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Some factors affecting innovation activities of enterprises in Nghe An Province, Vietnam

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Abstract

Innovation plays an important role in the operation of enterprises. It helps enterprises develop competitiveness, improve products and services, enhance product quality, and increase profits. This study employs quantitative methods to evaluate the factors affecting the innovation activities of enterprises in Vinh City, Nghe An Province, Vietnam. The study surveyed 150 enterprises operating in Vinh City, Nghe An Province. The OLS regression model was used to assess the impact of each factor on the innovation activities of enterprises. The research results indicate that the key factors positively influencing the innovation activities of enterprises in Vinh City, Nghe An Province, include legal factors, human resources, regional connectivity, support services, technological factors, and infrastructure. Based on the research findings, the authors provide several recommendations for businesses in Vinh City to further enhance their innovation activities, thereby promoting the economic development of Nghe An Province.

Keywords: Connection, Enterprise, Human Resources, Innovation, Institution.

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1. Introduction

Innovation is an indispensable part of the development of today's enterprises. It helps enterprises enhance their competitiveness through new products and services and improve existing ones, thereby increasing product quality and reducing production costs, which enables better competition with domestic and international rivals. In Vietnam, enterprises play a crucial role in the national economy, contributing 36% of added value. The innovation activities of Vietnamese enterprises are highly regarded. According to the World Intellectual Property Organization (WIPO), Vietnam ranked 44th out of 132 countries and economies in the global innovation index for 2021. At the 13th National Party Congress, it was determined to continue promoting industrialization and modernization based on the foundations of science and technology, innovation, and the achievements of the fourth industrial revolution. The strategy for developing science, technology, and

innovation up to 2030 identifies the viewpoint that "Developing science, technology, and innovation is a top national policy, playing a strategic breakthrough role in the new period; it is the main driving force to promote growth, create breakthroughs in productivity, quality, and efficiency; it is a decisive factor in improving the competitiveness of the country, economic and social sectors, localities, and enterprises; it is the foundation for implementing national digital transformation; significantly contributing to improving people's lives, sustainable development, and ensuring national defense and security" (Decision 569/QĐ-TTg dated May 11, 2022).

According to Resolution 26/NQ-TW in 2013 on the development of Nghe An province, the Vietnamese Government has oriented Nghe An to become a science and technology center of the North Central region of Vietnam, including the development of a research and technology transfer agency system. At the same time, it aims to attract research and application organizations of science and technology from central ministries and branches to the area. Vinh City is one of the cities with many factors that could enable it to become an innovation center of the North Central region, including the significant contribution of small and medium enterprises. According to the Enterprise Survey Data, as of December 31, 2023, Nghe An province has 11,182 operating enterprises with production and business results, an increase of 9.84% compared to December 31, 2019. In 2023, the rate of profitable businesses accounted for 39.5%; the rate of break-even businesses was 13.9%; and the rate of loss-making businesses accounted for 46.6%. Moreover, most of Vinh's businesses are primarily small or even micro-enterprises. Hence, the resources for investment in innovative technology, technological innovation, and the application of scientific and technological advances are still limited. Businesses have not yet formed a culture of innovation. The number of innovative startups in Vinh City raising capital from investment funds is very small. There is a lack of connection with large companies and various investment funds. There is no close connection between research institutions, startups, investors, enterprises, and organizations supporting creative startups to establish a mutual support network. From the above context, it is evident that there is very little empirical evidence on the factors affecting the innovation activities of enterprises. On that basis, the authors surveyed enterprises in Vinh City, Nghe An province, on the impacts affecting the innovation activities of enterprises to make policy suggestions for enterprises, especially those in Vinh City, Nghe An province, regarding innovation activities.

2. Literature Review

There have been many studies on innovation in businesses. [Schumpeter and Nichol \[1\]](#) argued that innovation is a process in which business owners introduce new combinations into the market. Innovation can involve the introduction of a new product, the adoption of a new method of production or sales, the opening of a new market, the use of new input sources, or the formation of a new structure. Later definitions of innovation inherit the main ideas mentioned above by Schumpeter but have been adjusted to suit the objectives of each specific study.

