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Entrepreneurship Support Model for University Students - Literature Review and Strategic Solutions for Vietnamese Universities

Nguyen Thi Thuy[1] and Do Thi Bich Loan[2]

[1]Tan Trao University, VNU University of Education, [2]Vietnam Institute of Educational Sciences

This paper analyzes the role of entrepreneurship support models for students at universities around the world. The purpose of this paper is to review the research on entrepreneurship support models for students at universities through a literature review to gain a comprehensive perspective on this field and to seek solutions for Vietnamese universities. The results show that international universities are successful thanks to professional advisory systems, internal investment funds, modern infrastructure, and close links with businesses. Vietnamese universities can improve the quality of entrepreneurship support through investing in workspaces, developing mentoring programs, and strengthening international cooperation. The study provides some specific recommendations for solutions to promote the entrepreneurial spirit of Vietnamese students.

Keywords: Entrepreneurship, Entrepreneurship support, Entrepreneurship support for students at universities

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Corresponding Author
Do Thi Bich Loan
The Vietnam National Institute of Education Sciences, PhD in Education Management, Associate Professor, and Senior Researcher.
E-mail: bichloan1095@gmail.com

INTRODUCTION

In the context of knowledge economy and globalization, innovative entrepreneurship is increasingly important for socio-economic development. Universities not only impart knowledge but also become centers to promote entrepreneurship for students. Many universities in the world have built advanced entrepreneurship models, including training programs, incubators, and investment funds, to provide students with the necessary skills to establish businesses (Audretsch, 2014; Etzkowitz et al., 2008).

These models show that universities play a major role in developing entrepreneurial ecosystems, helping students develop critical thinking, time management, and problem-solving skills. Furthermore, encourage entrepreneurship not only creates employment opportunities but also promotes innovation in areas such as technology, healthcare, and finance, contributing to improving the local economy (Bae et al., 2014; Thursby et al., 2009). According to the OECD (2020), entrepreneurship contributes significantly to economic growth and unemployment reduction. Universities can provide a supportive environment, helping students realize their ideas, improve their competitiveness, and attract investment (Etzkowitz & Leydesdorff, 2000). However, there is also much debate about its role. According to Etzkowitz (2002), modern universities can develop “entrepreneurial

science", which combines academic research and innovation. However, some scholars such as Bok (2003) warn that an overemphasis on entrepreneurship can lead to the commercialization of knowledge and reduce the objectivity of research. One possible solution to this controversy is to build a balanced model, such as Cambridge Enterprise, that promotes both academic research and effective technology transfer (Siegel & Wright, 2015). This approach can be applied in Vietnam to minimize the risk of knowledge commercialization while maintaining the core educational role.

Understanding international entrepreneurship models and drawing on appropriate experiences are necessary to build an effective entrepreneurship ecosystem in Vietnamese universities.

RESEARCH METHODS

This study uses a qualitative research method to analyze in detail the startup support models at leading universities in the world, from which to draw appropriate lessons for application in Vietnamese universities. Qualitative research methods are suitable for in-depth analysis of models, because the characteristics of startup ecosystems are often complex, multidimensional, and cannot be completely measured by data (Creswell, 2014). Specific research methods include document analysis and case studies of some typical universities, such as Stanford, Cambridge, NUS, ETH Zurich and Tel Aviv, to compare key elements in these models.

1. Document Analysis

The document analysis was conducted based on reports, research papers and academic publications on entrepreneurship at leading universities around the world. This method helps the study to have a general and systematic view of the strategies, infrastructure, and other supporting factors in the entrepreneurial ecosystem of each university. The analyzed documents include scientific articles from prestigious journals, policy reports of universities and analytical reports of international educational organizations. These documents provide information on entrepreneurial models, policies to support student entrepreneurship, and factors leading to the success of the entrepreneurial ecosystem in universities (Yin, 2018). Data from the documents will be coded and analyzed using thematic analysis to identify key factors in entrepreneurial support models. Key themes will include funding, mentoring, infrastructure, and entrepreneurship training programs (Braun & Clarke, 2006).

2. Case Studies

The case study method allows for a deep dive into specific university models to better understand how they implement and operate entrepreneurship support activities. The selected universities include Stanford (USA), Cambridge (UK), NUS (Singapore), ETH Zurich (Switzerland), and Tel Aviv (Israel), representing diverse entrepreneurship models in the world's leading educational systems. The universities were selected based on their reputation, quality of entrepreneurship support, and representativeness of advanced entrepreneurship models. These universities have been recognized for having strong entrepreneurship ecosystems and have outstanding achievements in promoting entrepreneurship among students (Eisenhardt, 1989). Data for each case will be collected from public sources, such as school reports, documents from international university ranking organizations, and academic articles. In addition, data from previous studies on each specific case will be collected to gain more insight (Stake, 1995). Data from the cases are analyzed by cross-comparison between schools to identify success factors and challenges in each school's startup model. The comparison method allows to identify important similarities and differences, thereby providing useful lessons for Vietnam (Yin, 2018).

3. Data Analysis Method

Data is analyzed using content analysis and thematic analysis to identify important factors in each school's startup support model. The coding and thematic analysis will help synthesize key factors such as startup infrastructure, funding, mentoring, business connections and training programs (Patton, 2002). Content analysis: Used to identify and code common elements of the startup ecosystem, thereby finding success factors in different models. Thematic analysis: Applied to the coded elements to identify important themes and draw appropriate lessons for universities in Vietnam. This research method uses document analysis and case studies to compare startup support models of the world's leading universities and identify applicable lessons for Vietnam. Combined with content analysis and thematic analysis, this study not only provides an overview of the success factors of each model but also provides specific recommendations for Vietnamese universities.

LITERATURE REVIEW

1. Theory of Entrepreneurship

1.1. Some Concepts

- Entrepreneurship

Entrepreneurship is the process of starting a new business or venture, in which an individual or group of people creates, develops, and implements a new idea to meet a market need and create economic value. Entrepreneurship includes identifying business opportunities, planning, mobilizing resources, and implementing to bring a new product or service to the market (Shane & Venkataraman, 2000). Entrepreneurs are often able to identify opportunities and use resources flexibly to launch new products and services, with the goal of growing and expanding the business. Entrepreneurship is an important tool for economic development, so promoting young entrepreneurs is also one of the top tasks in many regions and countries of policy makers (Sobel & King, 2008).

