

Research Article

The Effect of Innovation on the Company's Performance in Small and Medium-Sized Businesses with the Mediating Role of Lean: Agile Project Management Office (LAPMO)

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Small- and medium-sized enterprises (SMEs) require less formalized project management methods than large corporations. However, project management can play a significant role in implementing innovations. Even though lean-agile project management offices (LAPMO) are becoming increasingly important for SMEs, each company's performance varies significantly due to varying innovative capabilities and the dynamism of internal and external contexts. Based on a literature study, innovative capabilities, and LAPMO, we have developed a theoretical model with 11 assumption models. As a follow-up, we conducted empirical research, including critical variable metrics, data collection and analyses, validity tests, reliability tests, regression analysis, and structural equation modeling. The model developed in this study considers the many roles that innovation capacity and project agility play in enhancing corporate performance. LAPMO mediates the relationship between innovation and performance in small and medium-sized businesses. Organizational innovation, open innovation, and innovation capabilities affect companies' performance. In small and medium businesses, they also affect LAPMO. For small and medium-sized businesses, LAPMO mediates the relationship between organizational innovation, open innovation, and innovation capabilities.

1. Introduction

Commercial competitiveness has increased as a result of globalization. Price reductions are no longer sufficient for companies to succeed in their respective industries [1, 2]. Only sustainable competitive advantages can be achieved by organizations using various methods (e.g., products, technologies, services, research and development, and ongoing innovation). To strengthen their competitive advantage, small and medium-sized enterprises (SMEs) can utilize contemporary technologies and best management practices [3]. Agile project management has shown to be highly effective in fostering innovation in high-tech companies. By combining both management approaches, innovative organizations can improve their performance. As a result of this integrated strategy, many companies have increased

their innovation level. Although these two strategies have not yet been fully integrated into reality, different degrees of project flexibility in high-tech SMEs can result in varying levels of inventive success. During the past two decades, science and professional management literature have gradually explored innovation and project management. Innovation and effective project management are essential for companies to survive and grow. As a result, small and medium-sized businesses (SMEs) have received little attention regarding project management and innovation. In contrast, large organizations have received significant attention. According to the literature, SMEs play an essential role in today's economy. In managing innovative projects, they play an important role locally and globally.

Nowadays, industrial companies facing tough competition in global markets use investment in projects to

maintain excellence and stay up to date to remain in the market [4]. Although the projects' results have a high strategic value for industrial companies, the research shows that only 10 percent of these ideas can eventually enter the market. One of the causes of this problem is the high rate of technology development that can make a product or a process technically or economically unjustifiable during a short period. Another part of this problem can be attributed to the complexity and different nature of projects compared to the traditional ones and the difficulty of their management [4]. While agile project management has become increasingly important for small and medium-sized companies with high technology, the performance of each company varies due to different innovation and capabilities levels [5]. It is possible to better understand the pre-development phases of innovation through innovation management, research and development (R&D), and technology management. A significant component of Brem and Voigt's research on innovation management (Figure 1) was their exploration of the foundations of technology management and R&D management.

Figure 1 shows that the management of technological innovations involves several tasks at different stages of the innovation life cycle: "Managing of fundamental research theories," "technology predevelopment and development activities," "prototyping for the product, process development," "invention," and "innovation for product and market launch" are defined by Brem and Voigt [7]. In other words, if there is an R&D department in an organization, processes for the early stages of innovativeness are covered. However, suppose there is no R&D department. In that case, there may be a technological management function or an equivalent function in the early stages of innovation management. Organizations can also embrace the existing agile methodology or construct a new agile approach using the management innovation framework [8] that can enhance the efficacy of their long-term predevelopment and innovation initiatives. A wide range of large, medium, and primarily small companies has made agile methodology (AM) and the core components, such as agile methodologies, techniques, frameworks, tools, and apps, very popular. Agile methodologies are new approaches to software engineering that stress teamwork, client cooperation, iterative development, and human, process, and technological adaptation [9]. AM's goal is to sell new creative products and services faster and more affordably for complex projects with undefined criteria [10]. The APM's focus on close cooperation and rapid processes means that agile teams show increased team efficiency and performance, lower development costs, quicker time to the market, better quality software, systems that better meet client demands, and repeatable results [9]. Factors such as project mission, senior management support, transparency and realism in goals, coherent planning, effective communication between the project team and stakeholders, the existence of sufficient staff, change management, proper project management, efficient and timely allocation of resources, sufficient budget, contractors, consultants, strategies' stability, previous experiences, complexity level, and the project size are among the factors

causing project success [11]. The critical factors for success in the world's most essential companies include organizational strategies, key competencies, and industry success factors, especially agility. [12]. There are different definitions for project success. The definition used in this study states that project success emphasizes the process of project management and is based on the realization of the project in a determined time, cost, specifications, and quality and the satisfaction of the project stakeholders. Although the success of project management and product success are interrelated, the cause-and-effect relationship between them is weak [13]. For example, a project may fail in terms of time and cost, but it can result in a successful product. The researchers consider successful value-added, user satisfaction, and agility as the factors of product success [14]. The problem of agility is not something that can only be considered for the private sector, and its use in the public sector can be a good area for the growth and development of this concept. Some believe that due to the lack of competition and speed in the public sector and, in a word, the lack of dynamism in its operational environment, considering the agility concept in this sector is practically meaningless and irrelevant. In contrast, due to a large number of clients as well as their needs and desires and in order to grow and excel in the fields of speed, quality, and, more importantly, cost, the public sector requires more agility than the private and manufacturing sectors [15].

Organizations need to be agile for some reasons: The first is the insufficiency of business opportunities. Too many competitors prevent opportunities from existing for a long time. Every organization, with all its force, seeks to achieve opportunities. The second reason is the lack of necessary organizational capabilities for rapidly presenting new products to the market. The third factor that has necessitated agility for current organizations is the unpredictability of continuous changes in various market levels. The opportunity can be created for the organization to distribute the existing risk among several organizations by creating virtual organizations. The fourth important reason, which can be a crucial advantage, is creating a virtual organization that combines all the available capabilities in all scattered enterprises. The organization can benefit more from limited opportunities in the market [16]. To survive in this tumultuous environment, organizations should focus on organizational agility. Taking advantage of the opportunities presented to the business is the essence of organizational agility, which is a deliberate and thorough reaction to the ever-changing requirements of competitive marketplaces. Agility is a complex and multidimensional concept that includes feeling environmental changes and responding quickly to unpredictable changes [17]. Market and technology changes have led to a strong interest in how organizations can respond effectively to changing environments. One problem is how to develop organizational agility as a new concept. An agile organization seeks to satisfy its customers and employees. It needs to have the ability to respond to continuous changes in its business environment.

Furthermore, agile thinking in such organizations goes beyond the existing monotonousness. It seeks to use potential opportunities and to create stable conditions for its

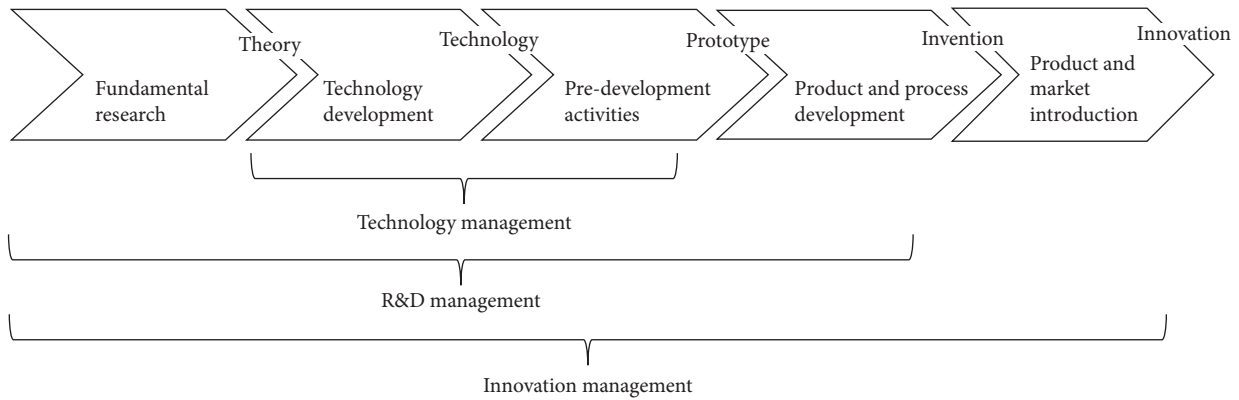


FIGURE 1: The innovation management spectrum [6].

capabilities and innovations [18]. An organization's agility involves providing value to customers, embracing change, paying attention to skills, and creating a participation tendency among its employees [19]. The term "agile" literally means quick, nimble, and active, and agility is the ability to move quickly and easily and think intelligently. Agility is also the ability to succeed in an ever-changing and unpredictable environment. Agility also means flexibility and the ability to react to environmental changes, according to which the need for improvement never ends. Today's standards will be the old methods of tomorrow. Therefore, improvement is always necessary [20]. Agility requires the ability to manage and apply knowledge. In this case, the organization acquires the potential to sustain its life in the changing and unpredictable business environment. Quick responding and knowledge management are two essential elements that can complete agility. Quick responding is obtained through the possibility of process change and flexible relationships in the structure that make re-organization possible. In addition to the discovery, acquisition, dissemination, and modernization of knowledge, knowledge management requires collaborative learning in its process and knowledge asset management in its structure [21]. Agility is a purposeful business strategy that prepares the organization according to its capabilities for succeeding in today's competitive environment. Agility is essential, and the results of studies have shown that compared to nonagile organizations, agile organizations have growth rates of 53% in productivity, 38% in employee satisfaction, and 3% in customer or consumer satisfaction [22].

The complexity of projects and their impact on companies' ultimate outputs are on the rise in today's world, along with the number of projects themselves. Therefore, to perform projects more quickly, inexpensively, and effectively, enterprises must seek specific solutions. In this regard, organizations face new challenges, including conflicts between projects over the use of resources and priorities, weaknesses in documentation and sharing of lessons learned, a lack of coordination and communication between projects, ineffective and inconsistent project management methodologies, a misalignment of project objectives with organizational policies or strategies, parallel processes, and increased project effort duplication. To institutionalize and

aid in improving project management in businesses, it is crucial in such situations to create a department in charge of project management expertise. This division, known as the project management office (PMO), is in charge of the centralized and well-coordinated administration of projects. A PMO can carry out a wide range of tasks in addition to assisting managers and project management teams, such as enhancing the procedures and operations of project management inside a company. A PMO can be created and set up to consolidate and unify an organization's project management process. It can be said that project-oriented companies now struggle with the diversity of rules, principles, and processes in their projects. By creating a PMO, businesses may reduce this uncertainty and produce integrated standards, policies, and procedures in all of their developments.

