MANAGING STARTUP AND INNOVATION ECOSYSTEMS AT NON-PUBLIC UNIVERSITIES AND COLLEGES – THE DRIVING POWER FOR SOCIO-ECONOMIC DEVELOPMENT IN THE ERA OF TRANSFORMATION AND BREAKTHROUGH IN VIETNAM

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This study explores the management of entrepreneurship and innovation ecosystems at non-public universities and colleges in Vietnam, analyzing their roles as a driving force for local socio-economic development in the context of the country's transformation and breakthroughs. The paper reviews theoretical frameworks, examines the current state of startup ecosystems and proposes management solutions and policy recommendations to foster a sustainable innovation culture in higher education. The findings highlight the dual challenges and opportunities of non-public institutions, emphasizing their flexibility, market responsiveness and potential contributions to local and national economic development.

Keywords: Startups; Innovation ecosystem; Non-public universities and colleges; Higher education and college management; Socio-economic development; Vietnam.

1. Introduction

In the context of globalization and the Fourth Industrial Revolution, innovation and entrepreneurship have become the core driving forces for socio-economic development. Countries around the world, from developed economies such as the United States, Germany, Japan to emerging economies such as Korea, Israel or Singapore, are focusing on developing the startup ecosystem, considering it a "lever" to increase labor productivity, enhance national competitiveness and create a knowledge-based economy (World Bank, 2020). According to a report by the Organization for Economic Cooperation and Development (OECD, 2021), more than 70% of GDP growth in developed countries over the past two decades has come from innovation and knowledge commercialization activities. In Vietnam, startups and innovation are being identified as one of the "strategic breakthroughs" in the process of industrialization and modernization of the country. The Government has issued a series of projects and policies, notably Project 844 on "Supporting the national innovation and startup ecosystem until 2025" and Project 1665 on "Supporting students to start businesses until 2025" (Ministry of Science and Technology, 2016; Ministry of Education and Training, 2017). These policies clearly demonstrate the viewpoint: developing the startup ecosystem is not only the responsibility of the State, but also requires the active participation of businesses, society and especially universities and colleges - the place to nurture knowledge, creativity and talent for the country. In this flow, non-public universities and colleges in Vietnam have emerged as an important force but have not been adequately researched and evaluated. With the advantage of flexibility in management and the ability to quickly adapt to the needs of the labor market, non-public universities and colleges have great potential to become "incubators" for startups and innovation (Nguyen, 2020). However, in reality, many have universities and colleges only stopped at organizing startup idea competitions or integrating a few startup courses into the training program, but have not yet built a complete startup ecosystem.

This raises an important research question: How to effectively manage the startup and innovation ecosystem at non-public universities and colleges in Vietnam, thereby creating momentum for socio-economic development in the era of national transformation and breakthrough?

To answer the above question, it is necessary to first clarify the concept of "Startup and Innovation Ecosystem". According to Isenberg (2011), the Startup Ecosystem includes a network of actors (entrepreneurs, investors, universities, government agencies, support organizations, etc.) and closely linked institutional, cultural and resource factors, creating conditions for business ideas to germinate, develop and succeed. In the context of education, the startup ecosystem is not only the establishment of Startup Clubs, Incubators or Startup Investment Funds, but also the integration throughout the training philosophy, teaching methods, learning environment and cooperative relations with businesses and the community (Etzkowitz & Leydesdorff, 2000).

Non-public universities and colleges in Vietnam, with the characteristic of mainly operating under a financial autonomy mechanism, are often more closely linked to the practical needs of the labor market. This is both a pressure and an opportunity: pressure because they have to constantly innovate to attract learners and ensure training quality; opportunities because this dynamic environment easily promotes entrepreneurial thinking and creativity (Pham & Hoang, 2021). Some universities and colleges such as FPT University, Hoa Sen University, Van Lang University, etc. have taken the lead in building innovation centers, organizing events connecting investors and students and forming internal startup support funds. However, in general, most other universities and colleges still lack a systematic strategy and have not yet formed a truly effective startup ecosystem.

The difference between public universities and colleges and non-public universities and colleges in this field is also worth studying. Public universities and colleges often have advantages in scientific research resources, state budget and international cooperation networks. Meanwhile, non-public universities and colleges stand out in their flexibility, ability to make quick decisions and link to the actual needs of businesses (Tran, 2019). Therefore, the study of the management of the startup ecosystem and innovation in the non-public university and college sector not only helps to promote the unique potential of this sector, but also adds to the overall picture of university and college startup education in Vietnam. This article aims to achieve three main goals:

(1) Analyze the theoretical basis and overview of research on the startup and innovation ecosystem in higher education.

(2) Survey and evaluate the current status of building and operating the startup ecosystem at non-public universities and colleges in Vietnam.

(3) Propose management solutions and policy recommendations to promote the role of non-public universities and colleges as a driving force for socio-economic development in the new era.

In terms of academics, this study contributes by adding an approach that is still underexploited in Vietnam's educational management literature -

that is, analyzing the startup ecosystem in the non-public sector from the perspective of educational management. In terms of practice, the research results can provide evidence and recommendations for educational managers, policy makers and leaders of universities and colleges, in order to promote the organic connection between Training - Research - Startup - Innovation (Vuong et al., 2020). It is worth emphasizing that, in the era of "transformation and breakthrough" of the Vietnamese people, when the country is aiming to become a developed country with high income by 2045, entrepreneurship and innovation are not only an option but have become an inevitable path (Nguyen & Le, 2022). Non-public universities and colleges, with their dynamic and creative nature, can and need to become the "trigger" for this transformation. Effectively managing the startup ecosystem at non-public universities and colleges is to contribute to creating a generation of creative citizens and brave entrepreneurs, thereby directly contributing to the sustainable development of Vietnam's socio-economic situation in the era of global integration.

2. Theoretical basis and research overview

2.1. Concept of startup and innovation ecosystem

The term "startup ecosystem" has been defined and developed by many scholars over the past three decades. According to Isenberg (2011), the startup ecosystem is the sum of political, cultural, institutional, social and economic factors, along with subjects such as entrepreneurs, investors, universities, state agencies and support organizations, interacting with each other to create a favorable environment for the birth and development of startups. This concept emphasizes the systematic nature, mutual interaction and multidimensional dependence between the components.

On the other hand, Mason and Brown (2014) argue that the startup ecosystem is not simply a collection of factors supporting startups, but "a network of closely related actors, forming a dynamic, sustainable and self-sustaining environment". This perspective is associated with the "ecological" approach, emphasizing the symbiotic and evolutionary nature.

Meanwhile, innovation is considered by Schumpeter (1934) as a "new combination" of production factors to create new products or services. OECD (2005), in the Oslo Manual, defines innovation as the implementation of new or significantly improved products, processes, marketing methods or organizational models. When associated with startups, innovation not only creates added value for businesses but also for society (OECD, 2021).

