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Strategic Transformation Towards an Entrepreneurial University: Developing A University-Based Entrepreneurship Ecosystem in Legal Entity Public University

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Abstract. This study explores the implementation of the entrepreneurial university concept at Universitas Negeri Semarang (UNNES), an Institute of Teacher Training and Education (LPTK) that has obtained PTNBH status. Employing a qualitative approach, this study examined the roles of internal actors, organizational dynamics, as well as the driving and inhibiting factors in the formation of a university-based entrepreneurship ecosystem (U-BEE). Using an exploratory qualitative design, the study draws on institutional theory and entrepreneurship ecosystem perspectives. Data were collected through participatory observation, in-depth interviews, and focus group discussions with university leaders, academic staff, business managers, and students. Thematic analysis was used to construct a conceptual framework based on empirical insights. The study found that the synergy between academic, corporate, and business clusters generates innovation, value creation, and socio-economic impact. A conceptual model for implementing the entrepreneurial university was developed using an input–process–output framework that integrated institutional theory and entrepreneurial ecosystem theory. Inputs consisted of organizational, personal, and environmental resources; the process included teaching, research, and entrepreneurship, while the outputs comprised innovation, institutional reputation, and financial sustainability. These findings underscore the urgency of institutional mindset transformation and cross-functional actor collaboration in strengthening PTNBH. The findings offer actionable strategies for higher education institutions in developing countries aiming to embed entrepreneurship institutionally. They highlight the importance of visionary leadership, cross-functional collaboration, and policy alignment to build resilient university-based entrepreneurship ecosystems. This study contributes to the limited body of knowledge on entrepreneurial transformation in public universities in the Global South. It introduces a nuanced empirical model of U-BEE formation and offers theoretical advancement by integrating institutional theory with entrepreneurial ecosystem thinking in higher education contexts.

1. INTRODUCTION

The high expectations from society regarding the contribution of universities to innovation, entrepreneurship, competitiveness, and regional economic growth have placed higher education institutions in a state of transformation (Guerrero et al., 2016). Educating knowledgeable and skilled graduates is recognized as a natural role of universities and serves as one of the most important mechanisms for knowledge transfer (Wennberg et al., 2011; Bramwell & Wolfe, 2008). However, universities today face increasing demands for direct technology transfer and the creation of new businesses. This is consistent with research on university entrepreneurship, which is largely dominated by technology transfer and the commercialization of research results (Herdjiono et al., 2020).

In response to these demands, state universities in Indonesia have transformed into legal-entity public universities (Perguruan Tinggi Negeri Badan Hukum or PTNBH). PTNBH is intended to enable public universities to manage themselves independently. However, this does not mean that they are exempt from their responsibilities as key contributors to the nation's human resource development. PTNBH is one form of the entrepreneurial university. The concept of the entrepreneurial university aligns with programs to improve the quality of higher education in Indonesia, where, under PTNBH status, universities are expected to become financially independent institutions and capable of bringing their research results into public use (Etzkowitz, 2016; Audretsch & Belitski, 2017; Kesting et al., 2018).

Universities are striving to become entrepreneurial entities and learning communities that foster student entrepreneurship (Herdjiono et al., 2020). High levels of student involvement in organizations and entrepreneurship learning can enhance creativity and entrepreneurial innovation (Feriady et al., 2021). In addition, perceptions about a profession play an important role in students' preparedness (Sakitri et al., 2024). Therefore, the development of an entrepreneurial culture and related practices becomes important (Lyytinen & Machado, 2014). The implementation of university culture affects the commitment and performance of university entities (Setiaji & Farliana, 2023). This extends to aspects of organization, management, and governance (Guerrero & Urbano, 2012; Arvidsson et al., 2014), as well as research on commercialization and the creation of new businesses (Rothaermel et al., 2007). All of this must be navigated through entrepreneurial leadership that can provide vision, mobilize resources, and create value (Marques et al., 2023).

In understanding the entrepreneurial ecosystem, we can examine smaller but representative sub-systems of the broader entrepreneurial ecosystem (Cavallo et al., 2019; Fuster et al., 2019; Miller & Acs, 2017). This article focuses on deepening the current understanding of the emergence of the entrepreneurial university by investigating the behavior of actors, the influencing factors, and the impact of the entrepreneurial university in the context of PTNBH implementation.

The urgency of this article lies in the unique position of LPTKs such as Universitas Negeri Semarang (UNNES), which has

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transformed into a legal entity public university (PTNBH) and has characteristics that differ from non-LPTK public universities. The transformation into PTNBH is expected to produce a multiplier effect on outputs and the quality of socio-economic conditions, such as job creation, business opportunities, and improvements in LPTK-based higher education. However, institutional activities and the Tri Dharma of Higher Education must reflect the vision of an entrepreneurial university as a prerequisite for successful PTNBH implementation. This study aims to produce a model for implementing the entrepreneurial university in LPTK public universities that have obtained PTNBH status, thus presenting a novel research contribution.

This study seeks to provide solutions to the challenges in adapting LPTK universities that are transforming into PTNBH, based on entrepreneurial spirit and mindset, where Tri Dharma activities are oriented toward innovation, value creation, and positive societal impact. It seeks to identify the value proposition in the form of interaction and collaboration models among actors and factors in the implementation of the entrepreneurial university model, as well as to measure the output of such models. The research problem is multidimensional and cannot be addressed with a single theory. To date, studies on entrepreneurial ecosystems, entrepreneurial universities, and university-based entrepreneurship ecosystems still lack a strong theoretical foundation and must continue to be developed (Stam, 2015). This study uses the perspective of institutional theory, combined with the theories of entrepreneurial ecosystems and entrepreneurial university.