- Entrepreneurship Support

Entrepreneurship Support is a set of activities, programs, and services provided by organizations, government agencies, universities, and other support facilities to help individuals or groups of entrepreneurs in turning business ideas into reality and building businesses. Entrepreneurship support includes many elements such as consulting, training, funding, infrastructure support, providing market information, and developing networks to facilitate the establishment and development of businesses (Isenberg, 2011).

Entrepreneurship support helps reduce risks for entrepreneurs, especially in the early stages, when resources and experience are limited. The Organization for Economic Cooperation and Development (OECD) has pointed out that entrepreneurial support includes providing a favorable business environment, skills training programs, access to capital, and building a mentoring network to improve the success of entrepreneurial projects (OECD, 2016). The ultimate goal of entrepreneurial support is to promote creativity, innovation, and economic growth through the development of new businesses.

Developing an entrepreneurial support system is to create innovative products and services of SMEs, including the structural elements of the entrepreneurial support system under endogenous and exogenous changes in the business operating environment (Demianenko et al., 2021).

- Student Entrepreneurship Support

University entrepreneurship support is the provision of services, programs, and resources to encourage and support students in developing business ideas, from the ideation stage to the establishment of a business.

This includes training in entrepreneurial skills, providing professional advice, financial support, facilities, and partnerships to facilitate students in realizing their ideas. University entrepreneurship support can include programs such as business incubators, innovation centers, and networking activities with entrepreneurs and investors. According to Lockett and Wright (2005), universities can provide not only theoretical knowledge but also practical skills, infrastructure, and an academic environment conducive to entrepreneurship.

- Entrepreneurship Education

Entrepreneurship education is teaching people to start and operate successful businesses that can generate profits, thereby facilitating economic growth (Hood & Young, 1993). Those who want to start businesses must have the relevant entrepreneurial knowledge, technology, and skills, and must be able to solve the problem of job creation that comes with employment (Kim et al., 2014).

1.2. Meoretical Framework: Triple Helix and the Startup Ecosystem

In the context of a developing knowledge economy, entrepreneurship not only plays the role of a driving force for innovation but also a key factor in promoting sustainable economic growth. Universities, in addition to their traditional role as training and research institutions, are becoming innovation centers, supporting students in realizing their business ideas. However, the role of universities cannot be separated from the relationship with the government and businesses in building a startup ecosystem. To explain this relationship, the Triple Helix model of Etzkowitz and Leydesdorff (2000) was used as a theoretical basis in this article. At the same time, to specify the role of each actor in the ecosystem, the study integrates the startup ecosystem model of Isenberg (2011).

The Triple Helix model emphasizes that the collaboration between three key actors—universities, governments, and businesses—is the foundation for fostering innovation and entrepreneurship. Universities act as knowledge generators, training human resources, and researching new technologies. Businesses receive this knowledge to commercialize and deploy it in the market. Governments provide support through policy formulation, financial provision, and favorable legal corridors.

Isenberg's model adds six elements to the entrepreneurial ecosystem: policy, finance, culture, support, human resources, and market. Each of these elements plays an important role in the ecosystem's functioning. By integrating the two theoretical frameworks, the study will clarify the roles of actors in the entrepreneurial ecosystem and explain how these elements interact to promote success.

2. The role of University Student Entrepreneurship Support

- Promoting creativity and innovation: Entrepreneurship support helps students develop creative thinking and problem-solving skills. Universities create an environment for students to experiment with new ideas and encourage innovation. According to Etzkowitz (2002), university entrepreneurship programs are a driving force for innovation and increase students' competitiveness in the global labor market. Universities are places to research and develop new technologies and new business models.

- Developing entrepreneurial skills and capacities: University entrepreneurship support programs provide important business skills such as business planning, financial management, leadership skills and communication skills. These skills help students better prepare for their entrepreneurial journey and increase their chances of future success (Kuratko, 2005). In addition, exposure to real business models helps students gain a more comprehensive view of the business environment and how a business operates. Entrepreneurship-oriented activities within and outside the university curriculum have a positive impact on university students' confidence and desire to start a business.

- Enhancing connectivity and build relationships: Supporting entrepreneurship at universities often goes hand in hand with building a network of connections between students and investors, entrepreneurs, and startup advisors. This not only provides students with opportunities to gain experience but also helps them expand important relationships for future business development. Building a strong network can also support students in raising capital and business cooperation when necessary.

- Promoting economic growth and job creation: Supporting student startups helps create new businesses, contributing to local and national economic growth. These businesses not only help promote innovation but also create more jobs for society, improving the economy in a sustainable way. According to Audretsch et al. (2006), universities play an important role in developing the startup ecosystem, and students are the core factor of future economic development.

- Providing infrastructure and financial support: Universities often provide co-working spaces, laboratories, and initial financial support for students to develop their projects. These resources are very important in the early stages when students often lack experience and financial capacity (Clarysse et al., 2005). Support from innovation centers and funding helps reduce stress and risk, giving students the opportunity to succeed.

3. Factors Affecting Students' Ability to Start a Business

Lien (2016) believes that there are 5 factors affecting students' ability to start a business, which are: (i) Education and training at university; (ii) Experience and personal experience; (iii) Family and friends; (iv) Personal personality; (v) Capital Tu and Tien (2015) believe that the order of influence according to decreasing importance of the factors on students' intention to start a business is: (1) Attitude; (2) education and opportunity to start a business; (3) capital; (4) subjective norms; (5) perceived behavioral control. In the current decade, India is making a necessary change in its startup support policies for students, which creates competition in the environment that is forced to evolve to improve the quality of labor in the startup ecosystem (Pandya & Mehta, 2019). Banal-Estañol et al. (2020) pointed out the role of coaches and angel investors in the development of innovative startup systems when analyzing the impact of early-stage individual stakeholders, first-stage venture capital investments on the success of startups.