Firm innovation is the ability to organize resources to carry out certain innovative activities [\[2\]](#). It is the ability to continuously transform knowledge and ideas into new products and production processes, opening up new markets and ways of organizing to benefit the firm and its members [\[3\]](#). Innovation can be viewed as a set of firm inputs to express the above concept in measurable activities at the essential step [\[4\]](#). Specifically, firm innovation is influenced by many sources inside and outside the firm. Internal sources include the knowledge base of the business owner or manager, the skills of employees, and the investment efforts in Research and Development (R&D). External sources include the frequency of external relationships, the depth of external relationships, and the extent to which external support is received. [Chesbrough \[5\]](#) argues that firms increasingly have to reshape the fundamental ways in which they generate and bring ideas to market and capture new ideas from outside to drive research and development (R&D) within their organizations. [Chesbrough \[5\]](#) also notes that traditionally, firms have managed R&D as an internal process, relying primarily on their own internal capabilities and competencies. However, in today's increasingly globalized environment, such a closed approach to innovation is no longer sustainable.

Studying the impact of external factors on business performance, [Moretti and Biancardi \[6\]](#) identified three main aspects: economic performance (represented by total revenue), financial performance of the enterprise (measured by market share), and human resource performance (measured by the number of products produced by employees). These studies have shown that the development of knowledge resources within the enterprise and the absorption of external knowledge flows have a positive and significant impact on the enterprise's economic performance. [Oltra, et al. \[7\]](#) analyzed 244 enterprises in the technology industry in Spain. They demonstrated the effectiveness of open innovation activities related to collaboration with partners. External collaboration in internal R&D activities will increase the impact on the performance of the enterprise. [Hung and Chou \[8\]](#) focused on 176 high-tech manufacturing enterprises in Taiwan by analyzing the impact of knowledge acquisition and external technology exploitation on enterprise performance. The authors all confirmed that external technology acquisition has a positive impact on the innovation performance of enterprises.

[Ba, et al. \[9\]](#) presented and classified the internal factors influencing innovation in enterprises, such as enterprise attributes, factors related to corporate strategy, organizational culture, resources, and strategies. In addition, innovation activities are also considered one of the cultural features of enterprises and directly affect their performance. [Huang and Rice \[10\]](#) surveyed 114 enterprises in Taiwan. The research results showed that innovation positively promotes the growth of enterprises by reducing organizational inertia and establishing a bridge between innovation practices and performance. They also recognized that innovation-based business models will create important forces for enterprises in development prospects. In another study, [Huang, et al. \[11\]](#) investigated the role of innovation in the performance of 294 Australian firms. They established a negative association between innovation and firms. They suggested that caution should be exercised when adopting open strategies, especially for SMEs, as these may reduce innovation output rather than contribute.

Furthermore, a lack of absorptive capacity may be correlated with a negative relationship. Two important elements of absorptive capacity are the ability to recognize and exploit external opportunities and absorb and integrate exogenous know-how into the existing information base. The lack of the latter may prolong the time it takes for firms to reap benefits from new outputs, which are commercialized more slowly in the market due to the protracted learning curve. For Vietnamese enterprises, innovation activities are also influenced by the relationship between human resources, linkages, support means, and the institutional framework [12]. In addition, some factors demonstrate capacity in innovation activities (leadership, culture, management, knowledge, etc.), especially the influence of internationalization on the ability to participate in implementing innovation investment and the level of innovation investment of enterprises.

Thus, most studies have evaluated factors affecting the innovation activities of enterprises, including internal and external factors. External factors affecting innovation include economic efficiency, finance, and human resources. In addition, there are also studies evaluating the impact of linkage activities between partners and stakeholders. Internal factors that positively impact enterprises' innovation activities include strategy, corporate culture, and enterprise resources. Another very important factor that has been studied is the business model of each enterprise based on innovation activities. However, no study has evaluated the impact of innovation activities in enterprises in Nghe An based on the basic characteristics of that locality. Therefore, this study evaluates factors affecting the innovation activities of enterprises in Nghe An, including factors such as regional institutions, human resources, support services, technology factors, local infrastructure, and the level of connection between local enterprises and other entities.