An entrepreneurial university goes beyond technology transfer and research commercialization. It plays a role as a provider of entrepreneurial capital, which includes entrepreneurial thinking, actions, and institutions (Audretsch & Belitski, 2017), and emphasizes entrepreneurship as a collective action (Etzkowitz & Klofsten, 2005). The concept of entrepreneurial ecosystems examines the combination or interaction of elements that support entrepreneurial activity, including cultural, social, and material attributes (Vekić et al., 2019). The university-based entrepreneurship ecosystem (UBEE), as part of the broader entrepreneurial ecosystem, includes various stakeholders, such as students, lecturers, staff, alumni, and the community, each with different goals and priorities (Huang-Saad et al., 2018). Institutional theory explains how organizational practices persist and evolve. In institutions such as universities, institutional rules must adapt to enhance performance, resource utilization, and long-term viability (Lockett et al., 2015).

This study aims to: (1) explore the involvement of internal actors in the implementation of university entrepreneurship, (2) identify an appropriate implementation model in the LPTK–PTNBH context, and (3) reveal the driving and inhibiting factors in the development of a university-based entrepreneurship ecosystem.

2. THEORETICAL FRAMEWORK

Institutional theory provides a framework for understanding how organizations such as universities adapt to external pressures and societal expectations. This theory explains that in order to survive and thrive, organizations must adjust their internal structures, norms, and practices to gain legitimacy (DiMaggio & Powell, 1983). In the context of universities, this includes adapting to national policies, global trends in higher education, and market demands for innovative and adaptive graduates.

UNNES, as an LPTK that has transformed into a legal entity public university (PTNBH), faces demands to realize the model of an entrepreneurial university. Therefore, institutional theory can be used to analyze the dynamics of institutional transformation, cultural resistance within the organization, and the adaptation strategies employed by university management and academic actors.

This study integrates the approaches of the entrepreneurial university, entrepreneurial ecosystem, and institutional theory to construct a model for implementing university entrepreneurship within the PTNBH context. This combined approach is considered relevant because it captures the complexity of relationships between institutional structures, actor behaviors, and the dynamic external environment of the university. Through this synergy, the study aims to provide a comprehensive conceptual framework for analyzing and developing a university-based entrepreneurship ecosystem.

3. LITERATURE REVIEW

3.1. Entrepreneurial University Concept

The concept of the entrepreneurial university has evolved as a new paradigm in higher education, where universities function not only as institutions of education and research but also as agents of economic and social value creation (Etzkowitz, 2016). This type of university is characterized by its ability to transform research outputs into commercially valuable innovations, create new ventures, and expand the institution's impact on society (Guerrero et al., 2016).

As centers of innovation, entrepreneurial universities play a strategic role within national and regional innovation ecosystems. They act as connectors between research, industry, and public policy (Bramwell & Wolfe, 2008). This role requires governance systems that support creativity, risk-taking, and innovative resource management (Kirby, 2006).

3.2. University-Based Entrepreneurship Ecosystem (U-BEE)

The entrepreneurial ecosystem refers to an environment composed of cultural, social, material, and institutional elements that interact to support entrepreneurial activities (Audretsch & Belitski, 2017). In the university context, this ecosystem evolves into a university-based entrepreneurship ecosystem (U-BEE), a sub-ecosystem centered within the campus environment and encompassing students, faculty members, alumni, incubators, research centers, industry partners, and government entities (Guerrero et al., 2016; Kesting et al., 2018).

U-BEE plays a crucial role in facilitating collaboration among actors, accelerating technology transfer, and fostering a conducive climate for the development of innovation-driven start-up ventures. The performance of U-BEE largely depends on the effectiveness of university organizational structures, policy support, the quality of human resources, and the availability of infrastructure such as laboratories, incubators, and university business units (Mascarenhas et al., 2017).

This study employed an exploratory qualitative approach aimed at gaining an in-depth understanding of the implementation process of the entrepreneurial university at a teacher education institution (LPTK) that has attained the status of a legal entity public university (PTNBH). The primary focus was on the dynamics of actors, institutional structures, as well as the driving and inhibiting factors in the formation of a university-based entrepreneurship ecosystem (U-BEE) at Universitas Negeri Semarang (UNNES).

4. RESEARCH APPROACH

4.1. Research Design

A qualitative design was chosen as it is well-suited for examining transformative and complex phenomena, such as institutional change in the context of higher education. This study adopted a naturalistic approach, oriented toward interpreting meaning from the perspective of key actors. This method allowed the researcher to contextually explore the relationships among policies, actor behavior, and organizational structures (Creswell & Clark, 2007; Tarnoki & Puentes, 2019).

4.2. Location and Unit of Analysis

The research was conducted at Universitas Negeri Semarang (UNNES), a teacher education institution (LPTK) that has recently attained the status of a legal entity public university (PTNBH). The units of analysis in this study included internal actors (university leaders, faculty members, students, business managers, and administrative staff) and institutional structures (academic units, entrepreneurship centers, and campus business units) that are part of the development of the entrepreneurial ecosystem.

4.3. Informan Informant Selection Technique

Informants were selected through purposive sampling based on their involvement and roles in the process of institutional transformation and university entrepreneurship. The composition of informants included 10 University Leadership (UL), 5 Business Managers (BM), 10 Academic Staff (AS), 15 Lecturers (LE), and Students and Activists (ST).

4.4. Data Collection Technique

Data were collected using three main techniques: (1) participatory observation of entrepreneurial activities within the campus environment; (2) in-depth interviews with key informants; and (3) focus group discussions (FGD) to validate the initial conceptual model. This approach enabled triangulation across sources to enhance data credibility.