4. Startup Support Models for Students at Universities in Some Countries

The startup support model at universities provides a comprehensive environment for students to learn, test and develop business ideas. Factors such as financial support, workspace, mentoring, and networking opportunities are core elements to help students overcome the initial difficulties of the startup process. By applying this model, universities not only help students realize their ideas but also contribute to economic development through the creation of new businesses and increased innovation.

ASIA

4.1. National University of Singapore - Singapore

NUS is one of the leading Asian universities in promoting student entrepreneurship, with the NUS Overseas Colleges (NOC) programme providing students with the opportunity to experience entrepreneurship in major technology hubs around the world such as Silicon Valley and Shanghai (Wong et al., 2007). The National University of Singapore (NUS) is one of the leading educational institutions in Asia, known for its innovative and effective entrepreneurship support ecosystem. The entrepreneurship support model at NUS focuses on providing practical training programs, international experience opportunities, and close links with global entrepreneurship centers.

This model is particularly known for the NUS Overseas Colleges (NOC) programme, business incubation programs, and startup funding system.

- NUS Overseas Colleges (NOC) Program: NOC is one of NUS's most prominent programs, providing students with the opportunity to study and intern in global startup hubs, including Silicon Valley (USA), Shanghai (China), Tel Aviv (Israel), and many other locations. The program aims to help students access advanced startup ecosystems, gain practical experience, and develop business skills. International experience and network building: By participating in the NOC program, students are trained and intern in a dynamic startup environment abroad, exposed to founders, investors, and successful entrepreneurs.

- Business incubation programs at NUS: NUS manages a number of incubation programs, notably NUS Enterprise and BLOCK71 Singapore, which have helped thousands of startups from inception to growth. NUS Enterprise: Is the organization that runs startup activities at NUS, providing a comprehensive ecosystem that includes financial support, workspace, and in-depth consulting services. NUS Enterprise provides students with an optimal working environment and support to develop products and business ideas. NUS Enterprise also regularly organizes seminars and events to connect students with investors and industry advisors.

BLOCK71 Singapore: A collaborative initiative between NUS Enterprise and several industry partners, BLOCK71 is designed to be an innovative startup hub where startups can access modern workspaces and a variety of support programs. According to Wong et al. (2007), BLOCK71 not only provides a physical space for startups but also serves as a "meeting place" between academia and industry, facilitating students' easy access to resources and collaboration opportunities.

- Financial support and investment opportunities for students: NUS provides various forms of financial support for student startup projects through startup support funds and funding programs. These financial resources enable students to develop their ideas without being overly dependent on external investment sources. NUS Entrepreneurship Support Fund: NUS has funding and investment programs, such as the SEED (Sparking Entrepreneurial Efforts and Dreams) fund, a fund that provides funding for student startups. This fund supports students in the early stages of their projects, helping them develop prototypes and build business teams. NUS also helps students reach out to venture capitalists and organizes "demo day" events where students can present their projects to potential investors. This is an opportunity for student startups to attract investment at an early stage and have more resources to develop.

BLOCK71, a prominent initiative of the National University of Singapore (NUS), has proven to be instrumental in supporting startups from the early ideation stage to scale-up. The programme provides workspace, mentorship and business support services.

According to the NUS Enterprise Report (2022), startups at BLOCK71 achieved an average annual revenue of US$1.5 million in the first 5 years of operation, significantly higher than the average of US$800,000 for startups that did not participate in the programme. In addition, more than 70% of startups at BLOCK71 were successful in raising early-stage funding and scaling within the first 3 years. A notable example is Carousell, a second-hand shopping app founded and developed at BLOCK71.

BLOCK71's success is a testament to the effectiveness of its hub-based startup support model. Key factors include strong connections to a mentor network, support from the Singapore government, and a focus on high-potential high-tech sectors.

The NUS Entrepreneurship Support model is a good example of combining education with practice, giving students not only the opportunity to learn but also access funding sources and international networks. The NOC

program is a special highlight in providing students with rich international experiences, which helps to enhance their global competitiveness. Providing financial support and incubation programs such as NUS Enterprise and BLOCK71 also create a favorable environment for young startups, helping them to develop sustainably. This model not only focuses on supporting student startups but also builds an ecosystem connecting universities and industries, contributing to the development of the knowledge economy in Singapore. These factors have contributed to making NUS one of the world's leading universities in supporting startups.

The NUS Overseas Colleges (NOC) programme at NUS provides students with the opportunity to study and intern in the world's leading startup hubs such as Silicon Valley (USA), Tel Aviv (Israel), and Shanghai (China). The programme not only provides knowledge but also helps students build international networks, creating a foundation for sustainable development of startup projects.

A typical success story from the NOC programme is PatSnap, a world leader in patent analytics and intellectual property data. PatSnap has raised over $300 million in investment from major funds such as Sequoia Capital and SoftBank Vision Fund (TechCrunch, 2023). Today, PatSnap is one of the leading global innovation companies. These results confirm that the NOC program not only helps to reduce startup risk but also fosters students' global innovation and entrepreneurship capabilities.

4.2. Malaysia

Universities in Malaysia play an important role in promoting entrepreneurship to improve micro enterprises into larger enterprises and make significant contributions to the economy. Since the 1990s, Malaysia has introduced entrepreneurship education into university curricula to provide students with entrepreneurial and creative skills to seize the opportunities of the new economy through the formation of entrepreneurship activities; Malaysia has an "Entrepreneurship Development Policy" for universities to create quality human resources, which are graduates with entrepreneurial knowledge and skills; The public higher education system offers entrepreneurship courses as one of the core courses; Conduct research and investigation on entrepreneurship education, as well as the factors affecting it, to support the teaching of entrepreneurship and to serve as a basis for developing educational policies to promote entrepreneurship; There are support policies and programs such as "Research Universities" under the "Ninth Plan" program, which allows research universities to receive more financial support and employees to receive more support and benefits; Curriculums designed to promote entrepreneurship orientation, place a strong emphasis on creativity, innovation and entrepreneurship across all disciplines; Improve collaboration between universities and industry for teaching, learning and research.