3. Research Model and Method

The study utilized a questionnaire survey method for businesses in Vinh City, Nghe An Province. The questionnaire was designed in two parts, including basic information about the business. The second part consisted of questions on a Likert scale, which included factors related to the business's innovation activities. In this section, the questions were scored from 1 to 5, with level 1 indicating "strongly disagree" and level 5 indicating "strongly agree." The study employed the OLS regression model to assess the impact of each factor on the business's innovation activities.

The team distributed 150 questionnaires and collected 134 cleaned questionnaires to conduct the study. The authors proposed a research model consisting of six factors as shown in Figure 1.

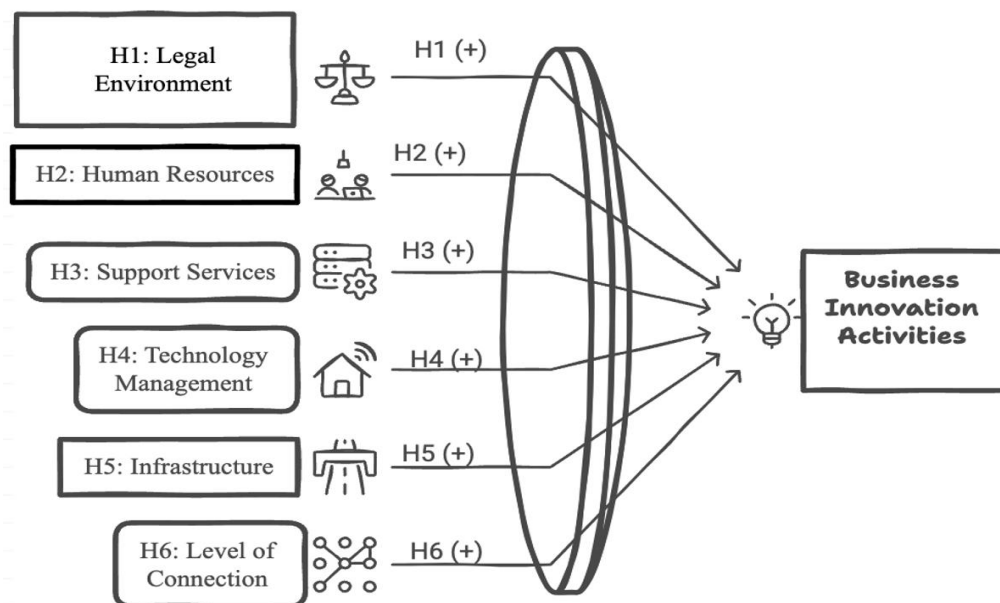


Figure 1.
Proposed research model.

In which:

* Dependent variable: Innovation activities of enterprises in Vinh City, Nghe An Province.

* Independent variables include:

3.1. Legal Environment

The legal environment for the innovation activities of enterprises consists of the rules and laws that regulate the behavior of enterprises and support them in accessing opportunities and resources during the implementation of innovation activities. The management apparatus and operating mechanism aim to ensure the rights of enterprises and resolve disputes over interests arising in the innovation process. In this study, the environment of the surveyed enterprises focuses on issues related to legal procedures when applying for licenses for activities related to innovation, accessing government preferential policies, and the difficulties enterprises face when implementing procedures related to innovation activities, such as the time required to apply for licenses, financial resources, in-kind contributions, and harassment by public authorities.

H₁: Legal factors are government policy mechanisms that positively impact business innovation activities.

3.2. Human Resources in the Enterprise

Human resources are formed when employees have an ideal working environment and are supported with welfare. Employees are considered the main resource that can be utilized to serve the economic purposes of employers. When businesses engage in innovative activities, employees are one of the factors influencing these activities. The basic characteristics of human resources in businesses are assessed as employees being highly skilled and creative, regularly exchanging ideas, cooperating with customers and suppliers, and using information flexibly.

H₂: Human resources in enterprises have a positive impact on innovation activities.