4.5. Data Analysis Technique

Data were analyzed using a thematic approach based on the model of Miles & Saldana, (2014), which includes three stages: (1) data reduction: organizing interview results into themes and sub-themes; (2) data display: creating matrices and networks of relationships between actors and structures; and (3) conclusion drawing and verification: developing a conceptual model based on theory and empirical data. Data validity and reliability were ensured through: (1) source triangulation: comparing interview results from various actors; (2) member checking: requesting confirmation from informants on data interpretations; and (3) audit trail: transparent documentation of the data collection and analysis process.

4.6. Research Ethics

The study was conducted in accordance with social research ethics principles, including obtaining informed consent, ensuring data confidentiality, and respecting the informants' right to withdraw from participation at any time.

Table 1: Actors and Roles in the Implementation of Entrepreneurial Universities.

Actors	Roles
University Leadership	Plays a role in designing policies and strategies to support and build an entrepreneurial ecosystem on campus. Some of the main roles are policy development, resource allocation, infrastructure development, partnerships with industry, promotion of entrepreneurial culture, evaluation and assessment, and support for lecturers and students.
Lecturers and Researchers	As lecturers and researchers, they can create an ecosystem that supports sustainable innovation and entrepreneurial development. The roles of lecturers include teaching and mentoring, involvement in innovative projects, networking, as well as consulting and collaboration. As researchers, lecturers have the following roles: innovation and technology development, funding and grants, application of knowledge, publishing and dissemination of knowledge.
Students	Students are actively involved in entrepreneurial activities, whether through startups or innovative projects. Through these roles, students not only contribute to the success of entrepreneurial initiatives on campus but also help shape the future of entrepreneurship in the wider community. Some of the roles of students include innovators and creators, practical entrepreneurship, collaboration and teamwork, feedback and research, and networking and community.
Staff	Staff serve as the frontline in administrative services and support. Their roles include administrative support, service, resource development, marketing and communication, training and development, and project management.
Entrepreneurship Center	Plays a central role as a catalyst for innovation and entrepreneurial development. The entrepreneurship center serves as the heart of the university's entrepreneurial ecosystem, supporting the development of innovative ideas and encouraging the involvement of all campus stakeholders. Its key roles include educational programs and training, business incubation, networking and connections, mentoring and consulting, organizing competitions, facilitating research and innovation, and advocating for entrepreneurship.
Business Managers	Businesses play a crucial role in managing and supporting various entrepreneurial initiatives. Their roles include project management, strategy development, budget management, networking and collaboration, and resource provision.
Alumni	They can also serve as mentors or investors, helping to build networks and provide practical experience. Alumni have roles such as mentors and advisors, network and connection facilitators, investors and financial supporters, disseminators of information and opportunities, collaborators in research, advocates for the university, and participants in university programs

5. RESULTS

5.1. Involvement of Internal Actors in the Implementation of Entrepreneurial Universities

Universitas Negeri Semarang (UNNES) obtained the status of Legal Entity Public University (PTNBH) in 2022. The transformation vision of UNNES PTNBH is "To Become a World-Reputed University and a Pioneer of Educational Excellence with

a Conservation Insight." Institutionally, UNNES has prepared a new organizational structure and governance (SOTK) to support the successful implementation of the PTNBH status. Based on this SOTK, the internal actors at UNNES involved in the entrepreneurial university can be identified as follows.

In an entrepreneurial university, higher education institutions are required to become enterprise entrepreneurship entities, meaning business activities that strive to operate differently and better, oriented toward innovation, proactivity, and risk-taking to achieve performance. The involvement reflects an actor interaction model aligned with the triple helix model (Etzkowitz, 2016) and supports the formation of an integrated internal ecosystem. Based on the roles of each actor, they can be grouped into three clusters, namely:

5.1.1. Academic Cluster

The Academic Cluster plays a primary role in the academic field but can also engage in entrepreneurial activities based on knowledge and organizational capacity (knowledge-based entrepreneurship). Knowledge-based entrepreneurship (KBE) is an entrepreneurial concept that emphasizes the importance of knowledge and information in business development. In KBE, innovation, research, and the development of new products or services are key to creating value and competitive advantage. By leveraging knowledge, actors can create more efficient products and services that meet market needs, thereby enhancing their business competitiveness.

5.1.2. Corporate Cluster

The Corporate Cluster has a primary role in asset optimization and business collaboration. The actors in this cluster are tasked with optimizing assets to achieve financial gains. Additionally, they facilitate direct business partnerships within the UNNES environment. This responsibility is assigned to the Asset and Business Optimization Agency (BOAB), which coordinates across actors, considering that the assets to be optimized are managed by multiple stakeholders.

5.1.3. Enterprise Cluster

The Enterprise Cluster refers to business entities operating outside the organizational structure and governance of UNNES, with the primary role of running businesses to generate profit. In this context, UNNES acts as the owner of the company PT. Usaha Niaga Insan Selaras.