Malaysia's higher education system ranks highly in the world: Ranked 45/137 in the World Economic Forum's Global Competitiveness Report 2017 - 2018, a pillar that has helped Malaysia become the 25th/137 ranked economy, ranked 25/50 in the Quacquarelli Symonds rankings in 2018, ranked 6th in Asia and the Best in Southeast Asia, and ranked 28/50 ranked world higher education systems (ranked 7th in Asia and 2nd in Southeast Asia) in the Universitas 21 rankings in 2019. Developing cooperation between higher education institutions and industry in training and research is one of the key policies and solutions to implement Malaysia's Higher Education Development Plan 2015 - 2025 (Tran, 2019).

4.3. China

According to China Briefing (Linh, 2023), the Chinese government hopes to attract more university graduates to start businesses to reduce the high unemployment rate among young people. In September 2021, the State Council Office released a set of guidelines on supporting graduate students' employment and entrepreneurship, which includes policies such as increasing funding for innovation and entrepreneurship education, providing tax incentives for graduates who are self-employed in their graduation year, preferential tax policies for small

businesses, encouraging financial institutions to provide financial services for graduate students' startup projects, and increasing the maximum loan amount for graduate students, among others. Preferential policies for graduate students starting their own businesses include:

- Allocating about 30% of space in government-funded incubators and startup platforms for college graduates to use for free, and providing rent subsidies for those who start businesses in incubators in some cases;
- Deduction of actual value-added tax (VAT), urban construction and maintenance tax, education surcharge, local education surcharge and individual income tax (IIT) for college graduates engaging in individual business within three years (36 months) from the month of registration as individual business owners, with an annual limit of 12,000 yuan (about 1,736 USD) per household;
- Loan applications of up to 200,000 yuan (about 28,935 USD) to secure loans for college graduates starting their own businesses. For eligible borrowers starting a business partnership or organization to start a business together, the loan amount can be increased appropriately;
- One-time business subsidies for university graduates within two years of leaving school who are setting up small or micro enterprises for the first time or have been self-employed for more than one year. Specific measures and levels are determined by each province, region, and city.

MIDDLE EAST

4.4. Tel Aviv University - Israel

Tel Aviv University is a leading startup hub in Israel with the StarTAU program supporting students to develop ideas from the initial stage to product launch. Israel is known as the "startup nation" with a strong culture of supporting innovation and creativity (Senor & Singer, 2009). Tel Aviv University (TAU) is one of the leading centers in Israel for promoting entrepreneurship and innovation. TAU's entrepreneurship model is designed to develop business ideas from the initial stage to the establishment of a business, with comprehensive support from training programs, startup incubators, and mentoring networks. TAU is notable for its StarTAU program, an industry-linked startup ecosystem, and financial and mentoring support.

- StarTAU is the main startup support center at Tel Aviv University, established with the goal of providing training and mentoring programs for students and the broader startup community. StarTAU provides a comprehensive platform for those who want to develop business ideas into real businesses. StarTAU organizes a variety of training programs and workshops focused on entrepreneurship. These programs include courses in business planning, marketing, and financing for startups. Each course is designed to equip students with the knowledge and skills necessary to develop and manage a startup (Senor & Singer, 2009). StarTAU also hosts seminars with prominent entrepreneurs and investors, providing students with the opportunity to learn from real-world experiences. StarTAU provides students with the tools and resources necessary to start a business to launch and develop their projects. Students can receive consulting support on important aspects such as market analysis and business strategy. According to Avnimelech and Teubal (2006), TAU also encourages students to participate in startup competitions and pitch their ideas to investors so that they can receive real-world feedback and seek funding opportunities.

- Startup ecosystem and industry connections: TAU has built a large startup ecosystem, not only connected within the university but also linked with major businesses and industries in Israel. This gives students the opportunity to directly interact with the market and real entrepreneurs, expanding their networks and enhancing their startup

opportunities. TAU has close relationships with high-tech companies and large corporations such as Microsoft, Google, and Intel. These partnerships not only provide internship and job opportunities for students but also help students get support from large industrial resources to develop their products (Breznitz & Taylor, 2014). This connection also helps students easily grasp market trends and needs, thereby developing highly applicable solutions. TAU also focuses on collaborative research programs with businesses, especially in the fields of information technology, life sciences and engineering.

- Financial support and mentoring programs: Tel Aviv University provides financial support programs for student startups through venture capital funds and support from external sponsors. The university also has a strong mentoring system, helping students receive guidance from industry experts. TAU Ventures is a start-up investment fund under TAU, providing financial support for potential start-up projects. This fund often invests in technology companies and projects with high growth potential, helping students with initial financial resources to develop their ideas. According to De Fontenay and Carmel (2004), funding from TAU Ventures helps start-up projects overcome initial financial difficulties, increasing the likelihood of success. TAU has an in-depth mentoring program, connecting students with experienced entrepreneurs in various fields. These mentors not only help students with business strategies but also assist in building leadership and team management skills (Rosenberg & Nelson, 1994). According to a TAU report, this mentoring program has helped many start-up projects succeed and achieve impressive growth milestones in their first years.

EUROPE

4.5. University of Cambridge - UK

Cambridge has established an entrepreneurial ecosystem that includes research centers and business incubators, notably Cambridge Enterprise, which helps transfer inventions and supports student product development. Cambridge Enterprise is an organization within the University of Cambridge, with the mission of supporting technology transfer, business incubation, and developing entrepreneurial initiatives from the university's student and faculty community. This organization helps promote the commercialization of inventions and research from the university's laboratories, and provides consulting services and financial support for entrepreneurial projects. Role in technology transfer: Cambridge Enterprise undertakes copyright registration and licensing for inventions of students and faculty, and advises them on how to develop and protect intellectual property (Siegel & Wright, 2015). This helps to reduce risk and increase the commercialisation potential of projects.

- Financial support and venture capital: Cambridge Enterprise has a dedicated venture capital fund for potential start-ups. This provides important capital for students to develop their ideas from the initial stage to product launch (Cosh & Hughes, 2010). These investments not only provide finance but also come with support from experienced industry experts and advisors.