Support services for business innovation activities greatly impact business innovation. These services can include government initiatives that support innovation, such as providing open data for businesses to develop and test products, assisting businesses in accessing output markets, connecting them with the innovation startup ecosystem, facilitating access to the most advanced technologies, and offering preferential policies regarding land taxes and facilities that support innovation activities.

H₃: Internal and external support services also have a positive impact on the innovation activities of enterprises

3.3. Technology Management Factor

Technological advancements include the development of new technologies and improvements in existing technologies that can create opportunities and challenges for organizations and businesses, in particular. Technological change encompasses business actions such as conducting research and development activities, considering research and development as competitive factors for growth, and business technology transfer activities as fundamental elements contributing to the promotion of business innovation activities.

H₄: The technology management factor of enterprises also has a positive impact on the innovation activities of enterprises

3.4. Infrastructure

Internal and external infrastructure of enterprises are factors that affect the innovation activities of these enterprises. In this study, infrastructure can be understood as innovation-related activities such as technology transfer centers, business incubators, technology parks, and innovation centers in the province. Additionally, infrastructure is also understood to include the banking system, investment funds, telecommunications and technology infrastructure, electricity infrastructure, roads, schools, and stations in industrial parks and business concentration areas.

H₅: Enterprise infrastructure factors have a positive impact on enterprise innovation activities

3.5. The Level of Connection Between Entities

The connection between subjects in innovation activities is also a factor that stimulates innovation activities in enterprises. Enterprises often coordinate with research institutes, universities, financial institutions, or other businesses in the area or near the business's operating location. For some enterprises with relatively good innovation activities, co-working spaces or intermediary support centers are often coordinated near the business location.

H₆: The level of connection between subjects has a positive impact on the innovation activities of enterprises.

Table 1.

Explanation of the participation of variables in the model.

Variable name	Explanation	Expected sign
A15	Legal factors for business innovation activities	(+)
A16	Technology management factors serving business innovation activities	(+)
A17	Infrastructure that supports business innovation activities.	(+)
A18	External services that support business innovation activities.	(+)
A19	Human resources serve the business's innovation activities.	(+)
A20	The level of connection between subjects in business innovation activities	(+)
A21	The innovation activities of enterprises.	

4. Research Results

4.1. Statistical Results

The study surveyed 150 enterprises in Vinh City, Nghe An Province, with 140 responses; however, 6 were eliminated due to incomplete answers, leading to a lack of value. Therefore, only 134 qualified responses remained.

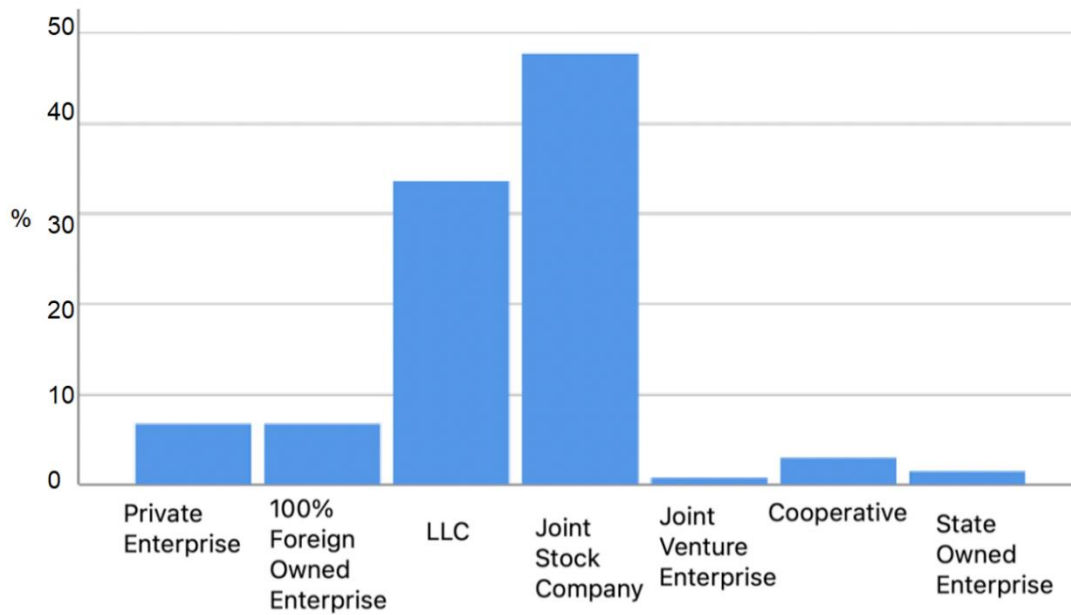


Figure 2.
Proportion of types of enterprises participating in the survey.