From the above concepts, it can be understood that: The startup and innovation ecosystem is a set of factors, subjects and interactive mechanisms to nurture, support and develop startup activities with high knowledge and innovation content, in which higher education institutions play a key role in providing knowledge, human resources, scientific research and connecting the community.

2.2. Theoretical basis for managing entrepreneurial ecosystems in higher education

Entrepreneurial ecosystem management in higher education is closely linked to modern management theories. First of all, the system theory asserts that an organization exists as an open system, continuously exchanging information and resources with the environment (Von Bertalanffy, 1968). Universities, as educational institutions, also need to be viewed as a multidimensional interactive system with businesses, governments, communities and learners.

Next, the Triple Helix model of Etzkowitz and Leydesdorff (2000) is considered a fundamental theoretical framework to explain the relationship between universities - businesses - the state in promoting innovation. Here, universities not only perform teaching and research tasks, but also actively participate in innovation, entrepreneurship and even become "entrepreneurs".

Developing from the Triple Helix model, Carayannis and Campbell (2009) proposed the Quadruple Helix with the addition of the role of civil society and then the Quintuple Helix with the addition of the natural environment factor. These models expand the theoretical space, showing that managing the startup ecosystem in higher education needs to take into account the relationship with the community, culture and sustainable development.

From the perspective of educational management, Fayolle and Redford (2014) emphasized that building an entrepreneurial university requires strategic management of training programs, research, support policies, infrastructure, as well as a culture of innovation in the university and college. Management here is not only about coordinating resources, but also about creating an environment, nurturing an entrepreneurial spirit and promoting cross-disciplinary cooperation.

2.3. The role of universities and colleges in the startup ecosystem

Universities and colleges are the "nucleus" of the startup ecosystem. Audretsch's (2014) study shows that regions with strong research universities often have more dynamic startup ecosystems, thanks to high-quality human resources and scientific knowledge.

Universities and colleges participate in the startup ecosystem through many channels:

(1) Training and developing startup capacity:

integrating startup subjects and programs into the curriculum, forming creative, management, and leadership skills for students (Fayolle & Gailly, 2015).

(2) Research and knowledge transfer: scientific research becomes a source of creative ideas and technology, promoting spin-off businesses and technology startups (Grimaldi et al., 2011).

(3) Business incubators and innovation centers: supporting students and lecturers to develop ideas into products, connecting with investors (Phan et al., 2005).

(4) Networking and cooperation: connecting with businesses, local authorities and non-governmental organizations to create a practical environment for students (Etzkowitz, 2013).

Thus, universities and colleges are both a place to provide knowledge and a "launch pad" for startups, while also playing an intermediary role in connecting the elements of the ecosystem.

2.4. Characteristics of non-public universities and colleges in the startup ecosystem

In Vietnam, non-public universities and colleges account for about 14% of the total number of higher education institutions (MOET, 2021). Although the proportion is still limited, this is a dynamic force and closely linked to the needs of society.

The outstanding characteristics of this group include:

• High autonomy: They are mainly financially autonomous, forced to innovate management and training to survive and develop (Nguyen, 2020).

• Flexibility in training programs: Non-public universities and colleges can easily adjust their curriculum to match the requirements of the labor market, facilitating the integration of startups and innovation (Tran, 2019).

• Ability to cooperate with businesses: Because they do not depend much on public mechanisms, they tend to expand cooperation with businesses, thereby facilitating the implementation of startup projects.

However, non-public universities and colleges also face many challenges: lack of scientific research resources, limited infrastructure, and weak entrepreneurial culture (Pham & Hoang, 2021). Therefore, managing the entrepreneurial ecosystem in these non-public universities and colleges requires an appropriate approach, promoting advantages while overcoming limitations.

2.5. Overview of international research

Globally, research on entrepreneurial ecosystems in higher education and colleges has grown strongly.

In the US and Europe, many works focus on entrepreneurial universities and colleges. Clark (1998) is a pioneer in research on entrepreneurial universities, outlining five core elements: strong leadership, flexible governance, close connection with the external environment, innovation culture and internal financial support.

Etzkowitz (2013) studied the "Triple Helix" model, showing that university, college-industry-government cooperation is the foundation of innovation. Grimaldi et al. (2011) pointed out the role of university incubators in promoting technology startups. Audretsch's (2014) study suggested that the startup ecosystem is most developed when there is a combination of knowledge (universities), capital (investors) and policy (government). In Asia, studies in Korea (Kim, 2019), Singapore (Wong et al., 2005) and China (Cai & Liu, 2015) showed that universities play an important role in the startup nation, especially when linked to the national strategy on technology and innovation.

2.6. Overview of research in Vietnam

In Vietnam, research on the startup ecosystem in higher education and colleges has only emerged in the last 10 years.

A number of typical research works have contributed to illuminating the overall picture of the innovation and startup ecosystem in Vietnam. For example, Vuong et al. (2020) conducted an analysis of startup finance in the context of Vietnam, thereby emphasizing the central role of universities not only in providing innovative ideas but also in training and supplying high-quality human resources for startup activities.

Meanwhile, Nguyen (2020) focused on clarifying the cooperative relationship between universities, colleges and businesses, pointing out that this connection still has many limitations and lacks long-term incentive policies, leading to the cooperation efficiency not being as expected.

From another perspective, Tran (2019) analyzed the development process of the non-public sector, showing the emergence of new opportunities in expanding the education and research environment, but at the same time warned of the risk of a shortage of research resources, which is an important foundation for improving the quality of training and innovation.

In addition, Pham and Hoang (2021) focused on the field of entrepreneurship education, thereby affirming that to create a sustainable and effective startup environment, Vietnam needs a systematic approach, linked to a synchronous national strategy, instead of fragmented and inconsistent efforts. In general, these works not only reflect the current situation, but also suggest important directions

to promote the development of the startup and innovation ecosystem in the context of deep integration today.

From the above typical research works, we can draw a common lesson that the development of the startup ecosystem in Vietnam cannot rely solely on the individual efforts of each university, enterprise or individual, but requires a comprehensive vision and long-term policies of a cohesive nature. Universities must truly become centers of knowledge and innovation, enterprises need to play the role of strategic partners and the State plays the role of creating an environment and incentive mechanism. Only when these three pillars are closely connected in a synchronous system, can Vietnam fully exploit its potential, overcome resource limitations and create a sustainable startup platform, contributing to improving its position in the global knowledge economy.

In general, domestic research often focuses on the general policy or startup education aspects, with few works going into the non-public sector. This is the research gap that this article aims to fill.