- Facilities and business incubators: The University of Cambridge provides a variety of modern facilities to support student start-ups, notably research centres and business incubators such as IdeaSpace and St John's Innovation Centre. IdeaSpace: This is a shared workspace, focusing on supporting high-tech start-ups and projects with breakthrough potential. IdeaSpace provides students with a professional working environment, along with support services such as product development consulting, funding, and management skills training (Good & Michel, 2019). Thanks to facilities such as IdeaSpace, students can access many resources and opportunities to connect with potential investors. St John's Innovation Centre: Established in 1987, this center provides business incubation services

and supports startups from the ideation stage to product development (Huggins & Johnston, 2009). With modern offices and laboratories, the center helps students focus on product development and testing new technologies.

- Mentoring and connecting the startup community: The University of Cambridge also organizes many startup mentoring programs, with a network of experienced experts and successful entrepreneurs ready to support students in the project development process. Mentorship Program: This program connects students with experienced mentors in various fields, from financial management, product development, to marketing strategy. These mentoring relationships provide students with valuable advice and access to resources that would otherwise be unavailable to them. Community Connections and Entrepreneurship Networks: The University of Cambridge organizes many events, workshops, and seminars to foster connections between students, faculty, and entrepreneurs in the community. These events not only help students expand their networks but also provide them with opportunities to learn from the successes and failures of their predecessors (Bathelt & Turi, 2011). The entrepreneurship support model at the University of Cambridge is highly regarded for its integration of research, technology development, and commercialization. Cambridge not only provides funding but also focuses on building a large network of connections, enabling students to develop and test business ideas effectively. These activities have created a strong entrepreneurial ecosystem, helping the University of Cambridge maintain its leading position in the field of supporting startups globally.

4.6. ETH Zurich - Switzerland

ETH Zurich is known for its innovative research and development programs in the fields of science and technology. The university has several incubators such as the ETH Innovation and Entrepreneurship Lab, which support students and young scientists in establishing startups.

- Business Incubation Programs (ETH Pioneer Fellowship and Entrepreneur Club): ETH Zurich offers business incubation programs to support students in developing startup ideas. Programs such as the ETH Pioneer Fellowship and ETH Entrepreneur Club play an important role in providing resources and connections for young entrepreneurs. The ETH Pioneer Fellowship is an incubation program designed for graduate students and PhD students who want to turn their ideas into commercial products. The program provides a grant of up to CHF 150,000 to help students develop prototypes and validate their products in the market (Siegel & Wessner, 2012). The program has supported many successful startups, helping students turn their research findings into practical, commercially viable solutions. ETH Entrepreneur Club is a student-run startup community that organizes events such as hackathons, pitches, and mentoring programs to foster entrepreneurial spirit among students. ETH Entrepreneur Club provides students with access to experienced entrepreneurs and mentors, enabling them to develop entrepreneurial skills and expand their network in the technology and business sectors. The Innovation and Entrepreneurship Lab is a hub for students and researchers who want to transform innovative ideas into commercial enterprises. The center offers courses in product development, business planning, and idea validation. In addition, the Innovation and Entrepreneurship Lab also provides legal and financial consulting services to help start-up projects overcome initial barriers. The Venture Lab focuses on developing entrepreneurial skills for students and researchers by organizing workshops, courses, and mentoring programs. The Venture Lab does not only provide knowledge, but also helps students validate the market and develop business plans through support from professional consultants. - Startup funding and investment program (ETH Zurich Venture Fund and cooperation with Swiss Innovation Agency – Innosuisse Fund: ETH Zurich provides a comprehensive financial support system to support startups from the early stages, including ETH Zurich Venture Fund and cooperation with Innosuisse, the Swiss innovation fund. - ETH Zurich Venture Fund: This fund provides initial investments and seed funding to

startups founded by ETH Zurich students and alumni. The fund often invests in high-tech companies and projects with high growth potential. According to Hofer and Potter (2010), ETH Zurich Venture Fund not only provides capital but also supports startups in strategy building, risk management, and international market access. ETH Zurich also works closely with Innosuisse to provide funding packages and consulting services for startup projects. Innosuisse sponsors technology research and development programs, help startups to leverage research results to develop new products (Bürer & Wüstenhagen, 2009).

AMERICAS

4.7. Stanford University - United States

Stanford is known for its robust entrepreneurial ecosystem, which focuses on connecting students with leading financial and technological resources. Programs such as StartX, an independent business incubator run by Stanford students, provide funding, mentorship, and resources to support entrepreneurial projects.

- StartX - Independent Business Incubator: One of the prominent programs at Stanford is StartX, an independent business incubator but closely affiliated with the university. Founded in 2011, StartX supports students, alumni, and faculty in developing and commercializing their business ideas. The program provides mentorship from successful entrepreneurs, capital support from investors, and access to a wide network of partners on and off campus (Eesley & Miller, 2018). StartX not only provides knowledge and skills support, but also provides an innovative learning environment with workshops and experience sharing. According to Eesley and Miller (2018), students participating in StartX have the opportunity to learn from leading experts in various fields, from technology, finance to business management. An important element of StartX is its community-focused approach, encouraging entrepreneurs to share experiences and support each other throughout the development process (Eesley & Miller, 2018: 8).

- Entrepreneurship education and mentoring program: Stanford is also famous for the Stanford Entrepreneurship Network (SEN), a network that connects more than 30 organizations and startup programs on campus. This program offers courses on entrepreneurship, leadership skills, and innovation management skills. The featured course Engineering 145: Technology Entrepreneurship, taught by industry experts, helps students master the process of developing an idea from the inception stage to product launch. Stanford also hosts a variety of events, including workshops and startup competitions. Competitions such as Stanford Ignite provide students with the opportunity to develop their ideas, present them to investors, and receive direct feedback from experts. This not only helps students build their networks, but also improves their presentation skills and access to investment capital.