5.2. Entrepreneurship University Implementation Model in the Context of LPTK-PTNBH

Institutions in the private sector in Indonesia, in particular, can be said to have successfully developed strategies to capitalize on opportunities in the knowledge-based economy era. However, institutions operating in the public sector often face challenges to grow rapidly because they still retain many traditional aspects and values (Ginting, 2015). As Kirby (2006) stated, "the public sector often faces a sort of barriers to entrepreneurial activity as their in the private sector." Universities strive to become entrepreneurial entities as well as learning communities that foster student entrepreneurship (Mascarenhas et al., 2017). Based on definitions developed by experts (1998–2008) and summarized by García Aracil et al. (2014), entrepreneurial universities are related to leveraging opportunities arising from environmental changes that can be accommodated through optimizing the commercialization and commodification of services. This essence is different in the current era, where building networks to optimize external network resources has become crucial—an essence that is fundamentally based on social capital, shared values, and relationships (Coyle et al., 2013). Various empirical models have been developed to implement the entrepreneurial university. This study used the Input-Process-Output model, namely "entrepreneurial university as a dynamic system, which includes special inputs (resources, regulation, rule, mission, entrepreneurial capabilities, expectations society), process (teaching, research, managerial process, networking, interaction, and innovation, R&D activities), outputs (innovation and invention, entrepreneurial network, entrepreneurial human resources, effective research in line with the market needs, entrepreneurial centers) and aims to mobilize all of its resources, abilities and capabilities in order to fulfill its mission (Salamzadeh et al., 2011).

This study identified the empirical model of the entrepreneurial university implemented by UNNES, depicted in terms of input, process, output, and outcomes as follows.

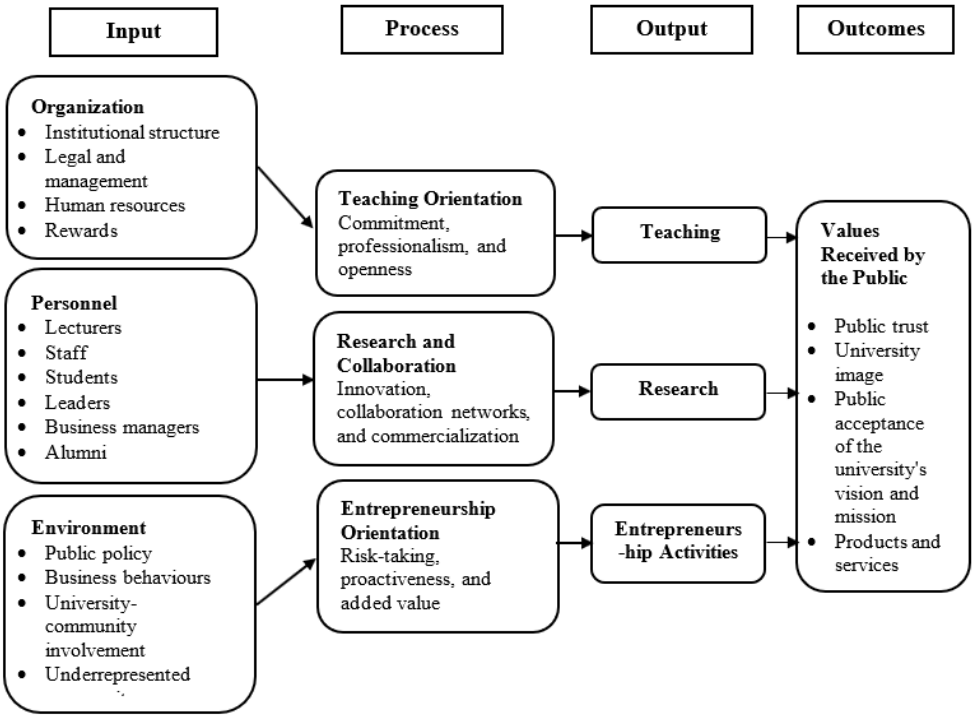

Figure 1: Empirical Model of the Entrepreneurial University at UNNES.

The inputs in realizing an entrepreneurial university at UNNES consist of three elements: organizational, personal, and environmental. The organizational element refers to the institutional aspects as the pillar of the entrepreneurial university, comprising institutions, legal and management frameworks, resources, reward systems, and organizational capacity. This element is crucial as the foundational basis that enables other elements to act.

Semarang State University has transformed into a PTN BH university, so the structure and governance must adapt according to needs so that goals can be easily achieved (UL).

The personal element consists of lecturers, employees, students, leaders, business managers, and alumni. They are the actors who carry out the entrepreneurial university. The quality of human resources and understanding of institutional changes in the entrepreneurial university are key to the actors' successful performance.

We, as employees, are accustomed to the old working methods, which tend to be passive and complacent. It requires time, training, awareness, role models, and a strong reason for us to shift to the new PTNBH paradigm full of innovation and independence (AS).

The environmental element serves as a supportive atmosphere for the realization of an entrepreneurial university ecosystem. The external environment consists of public policies, business sector behaviors, university community involvement, and other representative communities. Support from external parties is crucial to achieving the goals of becoming an entrepreneurial university. Generally, this external support manifests in the form of partnerships across various university activities. Optimal efforts are needed to enhance external engagement, including increasing participation in various organizations and raising public value within society and external institutions.

We need to increase our involvement with external parties while introducing the change in status of PTNBH UNNES. However, we must be professionally prepared to welcome the presence of external parties in various campus activities. The image of UNNES must be enhanced, especially in the non-educational sectors, which are still perceived as lacking (LE).

The process dimension in the empirical model of the entrepreneurial university at UNNES refers to three main elements. First, the teaching process is oriented towards commitment, professionalism, and openness. Second, research and cooperation that are oriented towards innovation, cooperation networks, and commercialization. As well as entrepreneurship that is oriented towards risk-taking, proactive, and value creation. There has been a paradigm shift in orientation at UNNES after transforming into PTNBH, or an entrepreneurial university, namely a university that has an entrepreneurial spirit and mindset where the activities of the Tridharma of Higher Education are oriented towards innovation, value creation, and impact that is beneficial to the entire community. Furthermore, it will produce teaching output, research, and entrepreneurial activities that support the achievement of PTNBH or an entrepreneurial university. The core of entrepreneurial university activities lies in three aspects: teaching, research, and entrepreneurial activities. These core activities at UNNES are detailed in Figures 2, 3, and 4.