In order to create agility and increase the speed of response and flexibility, the organizations must follow some rules and principles to be able to achieve them more quickly and effectively, and adhering to these principles shows the culture of accepting organizational agility and these principles include creating value for customers are the importance of people and the role of information, intra-organizational and extra-organizational cooperation, and readiness for changes [23]. Global markets have undergone many qualitative and substantive changes in the last two decades. There has been an intensification of regionalization and globalization of markets. A new era of consumer orientation is taking over as the production-oriented era ends. Industrial manufacturers have designed procedures that have shifted the industrial structure to maximize the use of facilities and minimize the waste of precious resources. As a result of this structural shift, small- and medium-sized businesses are expanding and developing. Nations' economic and social growth largely depends on the growth of small and medium-sized businesses. In all economies, these categories make up the bulk of commercial companies. In the private sector, small- and medium-sized companies conduct between one-third and two-thirds of transactions. Small- and medium-sized businesses create most jobs in a community. Furthermore, these marketplaces offer small businesses the opportunity to conduct global business most securely and reliably. Small businesses with high levels of

efficiency and competitiveness may also be able to control economies worldwide [24]. However, small and medium-sized enterprises have significant limitations in financial and management resources and face many problems competing in today's business world.

In today's competitive environment, where competition is fast and dynamic, such organizations cannot achieve their desired strategic goals individually and only by relying on their resources. They must look for a way to compensate for their limitations [25]. In order to promote an organization effectively, performance evaluation is considered one of the most critical methods. Therefore, managers and researchers have pursued the aim of organization evaluation for many years. Since then, performance evaluation methods have included balanced scorecards, quality award patterns, financial performance measurement, performance pyramids, and performance charters [26]. However, to develop growth and sustainability in today's competitive markets, all organizations, whether public or private, need an effective performance evaluation system to evaluate the effectiveness and efficiency of their organization's programs, processes, and human resources [27]. Efficient organizations do not suffice to collect and analyze data. However, they use them to improve the organization and fulfill its missions and strategies [28]. Innovation is necessary for all businesses today because of market competition, globalization, and rapid technological advancements [29]. Businesses use innovation to achieve efficiency, performance enhancement, quality control, learning, and market expansion objectives [30]. To develop these qualities, an organization must pay close attention to the creative abilities of its employees to adapt to change and manage it.

Creative and innovative firms are more likely to succeed [31]. Innovation necessitates the transformation of ideas into useable organizational forms, and this idea is used to promote organizational performance [32]. Innovation in companies is primarily about organizational learning and the creation of new knowledge [33]. Innovation can be a process by which inventions change into products, processes, services, or organizational changes with added value or are presentable to markets [34]. The concept of innovation refers to the successful and valuable implementation of creative ideas within the company [35]. Innovation does not necessarily mean employing the latest technologies but focusing on ways of thinking and finding creative solutions within the company rather than dealing with the issue of technology [36]. Innovation refers to a company's tendency to be engaged with new ideas, experiments, and creative processes that may result in new products, services, or processes [37]. Innovation is the motor of economic development and plays an essential role in competition at the national and corporate levels [38]. Innovation is the modernization of interrelated activities in a chain that begins with creative discovery, is then developed through entrepreneurship, and is eventually commercialized [36]. Innovation involves an interest in ideas, new experiences, and creative processes that may develop and create a new product, service, or technology [39]. Innovation is the implementation of new ideas that create value [29].

Innovation refers to new management, organizational, marketing, and strategic practices adopted by an organization. Organizational innovation applies a new organizational strategy within a company's business operations, workplace structure, or external interactions [40].

Due to rising production costs, such as energy and tax rates, as well as general variable costs, small- and medium-sized businesses are currently experiencing a recession. A decrease in liquidity, an aging population, and rising costs are causing the construction industry to suffer a recession. As a result of the efforts taken over the last several years to increase output, smaller and medium-sized businesses have been formed, creating competition among producers. To achieve optimal profit and continuity of small and medium-sized business activities, they must be present in international markets. Most of the research carried out on innovation and performance ignores the dimension of LAPMO, and this critical factor is neglected. One of the problems of small and large businesses losing their customers is not paying enough attention to this crucial dimension. Companies' attention to different dimensions and factors in innovation and the creation of specific products and LAPMO will be a trump card that will be a unique competitive advantage. It is, therefore, crucial for business stakeholders, including manufacturers, marketers, and vendors, to examine how innovation influences company performance in small and medium-sized businesses. This dimension will be vital in ensuring its competitiveness and ensuring its success. Therefore, the research aims to answer the question of finding the impact of innovation on the company's performance in small and medium-sized businesses with the mediating role of agile project management. In order to respond to this question and achieve its related study objectives, the main ideas were picked for a complete evaluation of literature on innovations, agility and flexible project management, company performance, and SMEs. The links between these factors were studied to build a theoretical framework. A typical high-tech Iranian SME was compared, and data were collected and analyzed using an investigation. A study of the system mechanism was conducted after reliability and validity tests were conducted on several variables.

2. Literature Review

2.1. Innovation. A company's ability to create value is often determined by its ability to introduce and apply new ideas, processes, products, or procedures across different parts of the organization. An organization's success depends heavily on innovation [41]. In another sense, organizational innovation is defined as the development and adoption of a new innovative idea or behavior in organizational processes for the entire organization [42]. Innovation as a process presents new chances for companies according to the underlying innovation theory [43]. Carlsson et al. [43] and Birkinshaw et al. [8] discovered that it was possible, either in a future income, a better technological process or a new product or a new service, or even an enhanced and improved practice, to actualize and transform opportunities

into economic activity. However, not all opportunities originating from efforts to innovate lead to viable ideas in which investment is worthwhile. Only a few invention possibilities or concepts lead to economically successful products [44]. Birkinshaw et al. [8] discussed product, service, technological, and strategic innovation. Some scholars define innovation as a process of producing technological transformations, new products, or new services [8]. Innovation is defined as a business initiative for change, a capacity, and even a role of entrepreneurship by Drucker [45]. Innovation is described as an intentional and targeted change in a product or service, according to Drucker [45]. The literature focuses on the formation of ideas within the scope of product development at an early stage of innovation (Cooper [46]; Poskela [47]; Borjeson et al. [44]). Cooper [46] and Koen [48] examined the early steps of invention and focused on the system of innovation as a source of new product ideas. Different ideas, such as establishing nimble or agile capabilities, are also a solution for companies interested in experimenting or taking a new way to manage the pre-development phases of innovation. In general, organizational innovation can be considered a process through which organizational initiatives are transformed into value-added or marketable products, procedures, services, or organizational changes [49]. In order to describe organizational innovation, it is essential to note that it is not a unidimensional idea but rather a multidimensional field including a range of aspects [50]. In this regard, Damanpour et al. have considered process and product innovation as the dimensions of organizational innovation. In another categorization, Moradi et al. [51], referring to Mioz and Edquist, have introduced service, production, and technical and administrative innovation as the most critical dimensions of organizational innovation. In a comprehensive view, Croissant and Apadin categorize the main dimensions of organizational innovation into three groups production innovation (leadiness of the company/organization in presenting new services and products to customers based on their changing expectations and needs, and environmental changes), administrative innovation (Applying new methods and techniques in the production of products and services and emphasizing the identification and application of managerial innovations) and culture/environmental innovation (Providing organizational space and environment for employees to come up with ideas and encourage them to take risks and taking innovative actions) that due to the comprehensiveness of this classification and also its applicability in terms of simplicity in measuring organizational innovation, it is used in this study [52].

Innovation is an essential competitive resource because it can produce new products that better meet customers' needs, improve the quality of existing products, and reduce the cost of producing products requested by customers [53]. Organizational innovation can be compliance with an idea or behavior new to the organization [54]. As a means of preserving their market position, businesses use innovations. Environmental adaptation is achieved through

organizational innovation. Accordingly, innovation implies that corporations need to adapt more to their environments [55]. An organization needs to innovate in order to succeed financially. Because in every business, innovation is included, and it leads to reactions in the market that can result in a competitive advantage and market position for business entities, the impact of innovation should be reflected in the value of the company and its financial performance [56].

2.2. Management Innovation. The management innovation process begins with thinking about how a new strategy could work for a company and recommends that nonlinear sequences be used to evaluate a new approach [8]. For example, using an agile method as a new approach to innovation in an organization raises concerns about its sufficiency. According to Cockburn [57], the question for utilizing agile approaches is "How can we remain agile in this situation?" rather than "Can an agile methodology be employed in this situation?"

The project team constantly learns through repeated tests and customer feedback, allowing the rapid incorporation of new information and knowledge into the next rotation that delivers the customer's product [58]. In this field, there is a tremendous increase in interest in agility in project management, although the definitions remain inconsistent, incomplete, and unclear [59–61]. Highsmith understands agility with five primary objectives: continual innovation, adaptability of products, shorter delivery times, adaptability of people and processes, and reliable results [9]. Augustine has characterized agility as "the ability to provide customer benefit while dealing with intrinsic project impermissibility and dynamism through recognition and adaptation to change" [62]. "Approach based on a series of principles whose aim is to make the project management process more easy, flexible, and iterative in order to achieve better performance (cost, time and quality) with a lower level of management and innovation and value-added for the customer" (Conforto et al. [60]). Cooper has summed up the APM technique as "a microplanning or project management tool to engage the customer and a development team swiftly to reach a product" [63]. In 2016, Conforto and others used the combination of a systematic evaluation of literature and a technique of frame semantics to construct a full definition of agility. The definition they offer is the following:

"Agility is the capacity of the project team to swiftly adjust the project plan to respond to the needs, market, or technological expectations of customers or stakeholders to improve project and product performance in an inventive, dynamic project environment" [60]. They pointed out that agility should not be seen as a specific methodology or practice as the performance of a project team. This conclusion has facilitated the adaptability of different businesses across the software industry and has been more understandable. In addition, their research suggested that the capacity to quickly and active customer involvement in the project plan is the two essential characteristics of agility in project management (Table 1).

TABLE 1: Difference between some literature review models (Made by researchers).

Model	Description
Reservoir model	Implementing and managing projects/developing project management methodologies
Reservoir-trainer model	Managing and implementing projects, developing project management methodologies, providing project support, consulting, and training on projects
Reservoir-trainer-manager model	Developing a project management methodology, managing a portfolio, managing relationships with customers and suppliers, managing project knowledge, defining organizational structures for projects, and managing resources
Hierarchical model	Projects
	Departments
	Organizations
	Participate in the management and implementation of projects/project support
	Manage and implement projects, provide project support, plan and audit projects, and manage portfolios
	Management of portfolios, resources, and consultation

2.3. *Innovative Project Management: Traditional vs. Agile.* The management of innovative initiatives can be simplified into two fundamental approaches, according to recent literature on project management:

This classic project management style is primarily seen because of the achievement of the objectives in time, based on assumptions made in the 1950s, 1960s, and 1970s. The project manager, outside the system, monitors and monitors project procedures. The project manager compares and monitors the results of the plan and acts as required in the system [64]. The definition of management positions is made possible via organizational and operational strategies and reasonable and logical prerequisites founded upon the Cartesian worldview. This technique reflects most international project management standards, such as PMBOK (PMI), ICB, and ISO 10006. These challenges are estimated to be addressed by around 75% of the project management literature published over the past 45 years [65]. In recent years, there has been rising questioning of traditional approaches to project management.