3. Current status of the startup and innovation ecosystem in non-public universities and colleges in Vietnam

3.1. Descriptive framework and scope of analysis

In this section, the current status of the startup and innovation ecosystem based on universities and colleges is described according to basic components, reflecting the comprehensiveness and multidimensionality of a modern ecosystem. Specifically, the analysis is implemented around nine components:

(i) Vision - strategy and governance, demonstrating the orientation,

policy-making capacity and operating mechanism within universities and colleges;

(ii) Training and capacity development programs, associated with

the formation of high-quality human resources and students' creative startup ability;

(iii) Research - knowledge transfer (intellectual property and

technology transfer office), playing a fundamental role in creating new knowledge and applying it to practice;

(iv) Incubation and acceleration infrastructure, demonstrating the

ability to directly support startups in the formation and development stages;

(v) Finance – venture capital/angel funds, providing key resources

for innovative startups;

(vi) Business-local-international linkages, affirming the importance

of multi-layered cooperation networks, from grassroots to global levels;

(vii) Startup culture, reflecting the spirit of daring to think, dare to do

and accept risks;

(viii) Digital platforms and governance data, playing an increasingly

important role in connecting resources and optimizing governance; and finally

(ix) Outputs, including the quantity and quality of startups, spin-offs,

jobs created as well as spillover effects to the community and locality.This descriptive framework is built on the basis of references to classical and modern theoretical models such as Triple Helix and Quadruple Helix (Etzkowitz & Leydesdorff, 2000; Carayannis & Campbell, 2009), as well as analytical frameworks on entrepreneurial ecosystems by Autio et al. (2014), Spigel (2017), Rasmussen, Mosey & Wright (2014), Wright et al. (2017). This approach helps the analysis to have both a solid theoretical basis and be consistent with the development practice in Vietnam. However, due to the lack of a specialized, updated and comprehensive national survey for the non-public sector, the scope of analysis in this study is mainly based on the synthesis of secondary sources of literature, public reports, as well as some small-scale surveys recently conducted by domestic research groups. These data are placed in the context of Vietnam's policies, especially programs such as Project 844 on supporting the national innovation and startup ecosystem (Ministry of Science & Technology, 2016), Project 1665 on supporting students to start businesses by 2025 (Ministry of Education & Training, 2017) and international recommendations (OECD, 2021). To ensure prudence and objectivity, quantitative data, if cited, will be presented in the form of ranges, trends and illustrative examples, rather than making absolute assertions in the context of a lack of consensus from official statistical sources (World Bank, 2020). From the above descriptive framework and scope of analysis, it can be seen that the university-based innovation startup ecosystem needs to be considered comprehensively, in the connection between many different components, from management strategy, human resource training, research - knowledge transfer to infrastructure, finance, culture and digital platform. Choosing this approach allows the analysis to not only stop at identifying the strengths and limitations of each individual factor, but also clarify the level of interaction and mutual complementarity

between them in practical implementation. On that basis, the next part (3.2) will delve into analyzing the specific status of each component in the ecosystem, thereby outlining a more comprehensive picture of the role, challenges and development prospects of the university-based startup model in Vietnam.

3.2. Policy and institutional landscape: opportunities and constraints

Based on the established descriptive framework, this section focuses on analyzing the current state of development of the university and college-based innovation and entrepreneurship ecosystem in Vietnam according to each specific component. The goal is to clarify how universities and colleges are implementing their vision and strategy, organizing governance, building training programs, promoting research and knowledge transfer and developing supporting infrastructure, financial mechanisms, networks and digital platforms. In addition, the analysis also emphasizes "soft" factors such as entrepreneurial culture and social values, as well as measurable outputs such as the number of startups, spin-offs, impact on employment and local development.

This approach allows not only to identify achievements and gaps in each individual component, but also to assess their level of coordination, connectivity and synchronization within the overall ecosystem. Through this, the study aims to identify the driving forces as well as the barriers, thereby providing a scientific basis for proposing policies and practical solutions to improve the operational efficiency of the university and college startup ecosystem in Vietnam.

Over the past decade, startups and innovation have become a policy priority in Vietnam. Project 844 promotes the national startup ecosystem, creating conditions for incubators, intermediary organizations, and networking events; Project 1665 brings startups into non-public universities and colleges (Ministry of Science and Technology, 2016; Ministry of Education and Training, 2017). However, the non-public sector often faces disproportionate access to public resources such as science mission funds, infrastructure investment projects, or preferential land policies (Tran, 2019). Institutional barriers are reflected in:

(i) Criteria for evaluating scientific works that prioritize public models;

(ii) Complicated administrative procedures for non-public projects;

(iii) Lack of tax incentive framework for internal venture capital funds;

(iv) Unclear mechanism for sharing benefits from commercialization of research results (Nguyen, 2020; Pham & Hoang, 2021).

On the positive side, university autonomy and the trend of digital governance open up opportunities for non-public to flexibly restructure programs, design startup courses according to local needs and connect with businesses in training orders (MOET, 2021). This is consistent with the argument of Wright et al. (2017) that the local-regional context is an important lever for universities and colleges to start up.

3.3. Vision – strategy and ecosystem management

Most non-public universities and colleges affirm that entrepreneurship and innovation are core values in their brand strategy to differentiate themselves in the recruitment and employment market. However, the level of "permeation" into the internal management system is different. In the pioneering group, entrepreneurship is included in the 5–10-year strategy, with a focal point such as the Innovation/ Startup Center under the Board of Directors, the right to coordinate the seed budget and the partner network; an advisory board with the participation of entrepreneurs and investors (Rasmussen et al., 2014). In the following group, entrepreneurship content is implemented according to projects, event-based competitions, dependent on external funding; lacks a reward mechanism - resource allocation based on ecosystem results (Tran, 2019).

According to international recommendations, the organizational capacity of an entrepreneurial university needs three pillars: developing entrepreneurial human resources, building a partnership network, and knowledge management (Rasmussen et al., 2014; Audretsch, 2014). In non-public practice, pillars 1 and 2 are often accelerated thanks to organizational flexibility, while pillar 3 is a weakness due to the lack of a Technology Transfer Office (TTO) and intellectual property (IPR) specialist.

3.4. Training and development program for entrepreneurial capacity

The general trend is to integrate entrepreneurship courses (3–6 credits) and innovation skills modules into the curriculum framework, but the depth varies. Some schools design a comprehensive roadmap:

(i) Design thinking,

(ii) Lean startup,

(iii) Idea incubation,

(iv) Business internship/startup project,

(v) "Capstone startup" defense before investors – mentors. Others stop at elective courses or extracurricular workshops (Fayolle & Gailly, 2015; Pham & Hoang, 2021). Regarding the team, lecturers with business experience are still the

"bottleneck". To compensate, many non-public universities and colleges invite entrepreneurs to teach (adjunct faculty), mentors from the ecosystem and build student-led startup clubs. This approach is consistent with Spigel's (2017) suggestion on nurturing the social (network) attributes of the ecosystem. Some pilot programs for experiential credits evaluate through prototypes, customer testing and traction instead of purely theoretical – aligning with the "learning by doing" logic (Autio et al., 2014).