The types of enterprises participating in the survey include most types of enterprises, but the joint-stock company type accounts for nearly 50%, followed by the Limited Liability Company (LLC), which accounts for about 33%. The remaining types account for a small proportion, less than 10% (Figure 2). The industry groups of enterprises participating in the survey belong to the commercial industry group, which has the highest proportion, followed by the industrial and agricultural, forestry, and fishery industry groups. The mining industry group has the lowest representation in the survey sample (Figure 3).

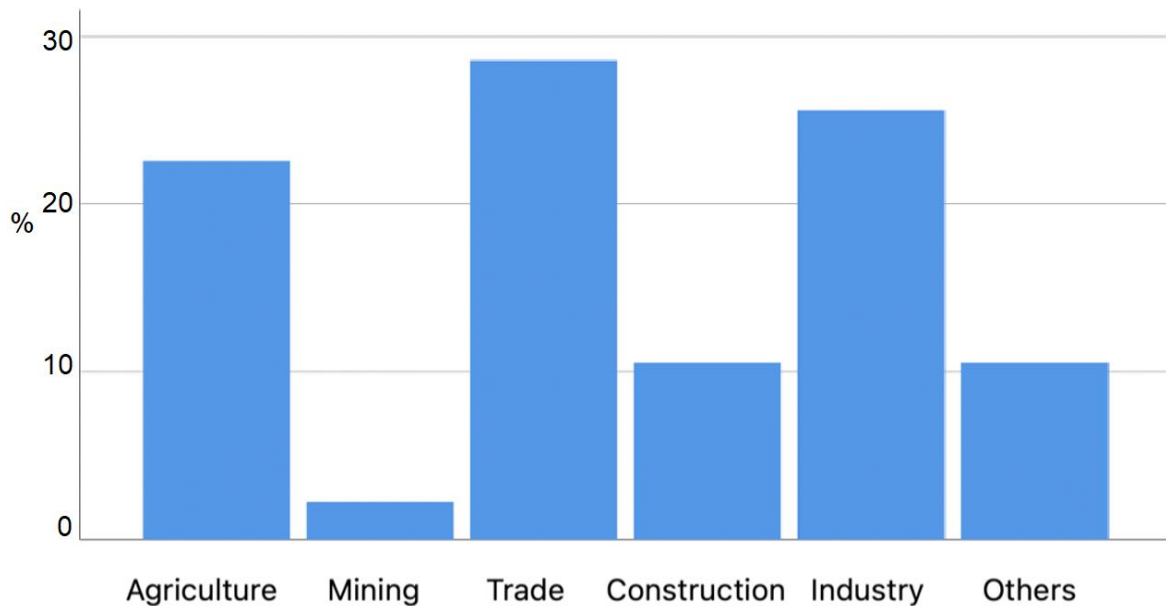


Figure 3.
Percentage of business sectors participating in the survey.

4.2. Results of Multivariate Regression Model

4.2.1. Checking the Reliability of the Scale

The results of the Cronbach's Alpha analysis indicate that the reliability coefficients of all scales meet the required standards. The Cronbach's Alpha coefficient is utilized to eliminate irrelevant variables initially. Variables with item-total correlation coefficients below 0.3 will be discarded, and the scale must achieve a reliability score with an Alpha of 0.60 or higher [13]. Subsequently, variables with factor loadings below 0.50 in Exploratory Factor Analysis (EFA) will also be removed. Consequently, all scales satisfy the reliability criteria ($0.6 < 0.95$) and are included in EFA to assess convergent and discriminant validity. The findings from the scale reliability analysis demonstrate that the Cronbach's Alpha reliability coefficients for all scales exceed 0.6 Table 2.