- Connections to Silicon Valley and the venture capital ecosystem: A key factor in Stanford's success in supporting startups is its proximity to Silicon Valley. Stanford has close relationships with leading technology companies such as Google, Apple, and Facebook, as well as reputable venture capital funds. Through internship programs and alumni networks, Stanford students have direct access to successful entrepreneurs and receive mentorship from those with real-world experience in the industry. Stanford students receive support not only from the school but also from the outside startup ecosystem. This creates opportunities not only for raising capital but also for product development and expanding customer networks. According to a study by Saxenian (1994), Stanford has become a training center for many technology founders and has had a major impact on the development of Silicon Valley (Saxenian, 1994: 27).

- Funding and financial support: Stanford provides funding through the Stanford Venture Studio and related

programs. Students can participate in programs such as Stanford Angels & Entrepreneurs, where angel investors and entrepreneurs provide financial support to potential projects. In particular, the Stanford-StartX Fund is an independent investment fund that provides financial support to student and alumni startup projects. The Stanford-StartX Fund does not require equity from startups but focuses on developing and promoting the success of projects (Sullivan, 2017). This not only provides a solid financial resource for startup projects but also helps students understand how to raise capital and the basic financial principles of startups. Stanford's funding for student startups allows them to focus on developing their ideas without having to worry much about finances in the early stages (Sullivan, 2017: 83).

4.8. Comparative Analysis

The table below provides a detailed comparison of the main features of the student entrepreneurship support models at leading universities around the world. The table also provides lessons learned for universities in Vietnam, to help them develop effective entrepreneurship support environments for students.

Each university has its own approach to supporting student entrepreneurship. Stanford focuses on building connections and funding, while NUS aims to provide students with hands-on experience in the world's leading technology hubs. Cambridge and ETH Zurich place a heavy emphasis on research and technology transfer, while Tel Aviv promotes entrepreneurship through a culture of innovation and flexibility.

Based on the theoretical framework of Triple Helix and the Startup Ecosystem and the Startup Support Models for Students at Universities in different countries, it shows that the interactive relationship between universities,

Table 1. Models of supporting student startups in some countries and lessons for Vietnam

University	Key features of the entrepreneurship support model	Lessons for universities in Vietnam
Stanford - United States	- StartX Accelerator: Independent student-run business incubator, providing funding and connections to investors. - Strong ties to Silicon Valley: Providing internships, networking and funding opportunities from top investors.	- Develop independent student-led incubation programs. - Build an influential alumni network to support startups. - Strengthen connections with domestic and international high-tech enterprises.
Cambridge - United Kingdom	- Cambridge Enterprise: Technology transfer and financial support for start-up projects. - IdeaSpace and St John's Innovation Centre: Providing co-working space and advisory services for high-tech projects. - Linking with research and industry centres to promote technology transfer and innovation (Siegel & Wright, 2015).	- Strengthen technology transfer support programs. - Invest in facilities such as co-working spaces and practice labs. - Promote links with research centers and businesses to support start-up projects.
NUS - Singapore	- NUS Overseas Colleges (NOC): International experience program, allowing students to intern at global startup hubs. - BLOCK71: Business incubator providing workspace and consulting support. - SEED Fund: Financial support for early-stage startup projects (Wong et al., 2011).	- Establish international experience programs for students to access the global startup ecosystem. - Build business incubators that provide both workspace and consulting. - Develop startup investment funds to provide financial support for students.
ETH Zurich - Switzerland	- ETH Pioneer Fellowship: Provides funding for students and researchers to develop products and validate markets. - Innovation and Entrepreneurship Lab: Innovation support center, providing workspace and legal advice. - ETH Zurich Venture Fund: Seed investment fund for high-tech projects (Siegel & Wessner, 2012).	- Strengthen innovation support programs for students and researchers. - Invest in high-tech startup support centers. - Establish seed investment funds to provide initial financial support for potential projects.
Tel Aviv - Israel	- StarTAU: Entrepreneurship center providing training and workshops on entrepreneurship. - Close links with industry: Partnerships with technology companies and collaborative research programs. - TAU Ventures: Investment fund providing financial support for potential start-up projects (Senor & Singer, 2009).	- Strengthening diverse and specialized entrepreneurship training programs. - Developing partnerships with major businesses and industries to increase opportunities for students. - Establishing an investment fund to support potential startup projects from the early stages.

governments, and businesses is the core factor in building a startup ecosystem. Meanwhile, the Isenberg model specifies the necessary support factors.

At BLOCK71 (Singapore), the university plays a central role in providing workspace and training students. Businesses participate through mentoring programs and capital investment. The government supports BLOCK71 through preferential policies and financial sponsorship. As a result, more than 70% of startups at BLOCK71 successfully raise investment capital and achieve an average revenue of 1.5 million USD/year within the first 5 years. This model illustrates how Isenberg factors such as finance and culture are effectively implemented.

The NUS Overseas Colleges (NOC) program also demonstrates close cooperation between universities and businesses. NOC students have access to the world's leading startup hubs such as Silicon Valley and Tel Aviv, where they not only gain experience but also build international networks. The failure rate of startups from NOC is only 20% within the first 5 years, much lower than the average of 50% in Singapore.

Data from StartX (USA) and Cambridge Enterprise (UK) also show that success depends on cross-industry collaboration and comprehensive support from government, universities, and businesses. For example, StartX has raised over 30 billion USD for startups from a network of large enterprises in Silicon Valley, while Cambridge Enterprise has achieved a patent commercialization rate of 45%, higher than the global average.