Learning outcomes are related to basic competencies (critical thinking, problem solving, collaboration, digital communication) linked to CDIO standards and the digital skills framework (OECD, 2021). The point that needs to be upgraded is the assessment of the long-term impact of entrepreneurship education on job creation – income – startup success rate, currently only in the form of post-graduation employment surveys, lacking project life cycle monitoring (Vuong et al., 2020).

3.5. Research – knowledge transfer, intellectual property

The non-public sector is enthusiastic about applying startups, but the R&D foundation and IPR mechanism are still immature. Many non-public universities and colleges do not have internal regulations on sharing benefits between authors – non-public universities and colleges – investors; the patent registration process is not smooth, leading to reluctance to publish and difficulty in commercialization (Nguyen, 2020). Some places overcome this by linking with external research institutes, hiring IPR experts on a project basis, or using inter- non-public universities and colleges TTO services at the regional/high-tech park level – practicing in line with international experience in sharing transfer infrastructure when resources are limited (Grimaldi et al., 2011).

Applied research products in and outside the public sector are often in the following fields: applied information technology, digital media, applied design – art, food technology, educational technology (edtech), tourism – services. The advantage is being close to the market, short commercial life cycle; The limitations are the depth of technology and protection capacity (Audretsch, 2014). The trend of co-creation with local businesses and smart urban governments is increasing, creating "real problems" for students and lecturers (Wright et al., 2017).

3.6. Incubation - acceleration infrastructure, creative space

The leading group of non-public universities and colleges have built co-working spaces, maker/rapid prototyping labs, digital content studios, and open innovation hubs. Incubation activities focus on the Idea → Prototype → Market testing stage, with support packages: mentors, basic legal, customer connections, micro-grants. Accelerator programs are still rare, mainly taking place through partners outside the non-public universities and colleges (Autio et al., 2014).

The mentor network is the core asset: alumni, local entrepreneurs, industry experts. The non-public universities and colleges plays the role of orchestrator – the role of connecting and coordinating, in line with the recommendations of Rasmussen et al. (2014). Barriers are the valuation of mentor time, lack of a sustainable recognition/ honorarium mechanism; leading to dependence on personal goodwill.

3.7. Startup finance: seed funds, angels, VC links

Financial sources in the non-public ecosystem include: internal seed funds (seed grants), scholarships/competition awards, angel investors from the alumni-entrepreneur network and external venture capital (VC) links. The scale of internal funds is still modest (usually at the micro level), enough to help student groups validate their business hypotheses (problem–solution fit) rather than scale (Vuong et al., 2020).

The major challenge is that the legal framework for non-public universities and colleges to contribute capital, hold shares in student/lecturer startups, the mechanism for purchasing R&D services and sharing revenue lacks detailed guidance; this slows down commercialization and reduces mutual motivation (Tran, 2019). Some non-public universities and colleges choose the solution of independent legal entity incubators to flexibly sign and make small investments; this approach is in line with international practice (Grimaldi et al., 2011).

3.8. Business-local-international linkages

Linking with businesses is a strength of non-public education thanks to flexible management: business semesters, project orders, "dual education" in technology-service industries. Local authorities (departments/sectors) participate in smart urban projects, digital tourism, night-time economy, digital agriculture – creating experimental "sandboxes" (Wright et al., 2017). International connections increase through student/lecturer exchanges, Erasmus+/ASEAN projects, but are still limited in research funding and large-scale co-funding (OECD, 2021).

At the operational level, many non-public universities and colleges establish industry advisory boards to periodically update competency standards and technology trends; this approach has proven effective in adjusting programs to meet emerging skills needs (Autio et al., 2014).

3.9. Startup culture and risk mentality

Startup culture in non-public universities and colleges is shifting from "events" to "daily practice". Competitions are still a media highlight, but are becoming less "isolated" when linked to the incubation-acceleration roadmap. Students' risk aversion is gradually being "detoxified" through fail-safe courses, "failure night" activities, and mentoring (Spigel, 2017).

However, social norms that consider success mainly as a stable job still have a significant impact; families rarely encourage their children to pursue long-term technology startups. The lack of a close role-model network in each industry/locality makes the symbolic capital of the ecosystem still thin (Spigel, 2017).

3.10. Digital platforms and ecosystem governance data

Some non-public universities and colleges have implemented digital ecosystem portals: idea management, mentor registration, event calendar, open science repository, ecosystem KPI tracking (number of projects, mentor-match, prototype, pilot customers). Basic data analysis supports decision making (e.g. identifying "bottlenecks" in the incubation pipeline). However, most of them are manual or fragmented records, lacking data standards and automation (OECD, 2021). Digitalization is consistent with the evolutionary ecosystem principle (Autio et al., 2014), enabling rapid learning and evidence-based resource allocation.

3.11. Outputs and Impact

Common quantitative outputs tracked by non-public universities and colleges include: number of ideas submitted to incubators, projects in the accelerator phase, prototypes, funding calls, awards, receipts of initial revenue, number of new jobs created. Qualitative outputs include: improved student innovation capacity, deeper industry links and the formation of innovation communities within the non-public universities and colleges. According to international experience, sustainable outcomes take 3–5 years to "mature" and cannot be measured by the number of short-term events (Audretsch, 2014; Wright et al., 2017).

In terms of local impact, student projects often address micro-meso issues (smart cities, tourism, urban agriculture, digital services for SMEs). In large cities, the impact is reflected in increased digital capacity for small businesses, improved public services at the district/county level, and promotion of the image of a startup city (World Bank, 2020).

3.12. Comparison of public and non-public universities and colleges

• R&D resources: Public universities excel in laboratories, state funds; non-public universities and colleges excel in speed, "time-to-market".

• Governance: non-public universities and colleges are flexible, empowering innovation centers; public universities standardize processes, strong in large research projects.

• Startup finance: Public universities and colleges have easy access to research topics/funds; non-public universities and colleges rely on angels/alumni and corporate funding.

• Culture: non-public universities and colleges emphasize application – market; public universities and colleges emphasize academics – publication (Tran, 2019; Nguyen, 2020).

Overall, the two sectors complement each other more than compete: public provides deep knowledge base; non-public quickly transforms into market solutions (Etzkowitz & Leydesdorff, 2000; Audretsch, 2014).

3.13. Regional and sectoral differences

In Hanoi - Ho Chi Minh City - Da Nang, the ecosystem is richer in mentors and investment; non-public universities and colleges easily "join hands" with technology enterprises and digital platforms. In other provinces/cities, the strength is local problems (Tourism, Agriculture, Logistics), suitable for the mission-oriented innovation model linked to practical needs (Wright et al., 2017). By sector, non-public has advantages in: applied information technology, digital design – media, tourism – services, e-commerce, edtech, where capital barriers and R&D infrastructure are lower than deep-tech.

3.14. Main bottlenecks

(1) Institutions and policies: There is no equal framework for non-public access to public funds; ownership mechanisms and benefit sharing from commercialization are unclear (Tran, 2019).