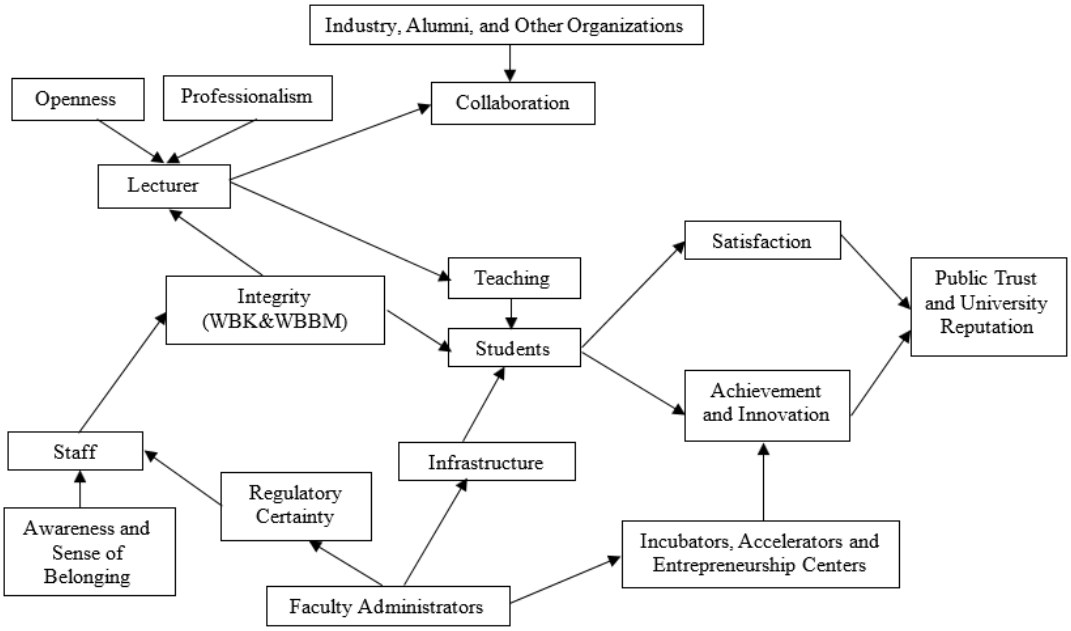

Figure 2: Empirical Model of Teaching at the Entrepreneurial University at UNNES.

Teaching becomes the core activity and primary responsibility of higher education institutions. The principal stakeholders involved in the teaching process include students, faculty members, administrative staff, faculty or university management, industry partners, alumni, and other relevant organizations. Effective synergy and collaboration aligned with each stakeholder's role are essential to ensure the quality of the educational process within an entrepreneurial university framework. The outcomes of teaching activities manifest in student satisfaction, innovation capacity, and academic achievement, which collectively contribute to enhanced trust and institutional reputation. This, in turn, fosters greater and more qualitative public engagement. In this paradigm, students are perceived more as customers within a market-driven mechanism, contrasting with the passive learner model prevalent in primary and secondary education. Accordingly, universities are obligated to deliver services commensurate with the financial investment made by students. Faculty members, as central agents, must embrace a renewed paradigm emphasizing integrity, transparency, and professionalism in the execution of the educational process.

> *The quality of services provided should be proportional to the tuition fees paid. Good lecturers are those who demonstrate integrity, openness, and professionalism. However, students themselves sometimes do not show the motivation and independence of learning that we expect (LE, ST).*

Staff play a crucial role in providing services to students and thus serve as a key indicator in assessing student satisfaction. Therefore, it is necessary to establish awareness, performance regulations, and a reward system to motivate staff. UNNES implements the Integrity Zone toward a Corruption-Free Area (WBK) and a Clean and Serving Bureaucracy Area (WBBM) as the standard for its service system. Faculty and university administrators hold significant roles through the provision of infrastructure and regulatory support. Industry partners, alumni, and other organizations contribute to the educational process through various forms of collaboration, such as financial assistance, practitioner-led teaching, internships, and other engagements.

> *To become a prominent university, support from alumni is essential, as observed in many universities. Additionally, lecturers who possess extensive collaborative networks ideally act as bridges connecting with other universities. The university must increase its engagement with external organizations. Furthermore, image building through various media channels has become increasingly urgent, particularly to attract high-quality inputs and collaborations (UL, LE)*.

In an entrepreneurial university, entrepreneurial skills are essential; therefore, the roles of incubators and accelerators must be provided and integrated into the educational process. UNNES focuses on entrepreneurship development, one of the real steps is by making entrepreneurship courses a compulsory course, the implementation of which is adjusted to the characteristics of study programs and faculties.

> *The entrepreneurial ecosystem at UNNES is essentially comprehensive, encompassing study programs, business incubators, student organizations, and professional development institutions; however, further integration is still required (LE, BM).*

The entrepreneurial education ecosystem at UNNES contributes significantly to the outcomes of entrepreneurship education. This ecosystem comprises institutional environments such as organizational structures supporting incubators, laboratories, and student organizations. The vision of institutional leadership and the core faculties, strengthened further by the change in status to a State Legal Entity (PTNBH), has increasingly reinforced entrepreneurship activities at UNNES. From the curriculum perspective, entrepreneurship has been established as a mandatory course across all study programs, with implementation adjusted to the specific characteristics of each program.