5. Current Status of Entrepreneurship Support for Students at Vietnamese Universities

Currently, Vietnam's startup ecosystem is still young compared to the world and innovation education in universities has not developed commensurate with its role; Innovation education in universities is still a new field, so currently in Vietnam, there is no separate major for innovation training. The university education program has not yet integrated innovation education. Innovation education seems to be limited to a few business administration courses and is mainly seen in economics and management majors, not in other majors. There is a lack of staff and lecturers who are also responsible for supporting students in innovation startups. The team of lecturers in innovation education is still thin and weak, not properly and systematically trained; The promotion of innovation education has not been planned and designed according to levels and majors. Funding mechanisms and incubation mechanisms are not effective in teaching entrepreneurship in universities. There is a lack of funding to support the practice of entrepreneurship education and a lack of information channels to provide resources at universities today; There are few startup incubation centers opened to raise awareness, knowledge, and startup skills for students in universities such as the National Economics University, Foreign Trade University, National University, University of Technology (Nguyen et al., 2023) ... The foundation of startup education is still relatively weak, awareness of startups and the startup movement is not strong, the rate of university students starting businesses is still low, the startup education system for university students is not perfect, the organization at all levels is not strong enough and complete, the shortcomings of startup education courses are still relatively obvious, support for startup education is still limited (Nguyen et al., 2023). Based on the above models, Vietnamese universities can learn from these leading universities how to build a startup support ecosystem. Building international partnerships, investing in incubation centers, and developing mentoring programs are key elements that universities in Vietnam should consider applying.

Startups have been creating new momentum for the Vietnamese economy with new directions and innovative ways of doing things. According to data from the national database on business registration, by the end of 2021, the whole country had 857,551 operating enterprises, an increase of 5.7% compared to the same period in 2020, an increase of 16.7% compared to the average of the period 2017 - 2020 (General Statistics Office, 2022). After 5 years of implementing Project 1665, the rate of higher education institutions making startups a compulsory or elective subject increased from 30% (in 2020) to 48% (in 2022). 75% of training institutions have organized short-term training activities for students through startup skills classes; 100% of training institutions have developed programs to inspire students to start a business. Currently, the country has 200 consultants and support staff for start-ups in

training institutions; 60% of training institutions have established start-up clubs in priority areas based on their strengths, 90 training institutions have arranged common spaces to support start-ups for students. In addition, 45 training institutions (accounting for 25% of training institutions) have established Student Start-up Support Centers, of which 10 Centers have been incubating student start-ups. Start-ups contribute to fundamentally innovating teaching and learning methods in universities and colleges, turning the training environment into a place for creating new knowledge. In addition, the Ministry of Education and Training has supported 10 localities to pilot the construction of start-up ecosystems in general education institutions; supporting 23 higher education institutions to pilot the construction of a startup ecosystem; signing contracts with 8 enterprises to accompany the Ministry in mobilizing resources to implement Project 1665 Phase 2 (2022-2025).

In addition to building and perfecting policies and mechanisms to support students in starting a business, every year, the Ministry of Education and Training also organizes National Startup Festivals for students, creating connections between three entities: State - School - Enterprise to promote the entrepreneurial spirit of students. In parallel with the Startup Festival, in the past 5 years, the Student Competition with Startup Ideas has been organized. From thousands of projects from students from localities, universities and colleges, the Central Organizing Committee of the competition received a total of 1,670 projects from training institutions and 900 projects from high schools and junior high schools nationwide. Of which, 70% of the projects had products and 30% of the projects were ideas or products at the trial production level. The rate of students participating in startups by establishing businesses after 5 years is maintained at a high level, over 7%... (Ministry of Education and Training, 2024).

To date, Vietnam has had 43 incubators established by universities, research institutes, academies and colleges and more than 40 educational and training institutions have formed models of clubs and startup support centers. The rate of schools with subjects on startups accounts for about 7-8%. In addition, there is also support from intermediary organizations that provide consulting, advisory, investment, capital calling, and market and business model support. Currently, local innovation support organizations account for 35% of the total 197 support organizations operating in Vietnam. At the same time, private organizations account for 56.9%, while public innovation support organizations have only 85 organizations with 43.1%. This shows that private organizations play an important role in promoting Vietnamese startups (Department of Science and Technology of Da Nang, 2022).

Startup support policies are still lacking and not comprehensive. Policies are still scattered, not focused on each industry, profession, and field. There are limitations in building incubation, training, and consulting organizations for startups. There is a lack of connection between institutes and universities with startup ideas. In addition, policies to support the commercialization of startup products are still lacking. The level of access to investment capital is still low, investors are still hesitant and cautious in supporting capital sources, and forms of capital support or loan support are complicated and overlapping. Training and coaching activities are still formal, impractical, not organized regularly, and training knowledge lacks high applicability (Nghe An University, 2024).

Most universities are still in the traditional teaching model, so they cannot create opportunities for students to actively participate in startup activities; Startup education and training have not been fully integrated into the national curriculum development system; Support mechanisms such as funding mechanisms, incubation mechanisms, protection mechanisms, etc. are not effective; Funds are the main issue that needs to be solved for startup education and training at universities in Vietnam today (Truong, 2020).

6. Solution Orientation for Universities in Vietnam

Based on the analysis of startup support models for students at universities in some countries around the world and interactive relationship between universities, government, and business, below are some specific solution-oriented recommendations for universities in Vietnam for the Government, the Ministry of Education and Training, and universities in Vietnam to strengthen and develop the startup ecosystem for students in universities.

- Recommendations for the Government

Policy Support for Early-Stage Startups: The government should implement policies to encourage startup development from the early stages, such as tax incentives, financial assistance for student venture capital funds, and the establishment of favorable legal conditions for innovative startups. Drawing from successful models at ETH Zurich and Tel Aviv University, the government could establish national seed investment funds or collaborate with international financial institutions to provide capital support for student startup projects.

Promoting International Partnerships: To integrate Vietnamese universities into global entrepreneurial ecosystems, the government should encourage universities to establish international collaborations. Such partnerships would enable students to gain exposure to successful ecosystems, as exemplified by institutions like the National University of Singapore (NUS) and Stanford University.

Legal Framework for University-Enterprise Collaboration: A robust legal corridor should be established to enable higher education institutions to cooperate with enterprises in organizing training programs within businesses. Based on this framework, the government could develop a national initiative program to support training partnerships between universities and enterprises, especially in priority fields aligned with socio-economic development and the demands of the Fourth Industrial Revolution.

Comprehensive Support for Entrepreneurship Education: Government, enterprises, educational institutions, and society must collaborate to create an enabling environment for entrepreneurship education. This includes preferential policies, financial support, and incentivizing financial institutions such as banks and capital markets to provide funding with preferential interest rates for startups (Nguyen et al., 2023).