(2) Resources: Lack of lecturers with startup experience, lack of IPR/TTO experts, limited standard incubation space (Nguyen, 2020).

(3) Finance: Small internal funds, lack of "mid-way" financial tools (bridge) for the product–market fit stage (Vuong et al., 2020).

(4) Data – impact assessment: Lack of data system according to project life cycle; The employment/income impact ratio has not been measured (OECD, 2021).

(5) Culture – psychology: Risk-averse, lack of local role-model; activities are sometimes heavy on festivals, light on substantive incubation (Spigel, 2017).

3.15. Emerging good practices

• Cross-cutting strategy: From subject → incubation → acceleration → fundraising, with clear KPIs, seed budgets and leadership commitment (Rasmussen et al., 2014).

• Mentor and industry board: Institutionalize mentoring mechanism (time contract, remuneration – benefits), industry advisory board updates skill standards (Autio et al., 2014).

• SPV/incubator legal entity: Flexibly hold shares, call for funding, sign MOU with VC/angel (Grimaldi et al., 2011).

• Digital ecosystem platform: Idea pipeline, mentor – startup match, internal public KPI dashboard for learning (OECD, 2021).

• University-enterprise-locality alliance: Mission projects (Smart cities, Tourism, Green logistics) create "real headlines" and early customer flows (Wright et al., 2017).

The current situation shows that the non-public university and college sector in Vietnam has left the starting line, entering the stage of shaping mechanisms and consolidating capacity. The advantages of flexible governance, proximity to the market and rapid implementation help non-public universities and colleges create applied impacts, but institutional - resource - financial bottlenecks are limiting technological depth and sustainability. Based on international theoretical frameworks (Triple/Quadruple Helix; ecosystem attributes) and regional experience, the leverage of non-public is

(i) Priority-ordered ecosystem strategy,

(ii) Institutionalization of mentors - TTO - SPV,

(iii) Governance data and impact assessment,

(iv) Linking missions with localities and international networks.

3.16. Current status of the startup and innovation ecosystem in non-public universities and colleges

3.16.1. The big picture

Over the past decade, startups and innovation have become a focus in Vietnam's education and economic development policies. The government has clearly defined the role of universities and colleges in forming a national startup ecosystem through projects such as Project 844 ("Supporting the national startup and innovation ecosystem until 2025") and Project 1665 ("Supporting students to start businesses until 2025") (Ministry of Science and Technology, 2017; Ministry of Education and Training, 2018). In this context, non-public universities and colleges – with their advantages of flexible governance, financial autonomy and closer connection to market needs – are increasingly seen as potential land for start-up and innovation activities.

However, according to recent reports, the development of the start-up ecosystem at non-public institutions is still quite uneven: some non-public universities and colleges have become "bright spots" in integrating start-up education and building innovation centers (e.g. FPT University, Hoa Sen University, Van Lang University), while many other non-public universities and colleges still stop at discrete activities such as organizing idea competitions, seminars or integrating a few start-up modules in the training program (Nguyen & Tran, 2020).

To clarify this situation, the next section will analyze in detail through a number of typical case studies, both to illustrate the diverse approaches and to point out common points in the challenges and opportunities that non-public universities and colleges in Vietnam are facing.

3.16.2. Case Study 1: FPT University - a technology - oriented startup ecosystem model

3.16.2.1. Development context and philosophy

FPT University, part of FPT Corporation - one of the leading technology enterprises in Vietnam, is the first non-public university established according to the enterprise-university model. The non-public universities' educational philosophy is "Practical Learning - Practical Work", emphasizing the close connection between training and the practical needs of enterprises.

According to Isenberg (2011), an effective startup ecosystem must be based on multi-dimensional connections between agents, from universities, enterprises, investors to management agencies. FPT University has clearly demonstrated this feature by directly leveraging the resources of the parent corporation and its global partner network to support students in starting a business in the technology field.

3.16.2.2. Startup and innovation activities

FPT has established F-Venture - a venture capital fund specializing in supporting technology startups developed by students and alumni. In addition, the non-public university has built an Innovation Hub, where students can access modern facilities, technology experts and investors to test and realize their ideas. According to internal reports, by 2022, more than 50 student startup projects have been incubated, some of which have successfully raised capital from international investment funds (FPT University, 2022).

3.16.2.3. Evaluation

FPT's strength lies in its unique combination model of education and business. The non-public university not only provides knowledge, but also brings students into a network of practical startups and innovation. However, the limitation is the strong focus on the technology sector, while other sectors such as society, culture and health are less focused. This raises questions about the diversity and inclusiveness of the ecosystem (Spigel, 2017).

3.16.3. Case Study 2: Head of Hoa Sen University - startups associated with social and cultural innovation

3.16.3.1. Positioning and characteristics

Hoa Sen University (Ho Chi Minh City) is one of the internationally oriented non-public universities, prominent in the fields of communication, management, design and art. Unlike FPT, Hoa Sen University develops a startup ecosystem associated with social innovation, cultural startups and service sectors.

3.16.3.2. Activities and initiatives

The non-public university organizes Hoa Sen Startup Festival - an annual event to connect students, businesses and the creative startup community. In addition, the non-public university also deploys creative labs in the fields of design and cultural industries, where students can test new products and services. Some social startup projects of Hoa Sen students such as "Green Life" (recycled products from plastic) or "Commercial floor for young artists" have been recognized by the domestic press and received support from social funds (Nguyen & Pham, 2021).

3.16.3.3. Evaluation

Hoa Sen University has demonstrated that the startup ecosystem is not only associated with technology, but can also spread to cultural and social fields, in line with the trend of "entrepreneurial university" diversification (Guerrero & Urbano, 2012). However, the limitation of the non-public university is the lack of strong financial resources to maintain long-term incubation activities.

3.16.4. Case Study 3: Van Lang University – startup ecosystem in creative industry and design

3.16.4.1. Outstanding features

Van Lang University focuses on the fields of architecture, design, medicine and management. In recent years, the university has invested heavily in innovation, especially in the field of cultural industry – an area identified by UNESCO (2013) as a driving force for knowledge-based economic development.

3.16.4.2. Implementation practice

The non-public university established the Innovation Center in 2019, providing creative space (Co-working space) and connecting design, architecture and communication businesses. Van Lang also cooperates with cultural industry businesses in Ho Chi Minh City to create output for students. According to 2022 data, more than 30 student projects have been commercialized as design products and creative services (Van Lang University, 2022).

3.16.4.3. Evaluation

Van Lang University's model demonstrates integration into the "triple helix" trend (Etzkowitz & Leydesdorff, 2000), when the non-public university closely links with businesses and local authorities in developing cultural industries. The limitation is that the level of internationalization of projects is still modest, with few products reaching the global market.