In addition to teaching as a fundamental task of higher education institutions, research also constitutes a core activity of an entrepreneurial university. Commercialization is the primary goal of research activities, which in turn creates public value in the form of products and services, enhances the university's reputation, and supports the realization of UNNES's vision and mission. However, achieving this requires a quality and supportive research ecosystem. Various actors are involved in this ecosystem, including lecturers, researchers, staff, students, industry partners, alumni, other organizations, research institutions (LPPM), incubators, and accelerators, all interacting with market needs, as illustrated in Figure 3. This interaction is expected to generate innovations from research results that will subsequently be commercialized to create higher value. Collaboration is essential to

encourage researchers and enable LPPM to generate research innovation capacity. Industry, alumni, and other organizations can support this effort through various forms of cooperation such as funding, business partnerships, and more.

The commercialization process is not easy to realize. It heavily depends on two factors: innovation capacity and management. Innovations are created by researchers who possess the capacity to conduct research and maintain integrity in the quality of research outputs. If economic incentives remain the top priority, the innovation process may be hindered. Innovations produced by researchers must also be well-managed. Researchers often have limitations in handling the commercialization process, so the research institution (LPPM) should establish a dedicated unit to manage it. Regulations and legal certainty in commercialization will foster a productive atmosphere. The commercialization process must be aligned with market needs, and business units owned by UNNES can serve as facilitators in this regard

> *The Center for Innovation, Intellectual Property, and Commercialization (PIKK) at UNNES is a forum for inventors from the academic community who have innovations in their research and then realize them in the form of innovative products that can be commercialized. We are currently developing Techno Park for a center for research and technological innovation that supports the development of applications of technology to strengthen the innovation and commercialization ecosystem in supporting UNNES PTN BH (UL).*
>
> *Researchers are responsible only for creating innovations; they are not tasked with selling them. Therefore, the research institution (LPPM) should undertake the commercialization process. Simplified systems and regulations motivate researchers by clarifying their rights and obligations, including profit-sharing from commercialization. UNNES must open research schemes that prioritize innovations that can be commercialized (LE, BM).*

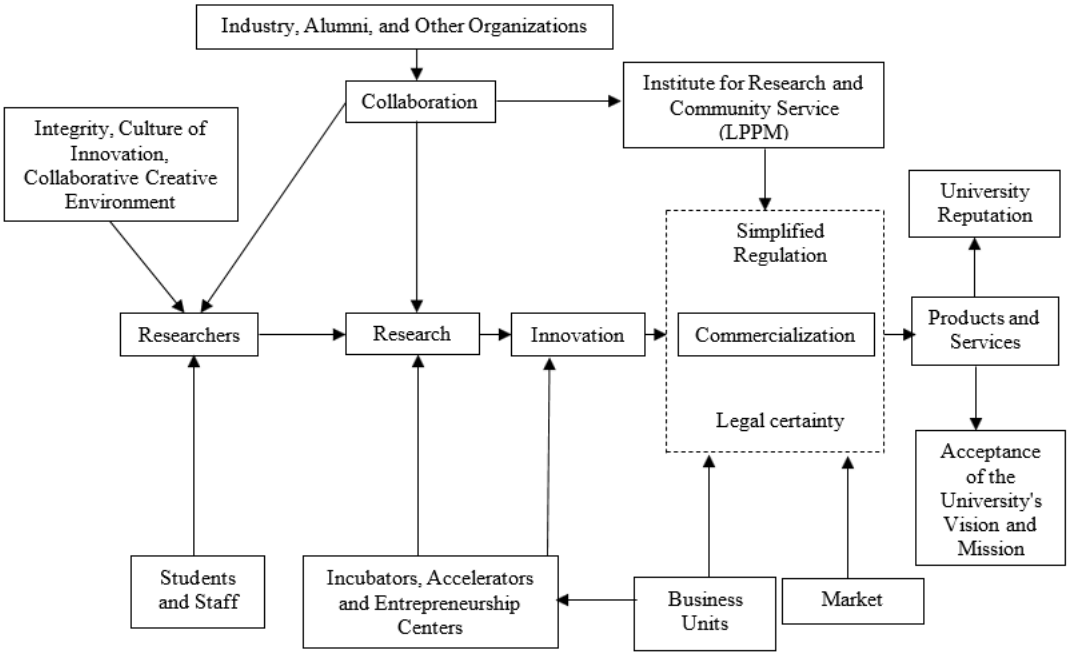

Figure 3: Empirical Model of Research at the Entrepreneurial University at UNNES.

Entrepreneurial activities serve as the primary driving force in an entrepreneurial university. The actors involved in entrepreneurship at UNNES can be categorized into three clusters: the academics cluster, the corporate cluster, and the enterprise cluster. These three actors must synergize to create a productive entrepreneurial ecosystem capable of generating profitability, which is expected to culminate in public value manifested as trust and a positive reputation for the university.

In addition to these three clusters, industry partners, alumni, and other organizations also play strategic roles in accelerating entrepreneurial performance through business collaborations. The presence of incubators, accelerators, and entrepreneurship centers is crucial to provide a continuous input into innovation and high-quality human resources. The roles played by these actors are influenced by several factors, including capital, cross-sector coordination, awareness within the academic community, regulations and legal certainty, risks, and market conditions.