The method, based on complexity, unpredictability, and innovation, which considers new economic situations, is attractive [66]. The latter is a massive problem for the company but may also be a valuable source for clients [9]. The key challenge was finding solutions in an innovative environment with much ambiguity. There was uncertainty. The traditional technique defined in the PMBOK (PMI) standard has increasingly been highlighted. It can potentially harm a company through structural complexity, linear logic, and lack of adaptability. A natural expansion and a complement to earlier academic achievements are the new approaches to project management. It is essential because the environment's complexity, dynamism, and nonlinearity and the further extension of existing approaches must be considered. Fascinating is the innovative strategies based on criticism of the typical management style. Both the need for innovation and the projection of the environment have encouraged new software development approaches [62] to be developed and disseminated. An innovative technique mentioned in the literature is APM (Agile Project Management), a collection of concepts, values, and practices that help managers to implement projects in unforeseen conditions efficiently. Agile project management emphasizes added-value activities while avoiding the need for both

formal and administrative requirements. As a result, the production process is more efficient and seamless. At the same time, product functionality and implementation goals are always considered. Constant attention allows the identification and removal of tiny objects, reducing total effort. It should be mentioned that APM is based on "lean thinking" concepts' flexibility and simplicity.

2.4. *Agility.* The first attempt to form the concept of agility can be attributed to the activities that took place from the late 1980s to the mid-1990s. During those years, the United States concluded that competition was no longer possible through traditional paradigms, and the organizations and industries needed a new approach to conservation and survival. For the first time, following a meeting of many scientific and industrial experts, a new paradigm was published by Iacocca Institute in the report entitled "21st Century Manufacturing Enterprise Strategy," and the points of view of industrial professionals were introduced to everyone; short after that, the term of "agile production" was used jointly with the publication of this report [67]. Of course, before preparing this strategic document, Lehigh University had conducted studies on 13 major manufacturing organizations, such as General Motors, General Electric, IBM, and Texas instrument, with the financial support of The United States Marine forces, together with the Iacocca Institute. These studies aimed to answer the question of which characteristics will have the studied organizations in the 21st century. After that, more than one hundred other organizations were studied, and in 1991 the results and findings of other research were published as a report. Later, in 1995, the results of the above research were published in Steven Goldman, Tagel, and Press under the title of "Agile Competitors and Virtual Organizations" Among the research results, we can mention the following [67]:

- (1) The new competitive environment has created many changes in production systems and organizations
- (2) Organizations with a competitive advantage in the new environment and can quickly produce products according to customer needs are agile and leading
- (3) The need for agility, a flexible production system, a knowledgeable workforce, and a management

structure encourages team innovation (both within and between the organizations)

- (4) If American organizations cannot move towards agile production, the standard of living in this country will be seriously endangered [67].

Through globalization and the development of information technology, supply-oriented markets have changed into demand-oriented markets to meet customers' needs [68]. On the other hand, organizations compete in different dimensions, such as cost, quality, transportation, and flexibility. So, today competitive environments are known for rapid changes and unpredictable markets [69]. In such a situation where competitiveness is the primary goal of any organization, the slightest slip can sometimes lead to the decline of an organization [70]. Therefore, organizational agility is one of the paradigms proposed to increase flexibility, speed, and quality [71]. The word "agility" in the dictionary means quick, nimble, active, and the ability to move quickly and easily and to be able to think fast. It was first proposed by the Aicocca Institute in 1991. In the report presented by this agency, agility has been introduced as an essential possibility for new products [70].

Today, agility refers to the ability to respond quickly to changing and unpredictable environments and use those changes as opportunities for organizational advancement [72]. Agile organizations respond quickly and flexibly to internal and external events [16]. As a result of its high-quality products and services, agile organizations synchronize their processes and personnel with advanced technology. Agile organizations think beyond compliance with changes and, due to their innovations and merits, tend to take advantage of potential opportunities in a turbulent environment and achieve consistent success [73]. Agility means very high adaptability without the need to make changes. The organization can create a capacity in its structure and operational methods to create flexibility, changeability, and adaptability to changing conditions without making a series of permanent, compulsory, and fundamental changes [74]. Although there is no consensus on the definition of organizational agility, there is agreement on various elements in some definitions. These elements include accountability, knowledge management, flexibility, and thinking. Lean manufacturing is usually associated with the effective use of resources. At the same time, agile production is related to effectively responding to changing environments to achieve productivity [75]. Therefore, the ability to respond to environmental events has become the most critical issue for agile organizations [76]. An essential element in organizational agility is responding speed. In this case, the organization can be in one of the following four forms: opportunistic, innovative, flexible, and agile. An opportunistic organization has a very high ability to react but a low ability to act. It uses the best practices, listens to its customers, and helps improve current capabilities.

Unlike this organization, the innovative organization has a high ability to act but has little ability to react. New technologies, services, strategies, and ideas are essential for innovative firms to adapt to changing market circumstances.

This company is not interested in improving low-quality items or current procedures. A flexible organization can respond and act simultaneously. An agile organization is one in which reactive capabilities and action abilities are high [77]. Another essential element in organizational agility is knowledge management. Knowledge management enables the organization to react appropriately to environmental events. The reaction detection cycle suggests an approach to applying learning processes. Such cycles enable organizational actors to identify environmental events, interpret concepts related to organizational goals, respond to them correctly, formulate their rules, and act on them. Organizational knowledge must be appropriately managed to achieve such learning cycles, including the creation, identification, acquisition, and transfer of knowledge required for the development. In order to respond to environmental changes, agile organizations develop learning processes and knowledge management capabilities [78]. In today's competitive world, where everything is changing rapidly, organizations need to consider adapting to changes and seeking out opportunities as they arise in today's competitive world.

Organizational agility is one of the parameters proposed to increase flexibility, speed, and quality [79]. Organizational agility means high adaptability without the need to make changes. The organization can have a capacity in its structure and operational methods to create flexibility, changeability, and adaptability to changing conditions without the need to make some permanent, mandatory, and fundamental changes [80]. The goal of an agile company is to enrich/satisfy customers and employees. An organization essentially possesses a set of capabilities to respond appropriately to changes in the business environment [81]. Technological rapid evolutions, increment of globalization risks, and expectations of privatization are environmental features that current business organizations encounter. To succeed in this environment, agility creates a competitive advantage that can be maintained with a reputation for innovation. As a new paradigm in production, university researchers introduced agility to the world of production [82]. The central concept of agility is to break the traditional way of traditional thinking, relationships, and hierarchy [73]. As a result of a dynamic, changing, and uncertain business environment, agility is a response to these challenges, a new way of doing business, and a new attitude toward producing, selling, and purchasing. It also enables new forms of business relationships and new ways of evaluating company performance. An agile company responds rapidly to unforeseen events, market opportunities, and consumer demands because it is swift, consistent, and conscientious.

Therefore, companies obtain the agility to create a practical integrated approach in their business and thus ensure that the agility suppliers can meet agility capabilities, deal with stimuli, and ultimately achieve strategic competitive advantage [81]. Literature [81, 82] discussed the operational and strategic components of agility. According to Augustine [62], "agility represents the ability to benefit customers by identifying and adapting to change in the face of intrinsic project unpredictability and dynamism."

Highsmith [9] defines Agility as “the ability to produce changes and respond to them to benefit the turbulent business environment.” Ifandoudas et al. [84] suggest that achieving agility also means creating a plan to focus business resources and harness agile characteristics such as reactivity, rapidity, and adaptability. Reference [84] describes agile practices as using agile and lean concepts for building customer value. Three concepts for flexible project management have been presented by Augustine [62] (see Table 2):

- (i) build harmonization and cooperation,
- (ii) foster development and self-government, and
- (iii) implement learning and adaptation.

Agile project management is an incremental and iterative process in which the project manager or developer and project stakeholders, in cooperation with the project scope, determine the needs that the project should address, and the prioritization of functions. The agile statement refers to the following four principles:

- (i) People and team interactions are superior to processes and tools
- (ii) Executable software, superior to bulky documentation
- (iii) Partnership with the client (employer), superior to contractual negotiations
- (iv) Responsiveness to changes, superior to mere compliance with the program (project).

The lean project management methodology has three fundamental pillars as follows:

- (i) Discovering and eliminating waste
- (ii) Daily improvement
- (iii) Recording progress by focusing on these pillars provides the basis for eliminating managerial waste in the organization’s task structure.

The main goal of adopting the lean project management methodology in the model proposed by the lean-agile project management office is to eliminate eight management wastes, namely, 1- transportation, 2- inventory, 3- movement (movement), 4- delay, 5- overproduction, 6- excessive processing is 7-defects, and 8-unused talents.

There has been a growing popularity of agile methods in the software market since 2004 and 2005, emphasizing continuous development, value creation, and lean principles [85]. The authors are Schwaber [86], Chin [87], and Augustine [62]. Cooper [63] believes continuous improvement is essential for product development processes to remain efficient and effective. Likewise, continuous development in innovation management is crucial, especially during innovation phases where opportunities are revealed.

2.5. Agile Project Management. Traditional planned project management practices are less successful in today’s highly dynamic, uncertain, and rapidly changing project

environment [88]. Customers are constantly demanding more features and more advanced products. In the last several decades, more adaptable and value-driven ways have been created to cope with such an unpredictable environment. APM was first released in the 1980s [89] as software development and got more popular when the 2001 Manifesto for Agile Software Development was published. The core ideals and ideas of a new development technique were given by Beck [90], which is more people-centered and valued in the manifesto. Some of the key features that distinguish APM from traditional management approaches include shorter iterative development cycles, flexible scope, increased value creation, iterative and adaptive planning, active involvement of customers, self-organized cross-functional project teams as well as embracing change [89, 91]. As a result of its significant success in the production of software, APM has moved to other domains [92, 93].

Due to different discipline-specific variances [94], straight transfer of physical product development methodologies is neither feasible nor practical. Consequently, APM research for physical product development focuses on how APM approaches can be changed to suit unique companies or projects and how traditional procedures are combined successfully. Although APM is still a relatively young field of research for physical product creation, the studies have so far shown positive results.

APM approaches thrive in a wide range of industries and have an advantageous effect on project success [93]. The most frequently claimed benefits are teamwork, customer integration, productivity, and flexibility [92]. There is still an absence of research on this subject, even if the findings appear to be promising, and additional in-depth case stories and statistical analyzes are needed [60, 88, 93].

APMs are particularly scarce in small and medium-size organizations (SMEs) [95]. In order to implement APM methods, significant changes must be made in an organization, agile professionals must be employed, and employees must be trained. The financial commitment is significant. Small and medium-sized enterprises are less likely to be able to make this transition than large firms. In order to enhance its flexibility and stay competitive in the global market, new ideas and methods are needed.

2.6. Agile Project Management: Main Characteristics. In today’s volatile corporate climate, conventional plan-oriented project management is unproductive and unable to solve difficulties such as increased complexity, unpredictable needs, and high change rates, according to several experts and practitioners [65, 89, 96, 97]. However, the solution to this difficulty is a more flexible project management technique, sometimes called the APM. In order for APM to be flexible and to respond rapidly to changing conditions, the documentation and planning are preserved to a bare minimum [93, 98]; [99]. [94]; [100]. Flexibility supports complexity management, reduces market and technical insecurity, and improves efficiency under unspecified situations. APM is a learning-oriented method

TABLE 2: Lean project management principle (made by researchers).