3.16.5. Case Study 4: Other non-public universities – Nguyen Tat Thanh, Thang Long, Duy Tan

3.16.5.1. Initial efforts

Many other non-public universities have also begun to form activities to support startups. Nguyen Tat Thanh University has an "Innovation and Startup Center" with courses on startup skills. Duy Tan University (Da Nang) established an incubation center and has had a number of successful biotechnology startups. Thang Long University (Hanoi) integrates startups into its economics and business administration program.

3.16.5.2. Typical barriers

However, most of these universities are limited in financial resources, lack of lecturers with startup experience and have not yet formed a close cooperation mechanism with businesses (Rasmussen et al., 2014). In addition, according to Wright et al. (2017), for the startup ecosystem to develop sustainably, there needs to be "institutional logics" - that is, a system of thinking and synchronous policies. This is still lacking in many non-public universities in Vietnam.

3.17. Overall assessment

Through the case studies, it can be seen that:

• Strengths: Non-public universities have advantages in terms of flexibility in management, practicality and connection with business needs. Some pioneering universities (FPT, Hoa Sen, Van Lang) have formed a fairly systematic startup ecosystem model.

• Limitations: Lack of financial resources, lack of experienced lecturers in startups, activities are

still movement-like, internal policies have not been synchronized with national strategies.

•Opportunities: Strong government encouragement, social concern, the development of digital technology and the creative economy opens up a large space.

•Challenges: Competition with the public sector with abundant resources; lack of financial sustainability and internal policies; increasing demand for internationalization.

When placed within the international theoretical framework (Isenberg, 2011; Spigel, 2017; Guerrero & Urbano, 2012; Rasmussen et al., 2014), it can be concluded that Vietnamese non-public universities are in the "formative" stage of the startup ecosystem, with some notable pioneering models but still need long-term management strategies and stronger policy support to develop into a sustainable, cohesive and influential ecosystem.

4. Management solutions and policy recommendations

4.1. Problem statement

After analyzing the current situation at non-public universities and colleges in Vietnam, it can be seen that although the startup and innovation ecosystem has had positive initial steps, it still faces many barriers in terms of resources, governance and connectivity. For this ecosystem to become a real driving force for knowledge-based economic development, a system of synchronous management solutions and policies is needed, based on international theory and the specific context of Vietnam.

As Isenberg (2011) pointed out, the startup ecosystem cannot be formed naturally but requires a process of creation, in which non-public universities and colleges play a central role in connecting resources, creating a startup culture and producing knowledge. According to Rasmussen, Wright & Bercovitz (2014), a successful startup university must possess three core competencies:

(i) The capacity to manage startup strategies,

(ii) The capacity to create a support system, and

(iii) The capacity to connect networks. In the non-public context, the design and implementation of solutions should emphasize flexibility, creativity, and efficient use of resources.

4.2. Group of management solutions for non-public universities and colleges

4.2.1. Solution 1: Perfecting the startup and innovation management model

Non-public universities and colleges need to establish an integrated startup and innovation management mechanism in their overall development strategy. Startup activities should not be considered as just an "appendix" or extracurricular activity, but must become a strategic pillar alongside training and research.

According to Clark (1998), an innovative university and college needs to build an "entrepreneurial steering core" – that is, a management system with an entrepreneurial vision, the ability to coordinate resources and make quick decisions. For non-public universities and colleges, this is even more important because the high autonomy mechanism allows the non-public universities and colleges to be flexible but can also be easily dispersed if there is no clear strategy.

Specifically:

• Establish an Entrepreneurship and Innovation Board under the Board of Directors, with the right to advise and make decisions.

• Issue a 5-10 year entrepreneurial and innovation strategy with measurable goals (KPIs: number of incubated startups, number of successfully funded projects, number of commercialized products).

• Develop a mechanism to evaluate and encourage lecturers and students to participate in entrepreneurial activities.

4.2.2. Solution 2: Develop sustainable financial resources

One of the major barriers of non-public universities and colleges is financial constraints. According to Guerrero & Urbano (2012), the lack of resources will reduce the ability to maintain long-term incubation activities. Therefore, it is necessary to diversify resources in the following directions:

• Internal startup fund: Allocate 1-3% of tuition fees or annual profits to establish a fund to support student ideas.

• Cooperate with businesses: Call on businesses to sponsor in exchange for access to human resources and technology.

• Mobilize venture capital funds: Establish partnerships with domestic and foreign VC funds to co-fund student projects.

• Spin-off mechanism: Allow lecturers and students to start businesses and share profits with the non-public university and college at a transparent rate.

4.2.3. Solution 3: Improve the capacity of lecturers and management staff

Current lecturers often lack practical startup experience (Rasmussen et al., 2014). Therefore, the non-public university and college needs to implement:

• Entrepreneurship training program: cooperate with international non-public universities and colleges (such as Singapore, Korea, Israel).

• Policy of inviting business experts to participate in teaching according to the "professor of practice" model.

• Promotion mechanism based on innovation: evaluated not only by the number of articles, but also by commercialization, invention and startup activities.

4.2.4. Solution 4: Innovating training programs and teaching methods

According to Wright et al. (2017), effective entrepreneurship education does not stop at imparting knowledge, but must develop "mindset" and practical skills. Therefore, non-public universities and colleges need to:

• Integrate entrepreneurship and innovation into compulsory subjects in the program.

• Apply project-based learning and experiential learning methods.

• Connect students with real startups during the learning process, instead of just doing simulation projects.

• Create opportunities for international exchange on startups.

4.2.5. Solution 5: Build a startup culture throughout the non-public university and college

Startup culture is the foundation for the ecosystem to develop (Spigel, 2017). Non-public non-public universities and colleges need to create an open environment, encourage creativity and risk taking:

• Organize annual startup festivals.

• Internal communication about the faces of students/lecturers who have successfully started a business.

• Encourage the spirit of "fail fast – learn fast", considering failure as part of the learning process.

4.2.6. Solution 6: Connection and cooperation

4.2.6.1. Linking non-public universities and colleges – businesses – government (Triple Helix)

According to the Triple Helix model (Etzkowitz & Leydesdorff, 2000), the close connection between Non-public Universities and Colleges – Businesses – Government is the driving force for innovation. Non-public non - public universities and colleges need to:

• Sign strategic cooperation agreements with local businesses to support incubation.

• Take advantage of local incentive policies (tax exemptions, infrastructure support).

• Create a "platform" connecting three parties through annual forums.

4.2.6.2. International cooperation

Vietnam's startup ecosystem needs to be strongly connected with the region and the world. Non-public Universities and Colleges can:

• Join international networks such as ASEAN Startup Network, Global Entrepreneurship Monitor.

• Cooperate with international universities to co-incubate cross-border projects.

• Organize student startup exchange programs with Israel, Singapore, Finland - countries with strong ecosystems (Autio et al., 2014).

4.3. Macro policy recommendations

4.3.1. Government and Ministry of Science and Technology

• Continue to implement Project 844 in the direction of expanding to the non-public sector.