Table 2.

Cronbach's alpha coefficient of observed variables.

Variable code	Variable name	Cronbach's Alpha coefficient
A15	Legal factors	0,799
A16	Technological factors	0,916
A17	Infrastructure	0,823
A18	Support services for business innovation activities.	0,931
A19	The quality of human resources in the business.	0,845
A20	Level of connection	0,917
A21	Business innovation activities.	0,631

After checking the reliability of the scale, exploratory factor analysis was conducted. The extraction method chosen for factor analysis was the principal components method with Promax rotation.

4.2.2. KMO Coefficient and Sig Coefficient

Exploratory factor analysis for independent variables shows: $P_{\text{value}} = 0.000$ of Bartlett's test allows us to reject the hypothesis H_0 (H_0 : Factor analysis is not suitable for the data). The KMO index = 0.815 shows the high suitability of the model [Table 3](#)

Table 3.

KMO coefficient and Bartlett's test for factors.

Kaiser-Meyer-Olkin measure of sampling adequacy.		0.815
Bartlett's test of sphericity	Approx. Chi-square	3470.232
	df	561
	Sig.	0.000

[Table 4](#) shows that when the scale combination was analyzed, seven factors were extracted. The total variance extracted was 71.672%, which is greater than 50%, indicating that the extracted factors explained approximately 72% of the variation in the data. Thus, there was no change in the research hypothesis group.

Table 4.

Extracted variance of independent variables.

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	9.745	28.663	28.663	9.745	28.663	28.663
2	4.415	12.985	41.648	4.415	12.985	41.648
3	3.134	9.217	50.865	3.134	9.217	50.865
4	2.248	6.611	57.476	2.248	6.611	57.476
5	2.192	6.447	63.923	2.192	6.447	63.923
6	1.478	4.348	68.271	1.478	4.348	68.271
7	1.156	3.401	71.672	1.156	3.401	71.672
8	0.96	2.824	74.496			
9	0.808	2.375	76.871			
10	0.759	2.232	79.103			
11	0.68	2.567	81.103			
12	0.616	1.811	82.914			
13	0.579	1.702	84.616			
14	0.569	1.674	86.289			
15	0.513	1.51	87.799			
16	0.457	1.344	89.143			
17	0.425	1.251	90.394			
18	0.385	1.133	91.527			
19	0.352	1.036	92.564			
20	0.335	0.985	93.548			
21	0.311	0.914	94.462			
22	0.28	0.822	95.284			
23	0.247	0.725	96.009			
24	0.218	0.641	96.65			
25	0.184	0.541	97.19			
26	0.169	0.498	97.688			
27	0.139	0.41	98.098			
28	0.132	0.389	98.487			

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
29	0.119	0.351	98.838			
30	0.105	0.31	99.148			
31	0.102	0.299	99.447			
32	0.074	0.218	99.665			
33	0.065	0.19	99.855			
34	0.049	0.145	100			

Table 5 of the rotated matrix of factors shows that there are 7 factors extracted from the data that meet the conditions for performing regression evaluation.

Table 5.
Component Matrix^a

Factor	1	2	3	4	5	6	7
A20.7.	0.876						
A20.2.	0.847						
A20.1.	0.821						
A20.3.	0.792						
A20.4.	0.774						
A20.6.	0.768						
A20.5.	0.756						
A16.3.		0.868					
A16.4.		0.857					
A16.5.		0.85					
A16.1.		0.818					
A16.7.		0.814					
A16.10.		0.792					
A16.9.		0.746					
A18.8.			0.945				
A18.6.			0.909				
A18.7.			0.906				
A18.9.			0.854				
A18.5.			0.802				
A19.1.				0.853			
A19.2.				0.838			
A19.3.				0.832			
A19.5.				0.801			
A19.4.				0.777			
A17.6.					0.842		
A17.2.					0.814		
A17.3.					0.788		
A17.4.					0.756		
A17.5.					0.713		
A15.3.						0.849	
A15.4.						0.786	
A21.3.							0.807
A21.1.							0.771
A21.2.							0.572

4.2.3. Regression analysis results

Table 6 summarizes the model, showing $R = 0.617$. This value reflects the suitability of the analytical model.