Lean PM principle	Description
Identify values	The first concern in lean project management is identifying the customer's desired values. Value can be defined as "anything the customer is willing to pay for".
Drawing value processes	When the principle of value flow mapping determines the process of creating value, all those processes that play a role in creating those values are highlighted, and the rest are considered waste. Customer satisfaction can be achieved by reducing waste from the process flow.
Drawing the final process of value	After removing waste processes, creating a flow of value-generating processes is necessary.
Creating traction in the market	Creating traction in the market aims to reduce excess inventory and commodities under construction, regarded as large waste in any industry. In order to reduce this waste (additional inventory and commodity under construction), companies try to understand better when the customer needs the value available.
Continuous improvement	Efforts to continuously improve the implementation of the first four principles are essential. In other words, implementing the above four principles should not be mechanical but best directed through continuous analysis.

[94]. Thanks to numerous tests and continuing user feedback, the project team continuously learns to quickly incorporate new facts and knowledge into the next iteration so that customers get the product they want [101]. Although much attention exists to the flexibility of project management, definitions continue to be unequal, incomplete, and ambiguous [59]. Highsmith's fundamental aims were continuous innovation, product adaptability, shorter delivery times, staff and process accommodation, and reliable results [9]. "The ability to create customer value while addressing unpredictability and dynamism inherent to projects through identification and adjustment of change," he termed agility [62]. Conforto et al. defined APM as "a principle based on a set of principles that aim to simplify, flexible and iterative project management processes so that better performance (cost, time and quality) is achieved with less management effort and a higher level of innovation, with value added for the customer" [102]. Cooper described APM as "a micro-planning or project management technique that enables a development team, including customers, to achieve an operational result quickly" [63]. In 2016, Conforto et al. established a thorough definition of agility by combining a systematic literary evaluation and a strategy for frame semantics. "Agility means that the project team can quickly adjust the project plan to meet the needs of the customer or the stakeholders, the market or technology in an imaginative and dynamic project environment" [60]. They stressed that agility should, rather than a technique or practice, be measured in terms of the performance of a project team. This finding helped to make agility easier and more understandable for numerous companies beyond the software sector. In addition, the ability to swiftly modify the project plan and active customer relationships are the two critical features of the agility to manage the projects.

2.7. Agile Project Management for Nonsoftware Development. APM's success in the software market has resulted in it spreading to other industries, including hardware development, building, and immobilization, education, and services [88, 93]. A recent study [103, 104]; [105] has

reported on hybrid models which incorporate agile and traditional approaches to project management. That allows companies to take advantage of agility while preserving stability using established means [88]. The studies have shown that integrating traditional best practices of project management, such as standardization, with simple, iterative, visual, and agile approaches for project planning and control improves the performance of projects and product development. According to the authors, combining these two approaches can become a realistic model for management in high-tech companies for innovation initiatives [60]. Gutiérrez et al. [106] proposed a paradigm that integrates APM with best practices in innovation administration for agile new product and process development. The technique ensures that genuine product requirements are met, and that project life cycles are minimized while permitting innovation and adaptability. Hannola examined the utility of APM techniques in improving the efficiency of the invention process [107]. APM techniques allow, according to results, many signs of progress in organizational processes, transfer of knowledge, and understanding of customers. Edwards et al. have been looking at implementing Agile-A stage-Gate hybrid in three manufacturing companies [95]. Research has shown that hybrid models are effective in SMEs and that APM technology positively impacts time-to-market, new product development, and project success.

2.8. Agile Project Management and Innovation. Brady and Soderlund [108] literature is starting to reveal a connection between innovation and the management of projects. Brady and Soderlund [108], for example, describe the notion of contingency and how projects that have been breakthroughs lead to novelty while resolving uncertainties and difficulties. Brady and Soderlund [108] looked at the need for an enterprise to develop project skills and how it links to the ability of the enterprise to manage and generate projects innovatively.

According to the PMI, a project is "a brief effort to generate a unique product, service or result" [2017]. According to [109], traditional project management involves

applying know-how, skills, instruments, and procedures to meet project needs. PMI [109]: “Project management is carried out by the implementation and integration of the initiation, planning, monitoring and control and closure processes for project management.” On the other hand, traditional project management methods may, if there is much uncertainty, be unproductive and hinder creativity [110]. Conforto and Amaral [102] examined the creativity of two APM firms and found both traditional and agile methods helpful. According to Conforto and Amaral [102], using project management software with smaller templates and commitment to customers enabled the team to provide what the customer requested. Conforto and Amaral [102] discovered that they could address incertitude in their innovation efforts using the APM technique while saving planning time and improving communication.

As it can be challenging for companies to accelerate their innovations to comprehend the requirements of foreign markets [110], APM advocates [9], Chin [87], and Augustine [62] said that APM should be adapted and flexible in order to deal with insecurity. Clarifying project selection enables companies to improve their innovation processes Kim and Wilemon [111]. In the predevelopment phases of invention, uncertainty is always present. Even firms with an R and D division should consider transforming their cultural heritage into dynamic, creative, adaptable engines for innovation, according to Meyer and Marion [112]. It illustrates that a flexible and adaptive approach to innovation is needed, enabling individuals to learn and explore, leading to new business chances for uncertainty Meyer and Marion [112]. In order to investigate management innovation, APM is essential for a variety of reasons. All project stakeholders are encouraged to communicate openly, innovate, and collaborate in the agile learning environment Schwaber [86], Highsmith [9], and Augustine [62]. In a self-management task team, for instance, members should learn, solve problems, work together, and adapt throughout the project as requirements change [86]. In Meyer and Marion [112], the prototyping of agile development has been successfully incorporated into design businesses. Second, APM is significant since it moves from anticipation (e.g., planning) to adaptation to change (e.g., visualization, exploration, and customer adjustment) Highsmith [9]. Third, the APM technique for apprenticeships and explorations enables all ecosystem players to receive continuous feedback that permits the sharing and exchanging of knowledge. There was a mistake. Fourth, because it assures that each invention gives customer value and uses a consumer or proxy technique Highsmith [9], Augustine [62], and Meyer and Marion [112], APM is critically important. Fifthly, a high frequency of change in requirements and a high degree of uncertainty Highsmith [9] and Balani and Jujuru [113] are employed by an APM strategy. APM, therefore, focuses on customer value and the expansion of innovation by working together to meet the company’s objectives Highsmith [9], Cockburn [57], and Augustine [62].

Although project management offices are recognized as a fundamental pillar to ensure the success of organizations from an organizational point of view, they are not very

popular in the business environment. Most organizations lack decision-making power and the right to enter the scope of review and approval. The projects do not belong to the organization and only act as an information repository of project management standards and methodologies. In recent years, four traditional or waterfall, agile, hybrid, and lean methodologies have been presented as critical project management methodologies, among them, agile project management and lean project management, due to their high capabilities in responding to project changes, timely responses to the requests of project stakeholders, identification and elimination of wastes, value creation, and strong communication between project team members have been given close attention by project-oriented organizations. Parallel to this issue; project management offices must move towards becoming agile and lean so that they can meet the requirements of implementing the agile and lean methodology in project-oriented organizations (Table 3).

2.9. Organization Performance. The organization’s performance is a multidimensional concept with administrative indicators such as financial and marketing index and product suitability that should have proper growth and profit and can be measured by objective or subjective indicators [114]. The company’s performance is defined as achieving organizational and social goals or going beyond them and fulfilling the responsibilities assigned to individuals. Performance management includes three main actions: (1) performance planning; that is, setting goals and guidelines for followers at the beginning of the planning period and developing plans to achieve these goals; (2) training; that is, day-to-day feedback and progress of activities to strengthen performance plans; (3) review of performance; that means total performance evaluation for a specific planning period [115]. Today, every organization seeks a more effective performance due to the increasing competition between organizations and to consider organizational changes [116]. Organization performance, which means state and quality of performance, is, in other words, a general structure that refers to how organizational operations are performed [117] and a large combination of intangible receipts, such as increasing organizational knowledge and objective and actual receipts such as economic and financial results [118].

Organization performance includes all the goals of competitiveness and organizational excellence [17]. It is related to flexibility, cost, speed, reliability, or quality. The organization’s performance can be considered like an umbrella that includes all the concepts relating to the success and the processes of the organization [119]. Apart from how to define the company’s performance, various methods and models have been presented regarding its evaluation, one of the most important and comprehensive of which is the Achieve model that is presented by Hersey and Goldsmith considering the features that this model has in terms of applicability and possibility of receiving information and its capacity in rooting out the problems and determining the strategy to solve them, it is widely employed by researchers

TABLE 3: Traditional versus Agile development differences (made by researchers).

Traditional project management office	NAB project management office-agile
Focus more on operational procedures	Focus on pure strategy and culture-agile
Project management information	Knowledge and the art of project management
Looking at the organization as a sophisticated machine	Looking at the organization as a complex being
Emphasis on control and supervision	Emphasis on automatic coordination and cooperation infrastructure
Preparing a map for the follow-up	Preparation of check compass for orientation
Focus on internal processes	Focus on outputs, customers, and feedback
Duty-oriented	Commercial-process-oriented
Emphasis on predetermined standards and methods	Emphasis on the flexibility of methods and procedures tailored to projects and environments
Defined, repeatable, method management	Flexible and inventor of methods
Focus on performance	Focus on productivity and initiative
Avoiding risk and not accepting it	Exploiting risks
Resource distribution	Optimal resource allocation management
Supervising the payment of projects	Cost-benefit analysis of organization projects
Leadership	The leadership of strategic thinking
Commands and control	Leadership and collaboration
Explicit knowledge management	Tacit knowledge management
Formal communication	Informal communication
Life cycle model of development	The evolutionary delivery model
Aimed at Lange's organization, mechanistic (bureaucratic with considerable formalization)	Organic (adaptable and participatory, enabling cooperative social action) is geared toward small and medium-sized businesses
Lots of control quality plan with late and intensive testing	Requirements, design, and solutions are all under constant scrutiny and testing regularly

in various studies [120]. Performance is one of the basic concepts in management because many management tasks are formed based on it. In other words, the organization's success can be judged using its performance [121]. Consequently, organization performance is a general structure that describes how an organization operates in terms of its state or quality [122].

Performance is a scale widely used in experimental studies to evaluate the economic success of a company. To do such, different indicators have been used, and no fixed or similar procedure can be seen in this field. However, the usual procedure is that some performance components are selected at first. Then each of them is evaluated objectively or mentally and using a question. Mental indicators are judgmental indicators measured by internal or external respondents and often include both financial and non-financial scales and provide a detailed description of effectiveness [123].

2.10. Success of Projects is Influenced by Project Management Performance. Ineffective traditional project management solutions focus primarily on cost, time, quality, and technical needs [124, 125]. A typical technique focuses on the expectations of several stakeholders [126–128]. Because the demands of stakeholders are frequently challenging to manage and estimate [127, 129], resistance has occasionally resulted in a new set of obstacles when determining models to measure successes, owing to commercial pressures [130]. Project success depends on understanding the relevance of PM and the positive relationship between PM performance and success [126, 131]. The PM literature suggests that Project success depends on PM comprehension. They argue further that this function needs to be seen within the company's overall strategy and long-term objectives [33]. According to the discussion preceding, there are independent, but linked notions for project success, and PM performance and a good connection is sought between these.

2.11. Business Enterprises of Small and Medium Size. There is disagreement regarding what constitutes a small business [132]. Small, medium, and microenterprises are classified as follows by the European Commission [133]:

- (i) In the medium category, you have fewer than 250 employees and a turnover of less than €50 million
- (ii) As defined by the Small Business Administration, a small business includes less than 50 employees with a turnover under €10 million
- (iii) Micro: a company with fewer than ten people and a revenue of less than two million dollars.