> *Asset management and business collaborations are distributed across various units, resulting in coordination challenges. Excellent service remains merely a slogan and has yet to be fully internalized, despite the necessity for business units to be managed professionally. Business expansion requires capital, causing many business opportunities to be missed. The regulation governing the management of business and academic budgets is still combined, which hampers business performance. The reward system within business units needs to be restructured to enhance staff motivation in these units (BM).*

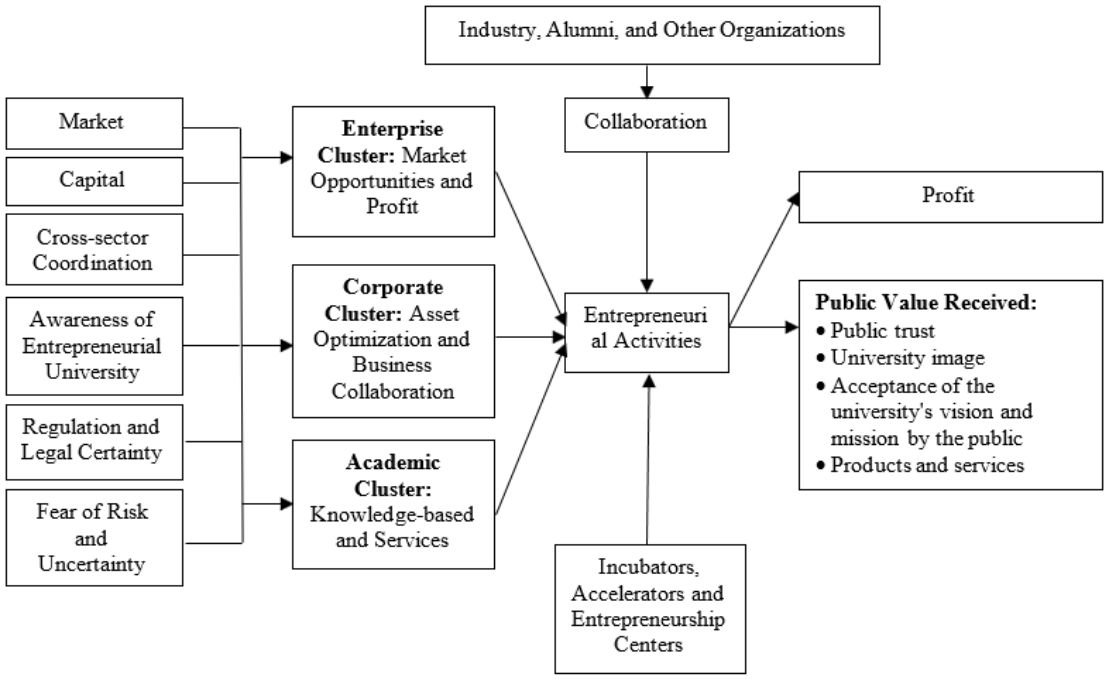

Figure 4: Empirical Model of Entrepreneurial Activities at the Entrepreneurial University at UNNES.

5.3. Driving and Inhibiting Factors of University-Based Entrepreneurship Ecosystem

The actors at UNNES collaborate to create an environment that supports innovation and entrepreneurship, fostering the emergence of a university-based entrepreneurship ecosystem (U-BEE). The development of a university-based entrepreneurship ecosystem is influenced by various enabling and inhibiting factors.

Table 2: Driving Factors of University-Based Entrepreneurship Ecosystem.

Factors	Description	Type of Driver
Government Policy	Policy support will encourage innovation and entrepreneurship. With the right policies, governments can help create a vibrant entrepreneurial ecosystem and support students in exploring and realizing their business ideas.	a. Funding support b. incubation and accelerator programs c. Training and education d. Promotion of university and industry collaboration e. Research and innovation support
Market Demand	Market demand creates opportunities and encourages the development of skills and knowledge needed for successful entrepreneurship among students.	a. Product and service innovation b. Employment opportunities c. Collaboration with industry d. Funding and investment
Human Resources	By leveraging existing human resources, universities can create a vibrant and productive entrepreneurial ecosystem that benefits not only students but also the wider community.	a. Skills and knowledge b. Networking and collaboration c. Entrepreneurial culture d. Mentoring and guidance
Supporting Infrastructure	Facilities such as incubators, accelerators, and entrepreneurship centers provide practical support. With strong infrastructure, universities can create an environment that is conducive to entrepreneurship, increasing the chances of success for students and the startups they create.	a. Research and development facilities b. Business incubators c. Access to technology d. Collaboration spaces e. Access to financial resources
Networks and Partnerships	Collaborations with industry, alumni, and other organizations strengthen the ecosystem and create new opportunities. Strong networks and partnerships can create an entrepreneurial ecosystem that supports the growth and success of student-founded startups.	a. Access to resources b. Interdisciplinary collaboration c. Internship and work opportunities d. Mentoring and guidance e. Building reputation
Culture of Innovation	By promoting a culture of innovation, universities can create an ecosystem that supports entrepreneurship, producing more entrepreneurs who are ready to contribute to the economy and society.	a. Creative environment b. Skills development c. Networking and support d. Focus on social solutions e. Reward for failure

By understanding these factors, universities can develop better strategies to build and strengthen a sustainable entrepreneurial ecosystem. The Entrepreneurial University model refers to an approach that integrates entrepreneurship into various functional aspects of the university. The following are several key elements within this model:

a. Development of entrepreneurship curricula within study programs that teach entrepreneurial skills, both formally and through supplementary courses. Integration of entrepreneurship across various disciplines to encourage cross-sectoral innovation.
b. Provision of incubator- and accelerator-based spaces and resources for students and alumni to develop business ideas. Managerial support and guidance from experienced mentors.
c. Collaboration with companies and organizations to create opportunities for research, internships, and real-world projects. Networking with alumni and industry professionals to expand opportunities for students.
d. Encouragement of research with commercial potential and practical applications. Provision of funding and support for

innovative projects that can be developed into products or services.

e. Building an innovation culture across the campus by organizing events, competitions, and seminars. Promoting collaboration among faculties and departments to generate new ideas.
f. Establishment of entrepreneurship centers focusing on entrepreneurship development, providing resources, training, and support for students and faculty.
g. Evaluation systems to measure the impact and success of entrepreneurship programs, as well as to make necessary adjustments.
h. Engaging alumni in mentoring, investment, and providing access to industry networks.
i. Innovation and commercialization lead to the creation of added value; therefore, a fair and transparent reward system is needed to enhance productivity.