Table 6.
Model summary.

Model	R	R ²	Adjust R ²	Std. error of the estimate	Sig. F Change	DW
1	0.617a	0.567	0.533	0.28131	0	1.154

Note: a Predictor variable: A19, A20, A15, A16, A17, A18
b Dependent variable: A21

Table 7.

Regression results.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	0.757	0.473		1.602	0.000
A20	0.237	0.084	0.268	2.837	0.005
A15	0.111	0.059	0.154	1.881	0.042
A16	0.167	0.089	0.163	1.882	0.042
A17	0.314	0.102	0.275	3.087	0.002
A18	0.115	0.078	0.143	-1.485	0.014
A19	0.114	0.097	0.092	1.173	0.023

Based on Table 7, the regression results show that all variables have Sig coefficients < 0.05 , indicating that all variables are statistically significant and have positive standardized weights, thus positively impacting the innovation activities of enterprises. Therefore, based on the analysis results, it can be concluded that Hypothesis H1 (A15: Legal factors) has a positive relationship with innovation activities. From the standardized Beta weight, we observe that A15 positively impacts the dependent variable with a statistical significance level of over 95% ($\beta = 0.154$; $\text{sig} = 0.04 < 0.05$). Hypothesis accepted.

Hypothesis H2 (A16: Technology factor) also has a positive relationship with innovation activities, with a coefficient $\beta = 0.163$ and coefficient $\text{sig} = 0.04 < 0.05$; hypothesis accepted.

Similarly, hypotheses H3 (infrastructure A17), H4 (support services A18), H5 (quality of human resources A19), and H6 (level of connection A20) also demonstrate a positive relationship with innovation activities, with standardized regression coefficients of 0.275, 0.143, and 0.09, respectively.

5. Conclusion and Policy Implications

This study has identified and analyzed the factors affecting enterprises' innovation activities in Vinh City, Nghe An province. The support from the government or competent authorities for the innovation activities of enterprises is a relatively significant factor. The government's support for enterprises is expected to create conditions that promote the success of enterprises' business activities, which is also consistent with the research results of Shamsuddoha and Yunus Ali [14]. The quality of human resources is also one of the factors affecting the innovation activities of enterprises. To carry out innovation activities, enterprises in Vinh City need to conduct systematic and in-depth training for high-quality human resources. In addition, it is necessary to increase training funding based on a reasonable allocation of investment resources for human resource training from the provincial budget.

In the innovation activities of enterprises, the government plays a very important role, especially in policy-making, creating a supportive environment, and implementing institutions to promote innovation activities. The effectiveness of innovation activities of enterprises is affected by the linkage factor, which includes the connections between enterprises in the region and outside, as well as the cooperation and coordination in implementing innovation between enterprises, between science and technology organizations and enterprises, and between enterprises and universities. Given the level of impact of the linkage factor on innovation activities, it is necessary to strengthen the connecting role of three organizations: research and training units, public service units under the management agency of science and technology in the province, and science and technology service organizations. For enterprises in Vinh City, with its own development characteristics, more active support policies from agencies and departments are needed to promote the development of innovation activities of enterprises.

With the above results, the study has provided important information for evaluating and proposing policy implications to impact the innovation activities of enterprises in Vinh City, Nghe An province.

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Table 1.
Cronbach's alpha coefficient of observed variables.