Enterprise Ireland [134], Ireland's industrial development agency, categorizes three types of SMEs of interest in its 2008–2013 strategy as follows:

- (i) Companies with global sales of more than €20 million

- (ii) A company with a global sales volume exceeding €5 million

- (iii) High potential start-ups, or HPSUs

Differences between SMEs and larger enterprises were noted by Ghobadian and Gallear [134]. They identified the following in particular:

- (i) A small business requires simple planning, control, and informal reporting mechanisms
- (ii) A lack of uniformity in SMEs' procedures and idealistic decision-making are common traits
- (iii) In spite of the low level of specialization and multitasking, SMEs have a high degree of innovation
- (iv) People: due to the high cost of failure, people prefer tried and true methods

The role played by small and medium-sized enterprises (SMEs) in economic and social development cannot be overstated [132]. SMEs account for 99.8% of all businesses in the European Union. In the private sector, they employ 70% of workers and produce 56% of the GDP. Almost one-fifth of the economy is accounted for by projects, according to Turner [135]. Although massive infrastructure projects are taking center stage in Western nations, this amount exceeds the amount spent on them [135–137]. Custom and tailor-made items, innovation, and growth management are examples of projects in small and medium-sized businesses. The new and upgraded items account for 25% of the sales of SMEs in Ireland, according to Ledwith [138]. SMEs, therefore, represent 14% of the innovation of the economy. In order to achieve this progress, 3% of SME's revenues are spent on innovation. The efficient and effective deployment of this money to ensure that SMEs meet their economic objectives and operate as growth engines is crucial for future economic growth. Nowadays, small and medium-sized businesses play an integral role in the process of market transformation in developing countries. These businesses play an important role in creating new methods that will lead to technological changes and incensement in production capacity [139]. It can be said that such units are looking for changes and competition because they are changing the overall structure of the market [140]; Moreover, the creation and development of small and medium-sized businesses is an important policy in creating new jobs, accelerating the improvement of the economic situation and the growth of countries, and that is why special attention should be paid to small and medium-sized businesses; Because small and medium-sized businesses are able to adapt themselves to today's environment; Also, their structure provides them the possibility to adapting themselves to extensive and comprehensive changes and developments and makes their preservation and survival possible [141]. A small and medium-sized business is a key component of economic growth and development in Iran. In Iran, 90% of businesses have fewer than 50 employees, according to the Iran Small Industries and Industrial Parks Organization [142].

Pathology of the companies, studying the reasons for their success or failure, and providing a local model of success for small and medium-sized businesses can significantly help improve their efficiency, performance, and competitiveness in the international market. Although more research has been carried out in the small and medium-sized businesses' literature, no comprehensive research has been carried out so far on the mechanisms of development of this type of business and the prioritization of these mechanisms. The mechanisms that small and medium-sized businesses use to achieve growth and development is a new subject that has received little attention in the growth literature. Hence, the present study focuses more on this issue. Identifying these mechanisms can help policymakers and policy-making organizations take targeted and effective actions in relation to these companies. It can also help business owners focus on key actions and can be leverage to help them achieve growth and development and to improve their business performance [143]. The development and prosperity of a large part of the economy of different societies in today's world depend on the mechanisms by which new businesses are formed and developed [144]. Business development mechanisms are a set of solutions that facilitate the development of small and medium-sized businesses in society and provide conditions for entrepreneurs to improve their competitive position in the market [139]. Meanwhile, entrepreneurs in any society play a key role in creating these businesses, and entrepreneurship is a powerful tool for understanding opportunities that using them can lead to solving problems such as employment, lack of creative and dynamic manpower, low productivity, low quality of products and services, economic downturn, and increased competition [145]. Nowadays, the economy of developed countries is based on small and medium-sized businesses, and entrepreneurs generally set up these companies that usually do not have the funds needed to develop their designs and ideas. These companies have a significant share in the development of advanced industries and job creation and have high flexibility compared to large companies [146].

In addition, small and medium-sized businesses have many other benefits. Small businesses have more flexibility with low public costs and limited machine capacity [147]. By creating regular communication networks and systematic cooperation with each other, these industries, while achieving mass production indicators, have the advantages of small businesses such as innovation and diversity [148]. The greatest benefit of the growth of small and medium-sized businesses is that they help the employment sector. Therefore, many governments are convinced that they should provide a platform for growth and development for small and medium units and support them [149].

Amboise and Muldowney consider small and medium-sized businesses as economic units that can be easily established and managed by an independent person (entrepreneur). The industry and trade unit uses the following divisions for statistical purposes: (1) microbusinesses: 1 to 9 people (manpower); (2) small businesses: 10 to 99 people (including small companies); (3) medium-sized businesses: 100 to 199 people; (4) large businesses: more than 200 people. The importance of

small and medium-sized industries in long-term economic growth and stability depends on their size and structure, which allow them to be flexible in certain circumstances and be able to cope with adverse economic conditions. Small and medium-sized industries are more demanding than large industries and therefore require low investment costs to create new jobs [150]. Large industries are highly affected by small and medium-sized industries, and their efficiency is highly under influence of them. One of the important conditions for sustainable success in today's world economy is the expansion of these industries and they play an important role in stabilizing incomes, economic growth, and employment in society [151]. Small manufacturing enterprises possess considerable intangible assets but usually, have limited capital and resources to support production and marketing; In addition, the market for their products is constantly changing, and it is globalized so their ability to acquire and manage scarce resources for survival is limited. Despite this limitation, small business failures have become lower than before [152]. Therefore, the development of small and medium-sized enterprises is the key to the economic development of the country. The global economy is influenced by small and medium-sized businesses in four ways: entrepreneurship, innovation, the change in technology, and the creation of jobs and revenue. In addition, global competition has intensified, uncertainty has increased, and demand for various products has increased, causing these industries to receive more attention. Although large industries are still receiving more attention from economic policymakers because of their advantages because of mass scale, the scope of production, experience, and organizational effect, the advantages of small and medium-sized industries have made them the first choice in the production of most of the goods.

In the meantime, obtaining the required funds and other necessities to start and continue these businesses has always been a problem for entrepreneurs. Entrepreneurs are discouraged from managing their businesses due to the long process of obtaining the needed funds. Different financial resources are available at different stages of the entrepreneurs' life cycle, and each stage has its own characteristics. A wide range of financial resources (with different possibilities and costs) are available to entrepreneurs [153]. The impact of small and medium-sized businesses on the economy of countries has always been studied by various experts, and the results show that the role of small and medium-sized businesses is very great due to their huge impact on the national economy of countries [154]. According to studies, such businesses can respond quickly to market changes and customer needs and can easily adapt themselves to new conditions. In fact, they have dynamic behavior in the face of changing environmental conditions. Various factors such as favorable environment, financial resources, marketing and sales activities, and proper use of information technology, affect the performance and sustainability of small and medium-sized enterprises [155]. In addition, small and medium-sized enterprises having growth traits face challenges such as the need for quick decision-making by managers, the rapid expansion of professional needs and expectations, the need to recruit and train new manpower, constant changes in enterprises, and resource limitations [155].

2.12. Project Management in SMEs. In terms of project management, we anticipate SMEs to follow the Ghobadian and Gallea restrictions (1997). Facilities are expected for simplified project planning and control systems and reporting procedures. We do not expect them to adopt certain major approaches, such as PRINCE, as both are too bureaucratic and provide structures that are too formalized for their requirements. We expect employees, especially in smaller companies, to take on various roles in projects [156]. Turner et al. corroborated these predictions (2009). Therefore, projects are managed by those who have other key duties. Therefore, tiny and micro-sized companies do not use well-known tools and processes for project management. Ledwith [138] conducted first investigations on methods of project management in Ireland's high-tech and service industries in SMEs. They found that SMEs should select an organized approach to project management by identifying as follows:

- (i) their long-term objectives
- (ii) success criteria and key performance metrics that are appropriate in support of their initiatives
- (iii) As a result of which relevant success factors
- (iv) because of which proper project management tools and practices are required, which ones match the above-mentioned criteria?

2.13. Hypotheses and Conceptual Model of the Study. This study investigated how innovation affects the performance of small and medium-sized companies and how agile project management mediates these effects. Examining the theoretical and experimental background of the study and taking into consideration the results of previous research of Ju et al. [5], Niewöhner et al. [156], Nemkova [157], Singh et al. [61], Arranz et al. [30], Andersson et al. [33]; Ravichandran [158], Magno et al. [101], and Yang and Liu [73]; the following hypotheses are developed for this study:

The main hypothesis as follows:

- (i) Innovation affects the performance of companies in small businesses
- (ii) LAPMO mediates the correlation between innovation and company performance in small and medium-sized businesses
- (iii) Subhypotheses
- (iv) Organizational innovation affects the performance of companies in small and medium-sized businesses
- (v) Open innovation affects the performance of companies in small and medium-sized businesses
- (vi) Innovation capabilities affect company performance in small and medium-sized businesses
- (vii) Organizational innovation affects LAPMO in small and medium-sized businesses
- (viii) Open innovation affects LAPMO in small and medium-sized businesses

- (ix) Innovation capabilities affect LAPMO in small and medium-sized businesses
- (x) LAPMO mediates the correlation between innovation and company performance in small and medium-sized businesses.

Based on theoretical and experimental backgrounds, a model and conceptual framework have been developed in order to explain the basic variables of the research subject. In Figure 2, we present the study's conceptual model.

3. Methodology of Research

A major objective of the current study is to evaluate the effectiveness of scientific theories regarding innovation's impact on the performance of small and medium-sized businesses, utilizing LAPMO as a mediator, as well as to develop applied knowledge regarding correlation quality and variable impact. This study is field research because of the real-world setting and large sample size, as well as correlational research because the data are collected based on links and correlations between variables. This study's statistical population includes SMBs operating in 2018-2019. There are 150 companies involved in the project. The Krejcie and Morgan table is one method of determining sample size. To conduct this study, 108 companies were randomly selected from a table that provided the researcher with a sufficient number of samples using a simple random sampling procedure. To collect data for the current study, the researchers developed a questionnaire. There are four ways to assess the validity of a questionnaire: face validity, concurrent validity, predictive validity, and concept validity.

A questionnaire's validity was examined using both faces (content) and construct (convergent) validity. It was sent to some management university professors to see if the research questionnaire was valid based on the components collected from previous valid studies, as well as references to appropriate sources, to assess the questionnaire's face validity. The face validity of the questionnaires was certified after academics and professionals reviewed and evaluated the questions. Factor loading was used to evaluate concept validity in this study. Factor analysis can only be carried out if the provided data are suitable for analysis. Do we have enough data for factor analysis? For this purpose, KMO indexes and Bartlett tests are used. To ensure adequate sampling, the KMO test must be conducted before factor analysis can be validated. For this index, a value of over 0.6 is considered ideal by Momeni [159].

Table 4 and Figure 3 show that each variable has a sampling adequacy index higher than 0.6, and also Table 5 shows that the general model has a KMO higher than 0.6 as well. Additionally, Bartlett's test was found to be significant at a level lower than the amount of research error (0.05), indicating that the sampling of the model was adequate.