• Create a competitive funding mechanism for innovation centers in non-public universities and colleges.

• Encourage venture capital funds to cooperate with universities through tax incentives.

4.3.2. Ministry of Education and Training

• Integrate startup - innovation into output standards for students.

• Issue a framework for startup lecturers' competencies.

• Develop a mechanism to recognize startup activities as part of scientific research.

4.3.3. Local authorities

• Connect non-public universities and colleges with local business incubators.

• Support co-working spaces, reduce land rental costs for startup centers.

• Coordinate the organization of regional Techfests, creating a playground for students of non-public universities and colleges.

4.4. Long-term recommendations

• Develop a digital ecosystem: an online platform to connect Students - Lecturers - Businesses - Investors.

• Promote interdisciplinary research on startups (economics, technology, sociology).

• Encourage the formation of alliances of non-public universities and colleges on startups, to share resources and increase influence.

• Bring Vietnam deeper into the global startup value chain, not only training human resources but

also exporting startups.

Management solutions and policy recommendations for the startup - innovation ecosystem at non-public universities and colleges in Vietnam need to be synchronous, multi-layered and long-term. The coordination between non-public universities and colleges, businesses and the state is a decisive factor, while the non-public universities and colleges themselves must proactively innovate governance, build a startup culture and expand international cooperation. Only then can this ecosystem become a real driving force for the development of the knowledge economy and international integration.

5. Discussion

5.1. Discussion questions

The results of the analysis of the current situation and proposed solutions for the startup and innovation ecosystem at non-public universities and colleges in Vietnam show a picture with many opportunities but also facing complex challenges. While international models (Etzkowitz & Leydesdorff, 2000; Isenberg, 2011; Spigel, 2017) emphasize the central role of universities and colleges in creating knowledge, networking and nurturing startup culture, in Vietnam, especially in the non-public sector, these factors are only in their infancy and not yet synchronized. Therefore, the discussion section needs to ask the question: Are the proposed solutions really feasible and sustainable in the specific context of Vietnam? And if so, what are the prerequisites for their realization?

5.2. Comparison with international experience

A study by Autio et al. (2014) shows that an effective startup ecosystem must have a combination of strong public policies, dynamic business networks and solid startup support infrastructure. In the context of non-public universities and colleges in Vietnam, there is a clear lack of incubator infrastructure and internal venture capital networks. Compared to Israel – where the "risk-taking" culture is deeply ingrained in society (Senor & Singer, 2009) – or Singapore with its synchronous national support system (Wong et al., 2005), Vietnamese non-public universities and colleges are still in the position of "latecomers", having to both build infrastructure and cultivate startup culture from almost zero.

However, the non-public nature itself brings some advantages: high autonomy, flexibility in training programs and the ability to quickly connect to the market. According to Rasmussen et al. (2014), non-public universities and colleges with organizational flexibility are more likely to develop organizational entrepreneurial capabilities. This opens up opportunities for the non-public sector to become "flexible incubators" compared to public schools that are often heavy on procedures.

5.3. Theoretical contributions

One of the highlights of this study is to emphasize the uniqueness of non-public universities and colleges in building an ecosystem for startups and innovation. International works often focus on public universities and colleges or study the overall national ecosystem (Guerrero & Urbano, 2012; Wright et al., 2017). Meanwhile, few studies have analyzed in depth the non-public context - which accounts for an increasingly large proportion in Vietnam and many Asian countries.

The article has pointed out that:

• Non-public universities and colleges have both the advantage of flexibility and are subject to fierce financial pressure, making investment in startups require a "smarter" model, saving resources but optimizing efficiency.

• The startup ecosystem in this sector is affected by two factors: internal factors (culture, governance, lecturer capacity) and external factors (state policies, investment markets, socio-culture).

• The concept of "adaptive entrepreneurial culture" can be seen as a new addition to the theoretical framework of entrepreneurial universities, when applied in the non-public context of Vietnam.

5.4. Practical implications

From the case-study analysis, it can be seen that:

• Some non-public universities and colleges such as FPT University and Van Lang University have been successful in building startup centers, but still face challenges in expanding scale and ensuring financial sustainability.

• Startup programs currently rely mainly on short-term funding (enterprises, projects) instead of sustainable funding mechanisms. This poses a potential risk of "breaking down" when external resources decline.

• The rate of commercialization of startup ideas is still low, reflecting the gap between training and the market.

Compared to international standards, these challenges are not new, but are more serious in the non-public context. Therefore, the article affirms that management solutions can only be promoted if they go hand in hand with macro policy reforms (Government, Ministry of Education and Training, Ministry of Science and Technology) to create a legal corridor and basic resources.

5.5. Limitations and challenges

The following limitations cannot be ignored:

• Limited practical data sources: Most studies are based on reports and small-scale interviews;

extensive and quantitative surveys are needed to increase reliability (as GEM - Global Entrepreneurship Monitor often does).

• Difficulty in measuring effectiveness: KPIs (number of successful startups, number of jobs created) in Vietnam are not unified, making international comparisons difficult.

• Socio-cultural impact: Vietnamese culture is still biased towards "safety", with little encouragement for risk-taking (Nguyen & Nordman, 2018), making it difficult to create an entrepreneurial culture in universities and colleges.

5.6. Suggested future research directions

To enhance the academic and practical value, future research can focus on:

• Large-scale quantitative survey on the awareness and entrepreneurial behavior of students of non-public universities and colleges, compared with the public sector.

• International comparative research between Vietnam and ASEAN countries with similar ecosystems (Thailand, Philippines).

• Analysis of the impact of specific policies (e.g. Project 844, Law on Support for Small and Medium Enterprises 2017) on the non-public sector.

• Research on sustainable financial management models for entrepreneurial centers in non-public universities and colleges.

5.7. Reconnecting with the research objectives

Overall, the research results and discussion have clarified the hypothesis that: the startup and innovation ecosystem at non-public universities and colleges in Vietnam has great potential, but needs a system of management solutions, synchronous policies and a supportive socio-cultural foundation. This not only contributes to the socio-economic development of Vietnam, but also helps to expand the theoretical framework of startup universities and colleges in a more diverse context, beyond the scope of traditional public universities and colleges.

6. Conclusion and future research directions

6.1. Summary of main findings

This study has approached the startup and innovation ecosystem in the specific context of non-public universities and colleges in Vietnam, a field that is increasingly significant in the process of transition to a knowledge-based economy and global integration. Theoretical analysis, international overview and case-study practical survey have pointed out three key points:

First, the entrepreneurial and innovation ecosystem (EI) is not only a collection of entrepreneurial activities but also a multidimensional system of linkages, where non-public universities and colleges play the role of "nucleus" in coordinating knowledge resources, technology, social capital and policy connections. This result is consistent with internationally recognized models, such as the Triple Helix framework (Etzkowitz & Leydesdorff, 2000) and the Entrepreneurial University Model (Clark, 1998; Guerrero & Urbano, 2012).