Variables name	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
A15: Legal factors (Cronbach's Alpha = 0.799)					
A15.1. Applying for a business license	23.4179	15.989	0.352	0.476	0.798
A15.2. Applying for a patent	23.3657	15.001	0.543	0.544	0.773
A15.3. Access to incentives and support	23.0821	13.805	0.615	0.516	0.759
A15.4. Exemption from administrative procedures	22.6194	14.268	0.549	0.554	0.771
A15.5. Simplification of procedures	22.5149	14.853	0.531	0.623	0.774
A15.6. Loan incentives	22.4627	14.942	0.446	0.548	0.787
A15.7. High invisible costs of businesses	23.1418	13.717	0.588	0.477	0.764
A15.8. Businesses facing harassment	23.4851	14.913	0.451	0.493	0.786
A16 Technology management (Cronbach's Alpha = 0.916)					
A16.1. Enterprises investing in R&D	37.403	26.618	0.731	0.684	0.905
A16.2. Number of R&D	37.7612	27.657	0.574	0.491	0.912
A16.3. Enterprises prioritizing R&D	37.4627	26.912	0.76	0.749	0.904
A16.4. Enterprises with strategic innovation goals	37.4925	26.673	0.752	0.699	0.904
A16.5. Technological and idea innovation	37.4328	26.774	0.734	0.697	0.905
A16.6. Relatively good number of applied technologies	37.6493	28.169	0.497	0.515	0.916
A16.7. Enterprises investing in R&D	37.4851	26.628	0.775	0.684	0.904
A16.8. R&D promotes enterprise performance	37.5299	26.642	0.732	0.723	0.905
A16.9. Enterprises accessing many technologies	37.3806	27.05	0.652	0.63	0.909
A16.10. Enterprises accessing new technologies	37.5224	27.89	0.548	0.768	0.913
A17: Infrastructure (Cronbach's Alpha = 0.823)					
A17.1. Number of transfer centers	13.1194	3.565	0.562	0.431	0.803
A17.2. Investment fund banks	13.0075	3.301	0.655	0.461	0.777
A17.3. Laboratories, research centers	13.2313	3.127	0.734	0.568	0.752
A17.4. Telecommunication infrastructure	13.1119	3.303	0.6	0.431	0.793
A17.5. Infrastructure in industrial parks	13.0821	3.384	0.542	0.333	0.811
A18 Support services (Cronbach's Alpha = 0.931)					
A18.1. Government provides open data	27.0821	22.828	0.606	0.693	0.931
A18.2. Provide full information to businesses	27.0224	23.03	0.648	0.696	0.928
A18.3. Support businesses to access	27.0299	22.21	0.748	0.686	0.923
A18.4. Government offers programs	27.0448	22.088	0.758	0.72	0.922
A18.5. Government implements connection and promotion	27.0224	21.646	0.787	0.709	0.92
A18.6. Support businesses to access output	27.1119	21.439	0.753	0.816	0.923

A18.7. Support businesses to access advanced technology	27.1567	21.366	0.803	0.861	0.919
A18.8. Businesses can access tax incentives	26.9627	21.359	0.802	0.762	0.919
A19 Human resources (Cronbach's Alpha = 0.845)					
A19.1. Highly skilled	25.0149	8.27	0.583	0.546	0.826
A19.2. Creative	25.0896	8.127	0.616	0.598	0.822
A19.3. Expert in each field	25.0522	7.839	0.637	0.524	0.819
A19.4. Ability to develop ideas	25.0224	8.233	0.572	0.594	0.827
A19.5. Frequent interaction	24.9776	8.278	0.608	0.59	0.824
A19.6. Ability to collaborate	25.3731	7.8	0.501	0.574	0.841
A19.7. Ability to process information	25.3433	7.941	0.571	0.797	0.828
A20 Level of connection (Cronbach's Alpha = 0.917)					
A20.1. Research Institute	18.3507	13.673	0.759	0.799	0.903
A20.2. University	18.3731	13.544	0.804	0.836	0.898
A20.3. Financial institution	18.2388	14.318	0.695	0.563	0.91
A20.4. Other nearby enterprises	18.1194	14.211	0.726	0.566	0.907
A20.5. Supply enterprises	18.1866	14.378	0.72	0.622	0.907
A20.6. Purchasing enterprises	18.2164	14.457	0.712	0.664	0.908
A20.7. Common working area	18.2612	13.879	0.801	0.683	0.899
A21 Business Innovation Activities (Cronbach's Alpha = 0.631)					
A21.1. Continuous improvement	7.1343	1.591	0.433	0.194	0.548
A21.2. Continuous innovation	6.9776	1.39	0.415	0.174	0.57
A21.3. Continuous research	6.9328	1.311	0.479	0.232	0.574