The common values of the items were analyzed after the sample size had been confirmed, and those with a value of less than 0.30 were removed from the study because they were incompatible with other items. To quantify

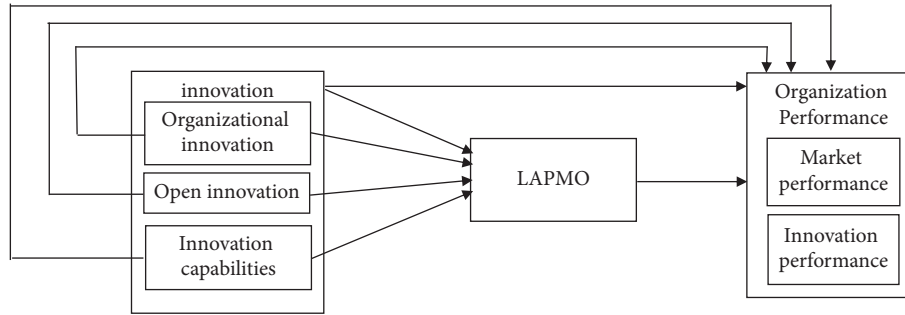


FIGURE 2: The conceptual model of the study (made by researchers).

TABLE 4: Reliability statistics of the research variables (made by researchers).

Variable	Innovation	Organization innovation	Open innovation	Innovation capabilities	LAPMO	Performance
Sampling adequacy index	0.711	0.850	0.868	0.888	0.833	0.700
Significance factor	$p \leq 0.001$	$p \leq 0.001$	$p \leq 0.001$	$p \leq 0.001$	$p \leq 0.001$	$p \leq 0.001$

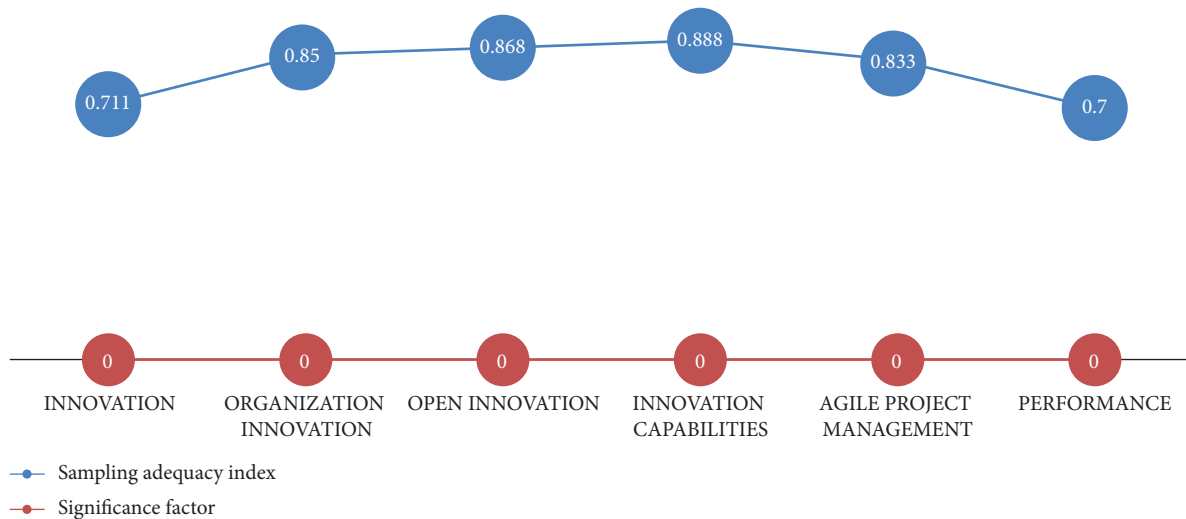


FIGURE 3: Reliability statistics of the research variables (made by researchers).

TABLE 5: Statistics of the adequacy of general model data (made by researchers).

Sampling quality index	0.759
Chi-squared	622.633
Sphericity Bartlett's test	Degrees of freedom
	3
	Significance
	$p \leq 0.001$

dependability, the combined reliability index was also generated in addition to Cronbach's alpha coefficient.

4. Data Analyses

Two broad steps were performed by Smart PLS software to assess this study's conceptual model: "model fit test" and "hypothesis test." A model fit examination is divided into three phases: validity and reliability of the measurement model are examined in the first phase. Secondly, the

relationship between variables is calculated in the structural model. The third step involves testing the overall fit of the model. Next, it is possible to determine whether the model meets the research hypotheses on an overall basis.

4.1. Measurement Model Evaluation. In the first step, factor load coefficients are used to test the research model. The weak relation is ignored if the factor load is less than 0.3. It is acceptable to have a factor load between 0.3 and 0.6, and it is highly desirable to have a factor load greater than 0.6. Figure 4 shows a structural equation model to estimate the factor load in the standard mode. All indices with factor loads over 0.4 are desirable according to the results of the test.

Cronbach's alpha coefficient is used to assess the reliability of surveys and was developed by Cronbach. Because of the questionnaire's dependability, remeasurements of the assessed attributes under the same conditions and at

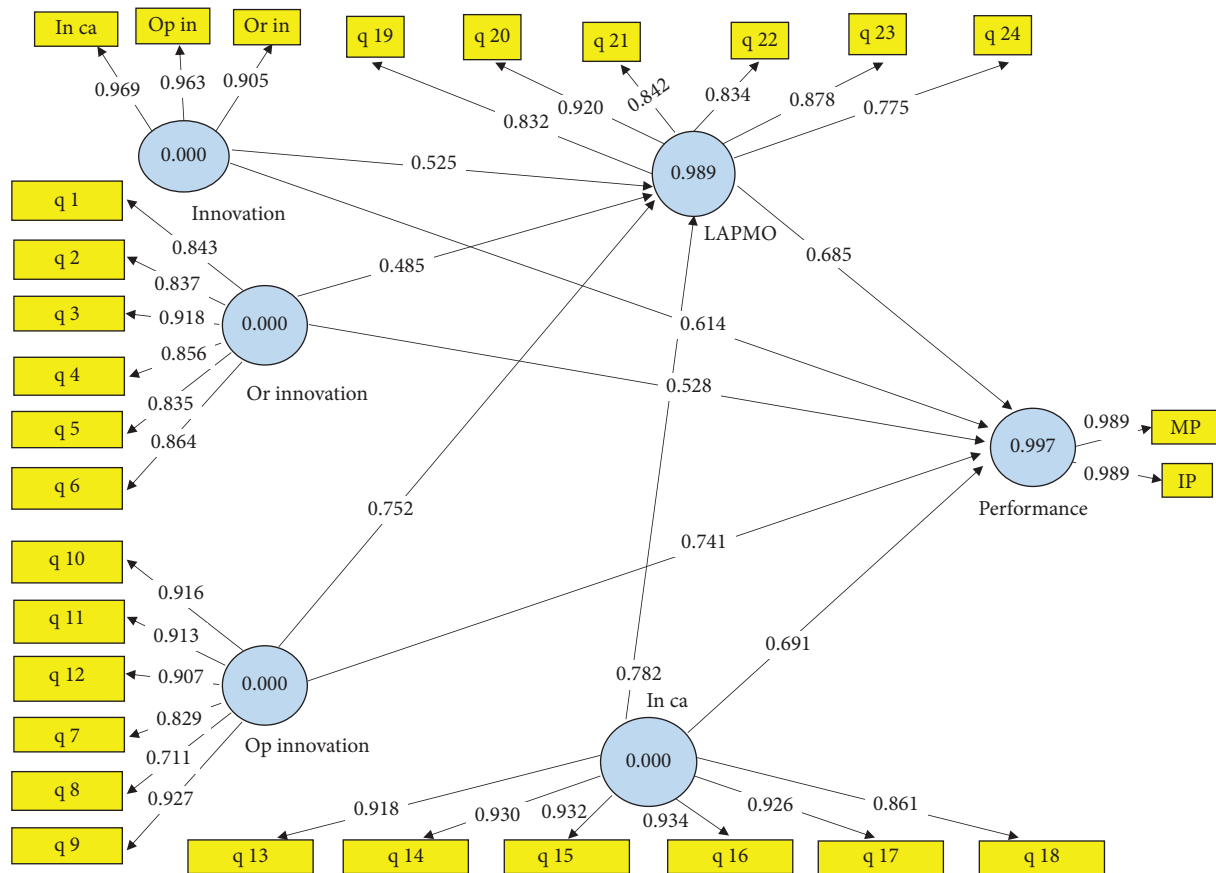


FIGURE 4: An estimation of standard factor load for the structural equation model of the study (made by researchers).

different times will produce almost identical findings. Table 5 contains Cronbach’s alpha values calculated using Smart PLS software for the variables investigated. This coefficient is more appropriate the closer it is to one, as previously stated. As a result of considering both independent and dependent variables, the questionnaire’s reliability was satisfactory.

An assessment of composite reliability is based on the correlation between variables’ indices rather than on their absolute values and is a more recent standard than Cronbach’s alpha. The internal stability of the model is satisfactory if the total reliability for each variable exceeds 0.70. Each study variable is described in Table 5. In terms of composite reliability, all variables have a score of at least 0.70, as shown in Table 5. The convergent validity of the model was assessed using the extracted mean-variance. A model’s fit is determined by the degree of correlation between its attributes and its structure. The stronger the correlation, the better the fit. A reflective model uses this index, but a hybrid model does not. Fornell and Larcker [160] proposed the extracted mean-variance criteria for testing convergent validity and claimed that the critical value of this criterion is 0.5. This implies that convergent validity is acceptable if the mean value of the extracted variance is more than 0.5. Table 5 and Figure 5 provide detailed information about the research model criteria. All variables have a mean-variance greater than 0.5, confirming the model’s convergent validity.

A divergent validity assessment was conducted using Fornell and Larcker criteria. When compared to other variables, this criterion evaluates how closely a variable is linked to its variables. It can be shown that one variable is more likely to interact with its indicators than others if divergent validity is acceptable. Fornell and Larcker believe that divergent validity is acceptable when the difference between each variable’s mean and its common variance is greater than the difference between the variables. A matrix with the correlation coefficients and square roots of the variance values of each variable is used in Smart PLS software to calculate this. Below is a table showing the matching matrices for the variables. Models with sufficient divergent validity have main diagonals that are larger than their lower values. The model’s divergent validity is demonstrated in Table 6 and Figure 6 by the fact that all prime diameter values are greater than their respective bottom column numbers.

4.2. Structural Model Evaluation. Models that illustrate latent variables’ relationships are known as structural models or external models. Only hidden variables and their associations are examined in this section, not the questions (indicators). The structural model is evaluated according to several criteria, each of which is described below.