Second, the current situation at non-public universities and colleges in Vietnam reflects diversity and unevenness, from pioneering models (e.g. FPT University, Van Lang University) to new non-public universities and colleges in the start-up stage. Pioneering non-public universities and colleges often have advantages in terms of business networks, technology investment capabilities and innovation-oriented organizational culture. However, the majority of non-public universities and colleges still face many difficulties in finance, support policies and limitations in research resources (Nguyen & Hoang, 2021).

Thirdly, proposed management solutions and support policies need to emphasize three pillars:

(i) Developing a flexible governance model, promoting innovation from within the non-public universities and colleges;

(ii) Strengthening connections with businesses, local authorities and investment funds to form a multi-actor ecosystem;

(iii) Building an entrepreneurial culture environment and a legal framework to protect innovation (OECD, 2021; World Bank, 2020).

These findings confirm that non-public universities and colleges not only play an educational and training role, but can also become a driving force for local socio-economic development if the entrepreneurial and innovation ecosystem is effectively organized and managed.

6.2. Theoretical contributions

In terms of academics, this study has added some important theoretical aspects:

(1) Expanding the concept of "entrepreneurial and innovation ecosystem (IEC)" in the context of non-public higher education, which has been little studied before, especially in developing countries. While international studies often focus on public or research universities and colleges (Spigel, 2017; Wright et al., 2017), this paper has shown that non-public universities and colleges have stronger competitive motivation to innovate in order to maintain student attraction and social prestige.

(2) Affirm the importance of the management role in ecosystem operation. Unlike general entrepreneurial ecosystems, in the higher

education environment, management factors – including strategic management, internal policies and leadership capacity – are decisive factors (Rasmussen et al., 2014).

(3) Contribute to the theoretical framework of "Entrepreneurial University" by demonstrating that this model can adapt and develop in non-public institutions, where market pressures force non-public universities and colleges to innovate faster. This provides additional perspectives for scholars studying university and college management in the context of globalization (Guerrero & Urbano, 2012; Altbach, 2015).

5.3. Policy implications

The research results provide some suggestions for education managers, policy makers and leaders of non-public universities and colleges:

• For the Government and management agencies: It is necessary to establish a separate policy framework for non-public universities and colleges, creating conditions for access to research and innovation funds, incubation programs and tax incentives for start-up activities (World Bank, 2020). At the same time, it is necessary to encourage forms of public-private partnership in developing innovation centers in non-public universities and colleges.

• For non-public universities and colleges: Non-public Universities and Colleges need to identify start-ups and innovation as a long-term strategy, not only to enhance the brand but also closely linked to the mission of contributing to socio-economic development. This requires changes in governance, prioritizing investment in R&D and strengthening cooperation with businesses (Nguyen et al., 2022).

• For businesses and investors: Non-public universities and colleges can become a "launch pad" for business ideas, where businesses seek creative human resources and research cooperation opportunities. Policies to encourage venture capital and link startup funds with non-public universities and colleges will help further promote the flow of ideas.

• For the community and local authorities: Non-public universities and colleges need to be seen as the core of the local innovation ecosystem, thereby creating a spillover effect on startup culture, promoting the formation of new industry clusters and enhancing local competitiveness (Audretsch & Belitski, 2017).

5.4. Research limitations

This study has some limitations:

• Data limitations: Due to the survey scope mainly focusing on a number of typical non-public universities and colleges, it does not fully represent the entire non-public system in Vietnam.

• Methodology: Leaning towards qualitative analysis and case-study, there is no large quantitative survey to test the hypotheses.

• International comparability: Although there are references to international models, the study has no field surveys abroad for comparison. These limitations do not reduce the value of the findings but open up opportunities for further research.

5.5. Further research directions

Based on the results and limitations, some directions can be suggested:

(1) Large-scale quantitative survey on awareness, attitude and behavior of entrepreneurship and innovation of students and lecturers at many different non-public universities and colleges.

(2) International comparison between Vietnam and some countries with strongly developed non-public universities and colleges systems such as Korea, Japan, Philippines.

(3) In-depth study of financial models to sustain innovation centers in non-public universities and colleges, including the role of venture capital and community funds.

(4) Analysis of specific policy impacts, such as the revised Law on Higher Education, Decrees supporting innovative startups and the national strategy on AI, to assess practical effectiveness.

(5) Application of new technologies such as artificial intelligence, blockchain, big data to students' startup and innovation activities, thereby exploring opportunities for digital transformation in non-public education.

5.6. Reconnecting with the development mission

Above all, this study affirms that non-public universities and colleges have great potential to become breakthrough drivers for socio-economic development at the local and national levels. In the era of strong national transformation, investment in the startup and innovation ecosystem is not only an academic need or management strategy, but also an essential part of the national vision of an innovative, creative and integrated Vietnam. As Isenberg (2011) emphasized, the startup ecosystem cannot be "mechanically copied" from one model to another, but needs to be "selectively designed" to suit local conditions. In the context of Vietnam, especially in the non-public sector, flexible adaptation, creativity and effective management will determine the success of non-public universities and colleges in their new role: not only training human resources, but also creating the future.

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QUẢN LÝ HỆ SINH THÁI KHỞI NGHIỆP, ĐỔI MỚI SÁNG TẠO TẠI CÁC TRƯỜNG ĐẠI HỌC, CAO ĐẲNG NGOÀI CÔNG LẬP - ĐỘNG LỰC KIẾN TẠO PHÁT TRIỂN KINH TẾ - XÃ HỘI TRONG KỶ NGUYÊN CHUYỂN MÌNH, BỨT PHÁ CỦA VIỆT NAM

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Tóm tắt

Nghiên cứu này tập trung phân tích công tác quản lý hệ sinh thái khởi nghiệp và đổi mới sáng tạo tại các trường đại học, cao đẳng ngoài công lập ở Việt Nam, đồng thời xem xét vai trò của chúng như một động lực thúc đẩy phát triển kinh tế - xã hội địa phương trong bối cảnh đất nước đang chuyển mình và bứt phá. Bài báo tổng hợp cơ sở lý luận, khảo sát thực trạng hệ sinh thái khởi nghiệp trong khối ngoài công lập và đề xuất các giải pháp quản lý cùng khuyến nghị chính sách nhằm hình thành một văn hóa đổi mới bền vững trong giáo dục đại học. Kết quả cho thấy các cơ sở giáo dục đại học ngoài công lập vừa đối mặt với nhiều thách thức, vừa sở hữu lợi thế về sự linh hoạt, khả năng gắn kết thị trường và tiềm năng đóng góp vào phát triển kinh tế - xã hội địa phương và quốc gia.

Từ khóa: Khởi nghiệp; Hệ sinh thái đổi mới sáng tạo; Đại học và Cao đẳng ngoài công lập; Quản lý giáo dục đại học và cao đẳng; Phát triển kinh tế xã hội; Việt Nam.