systems also showed a significant positive effect. Although its coefficient was comparatively lower than several other internal dimensions, the finding nevertheless indicates that organizational entrepreneurship begins partly with attracting and selecting individuals whose competencies and orientations are compatible with innovation. Creativity, initiative, divergent thinking, opportunity seeking, problem-solving capability, and calculated risk tolerance represent characteristics that may increase employees' likelihood of engaging in entrepreneurial behavior. The result is compatible with research showing that strategic entrepreneurship contributes to the development of strategic human capital resources through recruitment and retention (8). It also aligns with the broader evidence that human resource practices influence entrepreneurship in SMEs and other organizational contexts (10). Furthermore, electronic HRM may improve the capacity of organizations to identify, recruit, and manage suitable human capital, thereby contributing to corporate entrepreneurship (23, 24). The lower relative coefficient may indicate that recruitment alone is insufficient; entrepreneurial potential must subsequently be reinforced through training, empowerment, leadership, culture, and appropriate organizational structures.

Environmental and institutional factors had the lowest coefficient among the nine dimensions, although their relationship with organizational entrepreneurship remained meaningful and positive. This finding indicates that external conditions—including market dynamics, competitive pressure, technological change, legal and institutional support, and relationships with external stakeholders—shape entrepreneurial behavior, but their effect may be less direct than that of internal organizational and HR mechanisms. Organizations cannot fully control external conditions, but they can develop human and organizational capabilities that enable them to interpret and respond to those conditions more effectively. Prior research has shown that entrepreneurial orientation becomes particularly important in dynamic environments because it enhances organizational adaptation and performance (1). Technological and competitive environments also increase the importance of leadership and HR strategies for innovation (15). In addition, research linking green HRM with entrepreneurial ecosystems demonstrates that broader environmental and institutional considerations increasingly influence entrepreneurship-related organizational practices (25). The present result therefore suggests that external conditions create opportunities and pressures for entrepreneurship, whereas internal strategic HRM systems determine how effectively organizations respond to them.

The findings regarding electronic and strategically integrated HR systems are especially relevant to knowledge-based and technology-oriented organizations. Digital HRM can accelerate information processing, facilitate employee communication, support online training, enhance performance monitoring, and provide more flexible mechanisms for talent management and knowledge exchange. Previous studies have reported that electronic HRM contributes to corporate entrepreneurship (24) and that organizational agility can play an important role in the relationship between electronic HRM and entrepreneurial effectiveness (23). These findings provide further support for the current model because digitalized HR processes can strengthen several of its dimensions simultaneously, including strategic alignment, recruitment, employee development, knowledge management, and innovation-oriented performance management. In rapidly changing science and technology environments, this integration is particularly important because organizations must mobilize specialized knowledge and talent quickly in response to emerging opportunities.

Taken together, the findings support a systemic interpretation of organizational entrepreneurship. No single HR practice or organizational condition appears sufficient to generate sustained entrepreneurship. Instead, entrepreneurial outcomes emerge from the complementarity among leadership, culture, strategic alignment, recruitment, development, rewards, supportive structures, knowledge systems, and environmental responsiveness. This interpretation is consistent with evidence demonstrating that organizational entrepreneurship is embedded in broader HRM and organizational systems (3, 7). It is also consistent with contemporary strategic human capital research showing that entrepreneurship and human resource strategies interact in building valuable organizational capabilities (8). The satisfactory fit indices obtained for the proposed model provide empirical support for this integrated perspective. Therefore, the major contribution of the present study lies in conceptualizing organizational entrepreneurship as the outcome of a coordinated strategic HRM architecture in which complementary human, managerial, structural, knowledge-related, and contextual dimensions operate together to create conditions favorable to entrepreneurial behavior and innovation.

The present study has several limitations that should be considered when interpreting its findings. First, the quantitative data were collected through a researcher-developed self-report questionnaire, which may be affected by common-method bias, social desirability, and respondents' subjective perceptions. Second, the study population was drawn from managers and employees of organizations and knowledge-based companies located in science and technology parks in Tehran; consequently, the findings may not be fully generalizable to traditional industries, public organizations, small family businesses, or organizations operating in other geographical and institutional environments. Third, although the mixed-methods design strengthened the comprehensiveness of the investigation, the cross-sectional nature of the quantitative phase limits causal interpretation of the observed relationships. Finally, organizational entrepreneurship is dynamic and may change over time in response to leadership transitions, technological developments, competitive pressures, and modifications in HR policies, factors that could not be fully captured within the temporal boundaries of the present research.

Future studies are recommended to test the proposed model in different industries, organizational sizes, geographical regions, and institutional settings to evaluate its external validity and identify possible contextual differences. Longitudinal designs could be employed to examine how changes in strategic human resource practices influence entrepreneurial behavior and innovation over time and to provide stronger evidence regarding causal relationships. Future research could also examine mediating and moderating mechanisms among the identified dimensions, such as whether entrepreneurial culture mediates the relationship between leadership and organizational entrepreneurship, whether organizational agility strengthens the effect of strategic HRM, or whether environmental dynamism changes the relative importance of specific HR practices. Comparative studies between knowledge-based and traditional organizations, public and private sectors, or highly innovative and less innovative firms could further clarify the boundary conditions of the proposed model. Researchers may also combine employee surveys with objective indicators of innovation, patents, new products, commercialization outcomes, and organizational performance to reduce reliance on perceptual measures.

Managers and human resource professionals should treat organizational entrepreneurship as a strategic, organization-wide capability rather than as a responsibility assigned solely to innovation or research and development units. Particular priority should be given to employee training, empowerment, and development because this dimension demonstrated the strongest relationship with organizational entrepreneurship, followed by the alignment of HR policies with organizational strategy and the creation of supportive structures and policies. Organizations should recruit employees with entrepreneurial competencies, provide continuous innovation-oriented training, grant employees reasonable autonomy, allocate time and resources to innovative projects, establish rapid mechanisms for evaluating ideas, and design reward systems that recognize creativity and constructive risk-taking. Senior managers should visibly support entrepreneurial initiatives and foster a culture in which experimentation and learning from reasonable failure are accepted. Organizations should also strengthen knowledge-sharing systems, cross-functional collaboration, mentoring, internal innovation programs, and relationships with universities, research centers, and external experts so that individual knowledge and ideas can be transformed into sustainable entrepreneurial outcomes.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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