In assessing the connection between variables in a model, the significance numbers t are the most

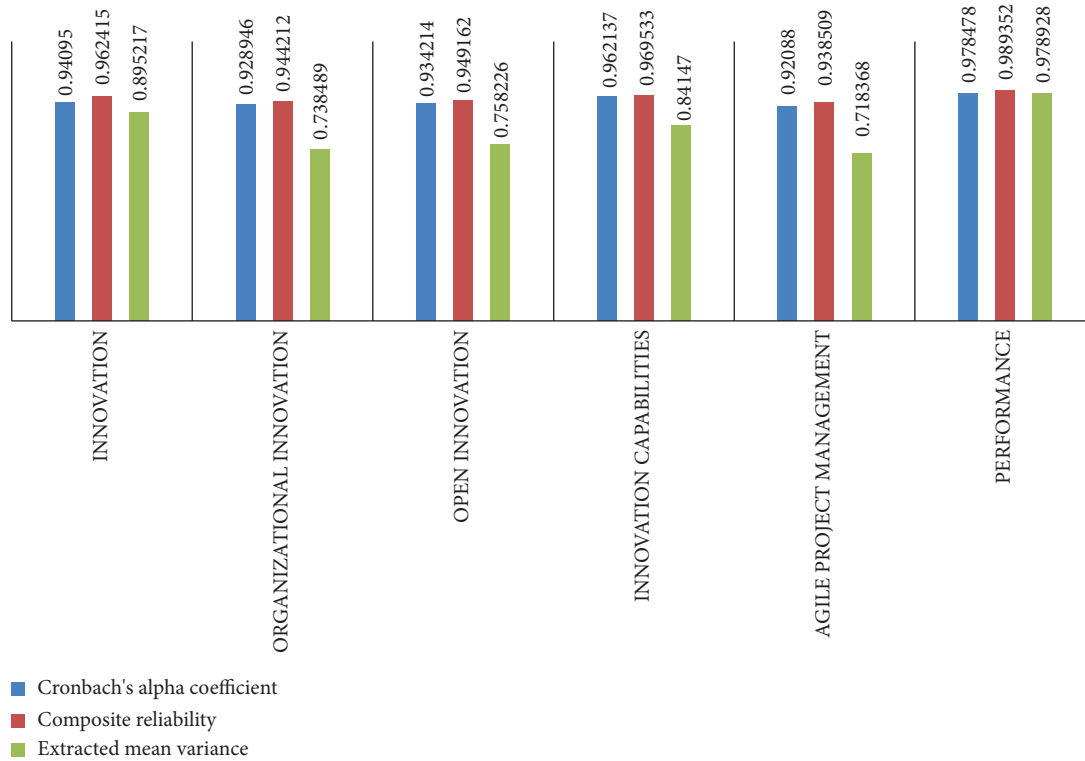


FIGURE 5: Cronbach's alpha coefficient values, composite reliability, and extracted mean-variance (made by researchers).

TABLE 6: Cronbach's alpha coefficient values, composite reliability, and extracted mean-variance (made by researchers).

Element	Cronbach's alpha coefficient	Composite reliability	Extracted mean-variance
Innovation	0.940950	0.962415	0.895217
Organizational innovation	0.928946	0.944212	0.738489
Open innovation	0.934214	0.949162	0.758226
Innovation capabilities	0.962137	0.969533	0.841470
LAPMO	0.920880	0.938509	0.718368
Performance	0.978478	0.989352	0.978928

fundamental criteria. A value greater than 1.96 indicates a valid relationship between the variables, confirming the relationship with 95 percent confidence. A t-coefficient significance test is shown in Figure 7 for the conceptual model of the study. As indicated by the arrows, the significance number t corresponds to the estimated values. Since the T-values presented in the figure are all greater than 1.96, the structural equation model includes all questions, and none need to be eliminated at a significance level of 95%.

An independent variable's coefficient of determination shows its effect on a dependent variable. In the case of the independent variable, the coefficient of determination is zero since it is only calculated for the dependent variable. Models with high coefficients of determination fit better when the dependent variables are higher. The criterion values for weak, medium, and strong values of R2 are 0.19, 0.35, and 0.67, respectively, according to Chin [161]. Internal path models with an endogenous latent variable (dependent variable) and a few extrinsic latent variables (one or two) are acceptable at the intermediate level if their structures describe an endogenous latent variable. However, the

coefficient of determination must be significant, at least if the latent endogenous variable depends on several latent exogenous variables. Research-dependent variables are shown in Table 6 with their coefficients of determination. Chin [161] categorizes research variables according to their coefficients of determination and shows that these variables have strong coefficients of determination, as can be seen.

The capacity of a structural model to anticipate is another criterion for evaluating it. Predictive connections are primarily determined by the Q2 index. Stone [162] proposed this criterion for measuring a model's predictive ability. It states that the model should be able to predict endogenous representations of latent variables using the blindfolding (BF) approach. A reflecting model is used to measure endogenous latent variables using the BF approach. Q2 indicates how well the model's other variables relate to the dependent variable if the value of Q2 becomes zero or less than zero. An endogenous variable with a greater value than zero has a predictive relationship with its independent variables [163]. According to Davari and Rezazadeh [164], 0.02, 0.15, and 0.35 indicate poor, medium, and great

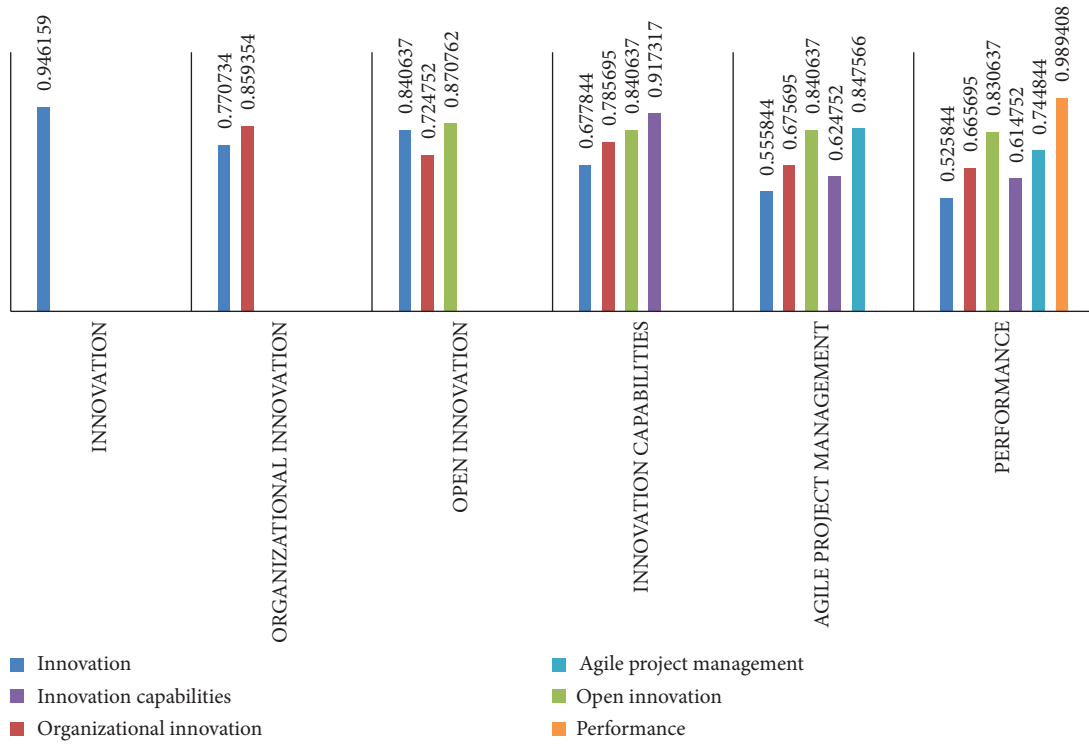


FIGURE 6: Divergent reliability of the model (made by researchers).

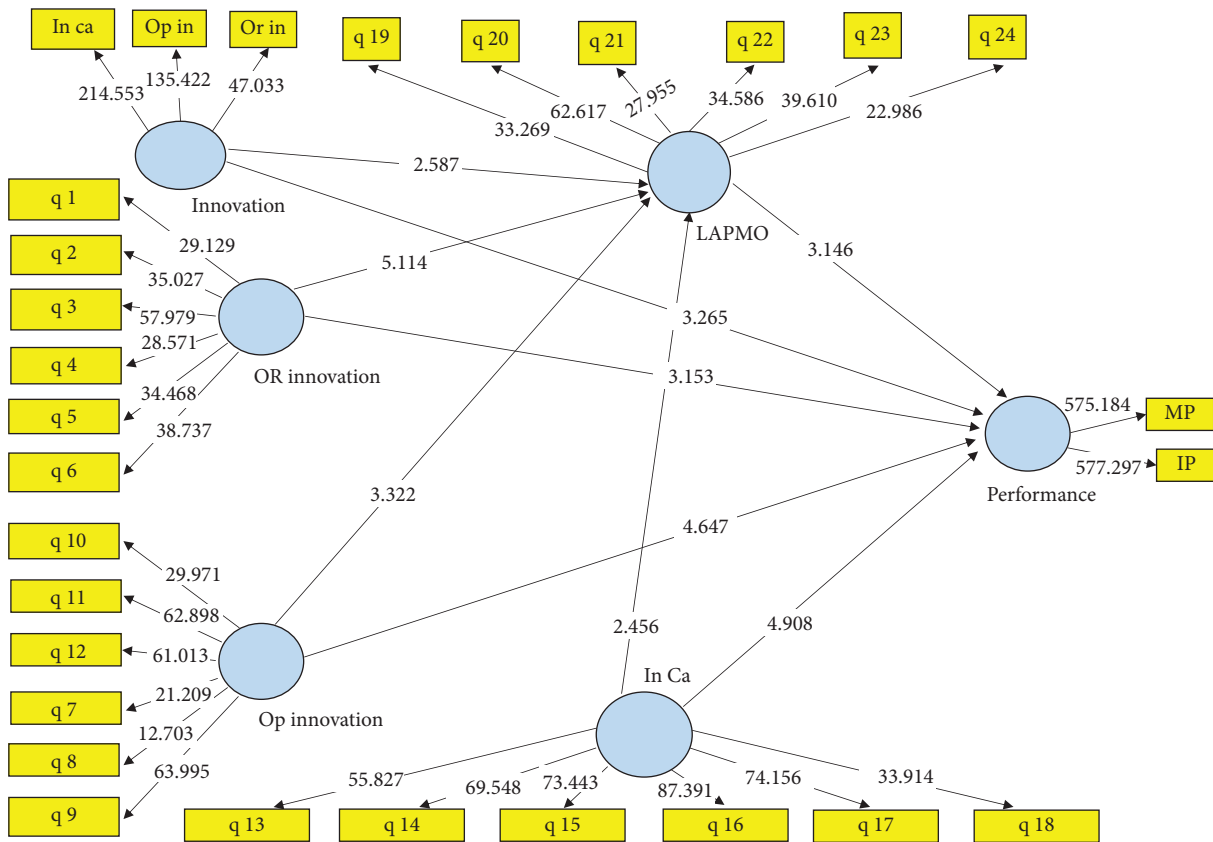


FIGURE 7: Structural equation model of the study in significance coefficients of t-statistic (made by researchers).

TABLE 7: Divergent reliability of the model (made by researchers).

Variable	Innovation	Organizational innovation	Open innovation	Innovation capabilities	LAPMO	Performance
Innovation	0.946159					
Organizational innovation	0.770734	0.859354				
Open innovation	0.840637	0.724752	0.870762			
Innovation capabilities	0.677844	0.785695	0.840637	0.917317		
LAPMO	0.555844	0.675695	0.840637	0.624752	0.847566	
Performance	0.525844	0.665695	0.830637	0.614752	0.744844	0.989408

predictive abilities in relation to the variable in question. According to Table 7, the model shows the high predictive ability for the dependent variables according to the value of Q2.