- Recommendations for the Ministry of Education and Training

Integrating Entrepreneurship into the Curriculum: The Ministry should incorporate entrepreneurship and innovation-focused courses within the higher education curriculum. These courses should cover essential topics such as startup skills, innovation management, and business strategy, and should be updated regularly to reflect evolving market needs. Practical teaching models inspired by Stanford and Tel Aviv University should be adopted.

Establishing Startup Support Centers: Universities should be supported to develop startup support centers, modeled after the incubation and innovation hubs at Cambridge and ETH Zurich. These centers would provide workspace, mentorship, and connections to funding sources, creating an ecosystem for nurturing student-led startups.

Capacity Building for Faculty: Training programs for lecturers should be developed to equip them with the skills to mentor and guide students in entrepreneurship. Faculty development programs can draw from best practices observed in leading international institutions.

Developing a Training-Enterprise Cooperation Model: The Ministry should design a comprehensive model for cooperation between higher education institutions and enterprises. This model should clearly define objectives, output standards, the distribution of training credits, management mechanisms, and quality assurance standards. Collaborative programs should prioritize hands-on student experiences, including internships, project-based learning, and prototype development.

Promoting Entrepreneurial Ecosystems: The Ministry should facilitate the creation of incubation and acceleration programs for student-led startups. These initiatives should connect with enterprises and community incubators to foster the development of innovative ideas that contribute to individual, community, and national growth. Emphasis should also be placed on promoting commercialization and intellectual property protection for student-led research projects.

Mobilizing Resources for Startups: Universities should be encouraged to leverage internal resources and engage external stakeholders to establish shared spaces such as laboratories and workshops for startup activities.

Community funds and socialized investments should also be mobilized to provide seed funding for promising student projects.

- Recommendations for Universities in Vietnam

Universities should develop business incubators and innovation centers, providing workspaces and consulting services for students. These spaces can learn from the model of BLOCK71 of NUS and IdeaSpace of Cambridge, providing flexible environments for students to test ideas and develop products. Develop mentoring networks and connect with industry: Universities should connect with successful entrepreneurs, alumni, and experts to form a dedicated mentoring network for student startups, similar to the mentoring programs of Stanford and Tel Aviv. Strengthening international cooperation: To give students access to global startup ecosystems, universities should seek opportunities to cooperate with international partner schools. Like NUS with its NOC program, student exchanges and field trips abroad will help students better understand global markets and startups. Financial support and finding investment funds: Universities should build internal startup support funds and connect with external venture capital funds to help students access capital. They can learn from Tel Aviv's TAU Ventures and ETH Zurich Venture Fund to support early-stage startup projects. Developing startups for students is not only the task of universities but also requires synchronous support from the Government and the Ministry of Education and Training. Successful models from international universities have shown that the combination of appropriate support policies, intensive training programs, financial support, and international mentoring and collaboration networks are key factors in creating a sustainable and effective startup ecosystem. Applying these lessons to the Vietnamese context will help universities become a solid foundation for the next generation of startups.

CONCLUSION

The study compared the startup support models at leading universities such as Stanford, Cambridge, NUS, ETH Zurich and Tel Aviv, and identified key success factors: professional mentoring systems, diverse funding sources, modern infrastructure and close ties with industry. These factors are key to creating an effective startup environment, helping students develop and realize business ideas. To apply these lessons, Vietnamese universities need to invest in workspaces, develop internal investment funds, and build professional mentoring programs. At the same time, expanding international partnerships and implementing exchange programs will help students have more opportunities to learn from advanced startup ecosystems. Active support from the government in developing infrastructure and promoting startup incentive policies is also important, helping to form a sustainable startup ecosystem. Applying these strategies not only improves the quality of startup support at Vietnamese universities but also promotes entrepreneurship, making an important contribution to economic growth and social development.

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대학생 창업 지원 모델 – 베트남 대학을 위한 문헌 검토 및 전략적 솔루션

Nguyen Thi Thuy[1] and Do Thi Bich Loan[2]

[1]Tan Trao University, VNU University of Education, [2]Vietnam Institute of Educational Sciences

본 논문은 전 세계 대학의 학생들을 위한 창업 지원 모델의 역할을 분석하는 것이다. 본 논문의 목적은 대학 재학생을 위한 창업지원 모델에 관한 연구를 문헌고찰을 통해 검토하여 이 분야에 대한 종합적인 관점을 얻고 베트남 대학을 위한 해결 방안을 모색하는 것이다. 연구결과는 전문적인 자문 시스템, 내부 투자 자금, 현대적인 인프라 및 기업과의 긴밀한 연계 덕분에 전 세계 대학이 성공하고 있음을 보여준다. 베트남 대학은 업무 공간 투자, 멘토링 프로그램 개발, 국제 협력 강화를 통해 창업 지원의 질을 향상시킬 수 있다. 이 연구는 베트남 학생들의 기업가 정신을 고취하기 위한 솔루션에 대한 몇 가지 구체적인 권장 사항을 제공한다.

주제어: 창업, 창업지원, 대학생 창업지원

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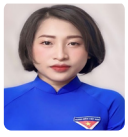
Corresponding Author
Do Thi Bich Loan
The Vietnam National Institute of Education Sciences, PhD in Education Management, Associate Professor, and Senior Researcher.
E-mail: bichloan1095@gmail.com

About the Authors



Nguyen Thi Thuy has a Master's degree in Educational Management, is currently teaching at Tan Trao University, and is a PhD student at the University of Education, Vietnam National University, Hanoi. She has over 12 years of experience in researching educational management systems, as well as supporting student start-ups at universities. She has published relevant articles in Vietnamese and International Journals.

Do Thi Bich Loan is PhD in Educational Management, Associate Professor, and a Senior researcher in Vietnam National Institute of Educational Sciences. She has over 25 years of experience in research of education policies and strategies, especially streaming and articulation in education system, as well as entrepreneurship activities and support for students at universities. She has been publishing relevant papers in Vietnamese and international Journals. Currently, she is interested in Entrepreneurship Support Model for University Students in the context of Industrial revolution 4.0.