4.3. Evaluation of General Model. Compatibility testing of the general model is completed once it is established that its measurements and structural models are compatible. We use goodness fit index to determine the model's overall fit. We can also use this index conceptually when the measurement model is reflective due to its dependence on the communality mean [163]. The criteria was proposed by Tenenhaus et al. [164, 165] (Table 7):

Moreover, the researcher evaluated the structural model's fit and the predictability of the model using the coefficient of determination, as well as the Q2 criterion. For the overall model, the GOF criterion was applied, and the results are shown in Table 8.

This research model has a GOF of 0.903186, which indicates a very good and suitable overall fit. Based on the strong fit of the overall model, the research hypotheses can now be examined (see Table 9).

4.4. Test of the Model Hypotheses

4.4.1. Small Businesses' Performance Is Influenced by Innovation. Based on Figure 2, we can conclude that the path coefficient at the 0.05 level of significance is significant at the level of significance at examining the effects of innovation on small business performance, as shown by (0.614), and the T -value is equal to 3.265; in other words, innovation has a significant effect on the performance of small businesses, confirming the null hypothesis.

4.4.2. Second, LAPMO Promotes Innovation within Small Businesses. According to Figure 2, innovation and LAPMO have a path coefficient of 0.528, whereas LAPMO and the performance of small businesses have a path coefficient of 0.685. In small businesses, innovation is significantly related to company performance based on the significance of the T -value for the relationship between LAPMO and company performance. Thus, the second key idea is confirmed.

Organizational innovation affects the performance of small and medium-sized firms.

According to Figure 2, when examining the effects of organizational innovation on small and medium-sized businesses' performance, the estimated path coefficient is (0.528). Since the T -Value is 3.153, we can conclude that this

path coefficient is significant at the 0.05 level. In small and medium-sized businesses, organizational innovation is significantly associated with their performance.

4.4.3. Small and Medium-Sized Enterprises Are Influenced by Open Innovation. Based on Figure 2, an estimated path coefficient of (0.741) for the open innovation variable on small and medium-sized business performance is shown in Figure 2, which indicates that at 0.05 significance, this path coefficient is significant at the T -Value of 4.647. As a result, open innovation is significantly associated with the performance of small and medium-sized businesses; therefore, the second subhypothesis is supported.

4.4.4. The Third Subhypothesis Is That Small and Medium-Sized Firms Perform Better When They Have Innovation Capabilities. According to Figure 2, the estimated path coefficient for examining the variable effects of innovation capabilities on company performance in small and medium-sized businesses is (0.691), and since this path coefficient has a T -Value of 4.908, we can conclude that at a 0.05 significance level, this path coefficient is statistically significant; that is, innovation capabilities have a significant correlation to company performance in small and medium-sized businesses.

In terms of LAPMO, organizational innovation affects small and medium-sized companies.

According to Figure 2, the predicted path coefficient for organizational innovation variable on LAPMO in small and medium-sized enterprises is (0.485). With a T -value of 5.114, it is apparent that organizational innovation in small and medium-sized enterprises has a substantial positive relationship with LAPMO; hence, the fourth subhypothesis is supported.

4.4.5. Open Innovation Has a Significant Impact on Small and Medium-Sized Companies. Based on Figure 2, the calculated path coefficient is (0.752) for evaluating the impact of open innovation on LAPMO in small and medium-sized enterprises. At the 0.05 level of error, the T -value of 3.322 indicates a significant relationship between open innovation and LPMO among small and medium-sized companies; hence, the fifth subhypothesis holds.

4.4.6. LAPMO Is Influenced by the Innovation Skills of Small and Medium-Sized Firms. According to Figure 2, the predicted path coefficient for small and medium-sized

TABLE 8: Commonality values and coefficients of determination of dependent variables of the model (made by researchers).

Variables	Communality values	Coefficients of determination
Innovation	0.895217	—
Organizational innovation	0.738489	—
Open innovation	0.758926	—
Innovation capabilities	0.841470	—
LAPMO	0.718368	0.988678
Performance	0.978928	0.996628

TABLE 9: Report related to the R2 criterion, Q2 criterion, and GOF criterion [87].

Variable	GOF				Criterion Q ²			R2 criterion	
	0.36 strong	0.25 medium	0.01 weak	0.35 strong	0.15 medium	0.02 weak	0.67 strong	0.33 medium	0.19 weak
LAPMO					0.702267			0.988678	
Performance		0.903186			0.967429			0.996628	

enterprises is (0.782) when examining the variable impacts of innovation capabilities. At the 0.05 level of error, this route coefficient is statistically significant at T -value 2,456; therefore, innovation capabilities in small and medium-sized enterprises strongly relate to LAPMO, supporting the Sixth subhypothesis.

4.4.7. A Subhypothesis 7 Suggests That LAPMO Modulates the Relationship between Organizational Innovation and Business Success in Small Companies. Figure 2 demonstrates that LAPMO and organizational innovation have a path coefficient of 0.485, which is different from LAPMO and business performance for small businesses, in which the path coefficient is 0.685. Accordingly, the T -Value indicates a significant relationship between organizational innovation and LAPMO in small businesses, based on the significance of the T -Value. Thus, the seventh subhypothesis is confirmed.

4.4.8. As a Mediator between Open Innovation and Corporate Success, LAPMO Plays a Crucial Role in Small Businesses. A path coefficient of 0.752 was found to be associated with open innovation and LAPMO, while 0.685 was found to be associated with LAPMO and company performance in small businesses. Open innovation and company performance in small businesses are significantly correlated based on the T -Value, which is significant in determining the relationship between LAPMO and company performance. This confirms the ninth subhypothesis.

Firm performance and innovation capability are linked through LAPMO, according to hypothesis 9.

Based on Figure 2, innovation capabilities and LAPMO have a path coefficient of 0.782, while LAPMO and small business performance have a path coefficient of 0.685. It can be concluded that there is a significant relationship between innovation capabilities and LAPMO when considering the T -Value, which is significant for the relationship between LAPMO and company performance in small businesses.

5. Discussion

Small and medium-sized firms require LAPMO because of the impressive results they achieve. LAPMO embraces change as a natural and unavoidable part of organizational life and encourages small and medium-sized businesses to learn from it. It views change not as a separate area or a frightening occurrence but as something that must be embraced as part of living human systems. In unanticipated events, market possibilities, and client demands, LAPMO is nimble, adaptive, and conscientious. This type of business has processes and structures that enable speed, adaptability, and robustness, along with an organized and coordinated system that is capable of achieving competitive performance in a dynamic and unpredictable environment that is not incompatible with the organization's current functions. In order to develop new inventions, characteristics such as adaptability and responsiveness to changes in the corporate environment may be crucial. As a result, this study examines how innovation impacts small and medium-sized companies' performance, with agile project management serving as the mediator. With agile project management serving as a mediator, what impact does innovation have on the performance of small and medium-sized firms? Small and medium-sized companies were recruited and surveyed to answer this question. A partial least squares method of structural equation modeling was used to analyze the acquired data. Small and medium businesses perform better when they innovate, and LAPMO mediates that association. Corporate performance is affected by organizational innovation, open innovation, and innovation capabilities in small firms. The level of LAPMO is also affected by the level of organizational innovation, the level of open innovation, and the level of innovation skills in small and medium-sized businesses. Small and medium-sized businesses are more likely to succeed when organizations are innovative, open to innovation, and have innovation skills. The current study's findings are consistent with those of Ju et al. [5]; Niewohner et al. [156]; Nemkova [157]; Kumar et al. [61]; Arranz et al. [30]; Andersson et al. [33]; Ravichandran [158]; Magno et al. [101]; Yang and Liu [73]; and Ravichandran [158].

The research conducted in this study will allow for a systematic examination of the relationship between innovation, project agility, and business performance, as well as extending research into the direct relationship between innovation capability, project agility, and corporate performance. The paper argues that project agility mediates the link between corporate innovation and business success based on case studies and theoretical inferences about the organizational process. The following six research topics are recommended based on this fundamental principle. Project agility's impact on firms was the focus of the original investigation. An organization's innovativeness was examined in the second study.

Project agility and organizational performance were the last topics discussed. As a fourth concern, we wanted to enhance the innovation-driven agility of projects and the performance of the company by using a "pathways mechanism." Project agility and business performance were the third issues. Fourth, the "path mechanism" for increasing the project's agility and performance was of concern. What is the relationship between innovation capacity and project agility, as well as innovation capacity and organizational performance as influenced by the innovation environment? Lastly, external variables affected the relationship between project agility and company performance. According to these research questions, the following results were found. The performance of a company is initially enhanced by project agility. The greater a company's capacity to innovate, the better its performance (i.e., the more innovative it is, the better it performs). Secondly, we found that innovation ability has a positive effect on a company's ability to handle projects with agility. Consequently, the greater the influence of agile management, the greater the potential for innovation. Lastly, our study shows that project agility is an intermediary between business innovation skills and firm performance based on how project agility affects it. Alternately, it is the theory that innovation can increase the agility of a project and improve the long-term performance of the company. The use of cutting-edge technology is therefore recommended for managers of small and medium-sized companies. The reason for this might be the use of specialized market research teams. The organization should also build and use production lines so that it can develop items with new features with the flexibility it needs. The findings of these analyzes should be shared with the appropriate departments after teams have been formed to investigate the reasons for a product or project's success or failure. Additionally, other departments should be given adequate power to develop and implement innovative ideas. A manager in a small or medium-sized business must be flexible in his or her approach.

6. Conclusion

A person should not focus solely on one strategy when evaluating strategies for achieving a particular objective method should be chosen, but they should also consider other methods. During their studies, researchers are

constantly confronted with limitations. Access to statistics and data is one of the most important aspects of research. It has become increasingly difficult for the nation to access research materials such as books, journals, statistics, and databases. This difficulty is caused by the lack of access to either of the research resources. A weak culture prevents people and institutions from sharing their discoveries, resulting in the privatizing of these resources. In addition, undesirable variables resulting from unique research schemes and procedures could compromise the study's validity from an internal and external perspective. Such variables are often difficult to control or eliminate in behavioral science studies. To minimize their impact, researchers attempt to predict, recognize, and take all measures necessary to minimize them. There are several drawbacks to this research:

- (1) Scientific resources are inaccessible: In this discipline, there are very few and limited scientific resources that are directly relevant to the topic of research (at least in Persian). Due to the difficulty of translating and integrating Latin literature into Persian, this requires the use of Latin materials, which presents a number of additional challenges in college, including limited Internet access.
- (2) Researchers were unable to find similar studies in this field despite much effort
- (3) The students' research requires spending financial costs at various stages, just as any research work
- (4) Administrations and institutions, as well as officials, do not contribute adequately to the study
- (5) There is uncertainty about the accuracy of the answers provided by the population in the study to the questionnaire questions
- (6) There is uncertainty about the exact understanding of the questionnaire questions among the respondents
- (7) There was a lack of familiarity and complete knowledge of the subject of the study among the research population
- (8) There was a lack of cooperation from some management and individuals when it came to distributing and collecting questionnaires
- (9) Some questionnaires did not return and disappeared due to the distance, making redistribution time-consuming.

Data Availability

Data are available and can be provided over the emails querying directly to the author at the corresponding author (a_sh_edu@yahoo.com).

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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