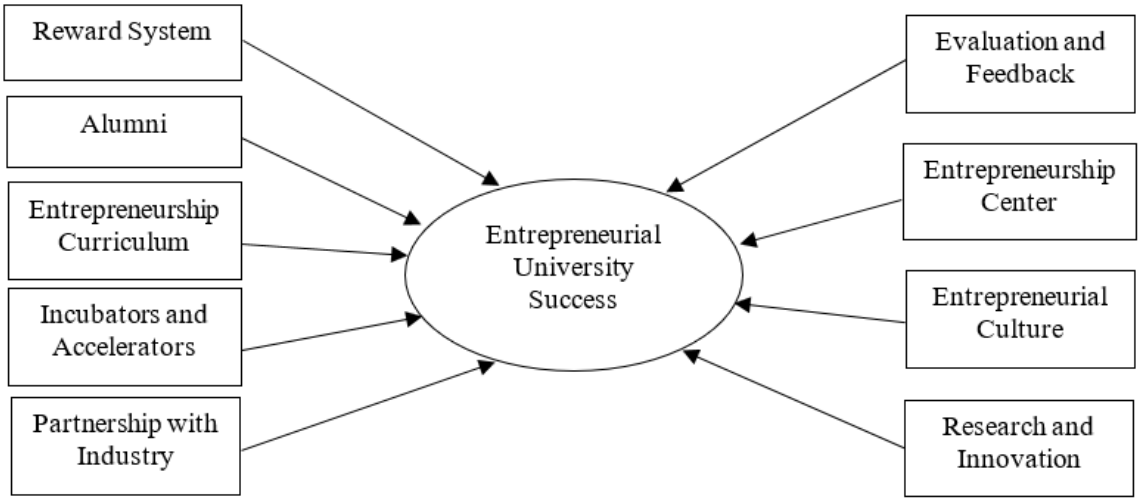

Figure 5: Key Elements of Entrepreneurial University Success.

6. DISCUSSION

The transformation of UNNES into a Public University with Legal Entity status (PTNBH) has driven the institution to adopt an entrepreneurial university model integrated within its tridharma (three pillars of higher education). This change is not merely administrative but strategic and systemic, requiring a reorientation of actor roles, institutional structures, and organizational culture.

Findings indicate that the development of the university-based entrepreneurship ecosystem (U-BEE) at UNNES involves three main clusters: the academic cluster (lecturers and students), the corporate cluster (business and asset managers), and the enterprise cluster (university business units). Collaboration among these clusters produces a continuous innovation process, from ideation and incubation to commercialization. These findings support the concepts proposed by Etzkowitz (2016) and Guerrero et al. (2016) which stated that an entrepreneurial university emerges from the complex interactions between internal and external actors and from the institution's ability to create public value through academic and economic activities.

The conceptual model employed in this study—Input–Process–Output—proves suitable for analyzing the dynamics of UNNES's transition. Inputs include human resources and policy support; the process involves integrating entrepreneurship into teaching, research, and community service; and outputs materialize as value creation, public recognition, and financial sustainability. Within this framework, education and research processes oriented toward innovation, value creation, and cross-sector collaboration serve as essential pillars. This aligns with Mascarenhas et al. (2017) who highlighted the importance of transforming university functions to generate economic and social impact.

Key factors accelerating the formation of U-BEE at UNNES include pro-innovation national policies and PTNBH autonomy, an innovative culture and adaptive campus environment, entrepreneurship infrastructure such as incubators and business centers, quality human resources, and networks with industry and alumni. Nevertheless, significant challenges remain, including limited funding for applied research and incubation, sectoral egos and suboptimal inter-unit coordination, inflexible internal regulations incompatible with business logic, and low entrepreneurship literacy among parts of the academic community. This concurs with Kirby (2006) critique that many universities fail to become entrepreneurial due to bureaucratic cultures that hinder decision-making speed and provide inadequate innovation incentives.

This discussion demonstrates that institutional theory explains how institutional changes occur under pressures of external and internal legitimacy (DiMaggio & Powell, 1983). UNNES, as an LPTK-PTNBH, is currently in a phase of institutional entrepreneurship— a situation in which internal actors attempt to drive innovation through the restructuring of institutional frameworks and norms. Practically, UNNES's success in implementing the entrepreneurial university model serves as an important reference for other PTNBHs in Indonesia with similar missions. The ability to combine academic vision and entrepreneurial logic is key to generating broader socio-economic impact.

7. CONCLUSION

This study concluded that the transformation of Universitas Negeri Semarang (UNNES) into a public University with Legal Entity status (PTNBH) has triggered the emergence of an entrepreneurial university model characterized by the integration of the tridharma of higher education within a university-based entrepreneurship ecosystem (U-BEE) framework. Findings indicated that the success of this transformation is strongly influenced by the synergy among academic, corporate, and business clusters, as well as the university's ability to align institutional structures, visionary leadership, and an innovative culture.

The entrepreneurial university implementation model proposed in this study adopted an Input–Process–Output approach emphasizing the contributions of three main pillars: (a) adaptive institutional and personal inputs, (b) innovative and collaborative teaching, research, and entrepreneurship processes, and (c) outputs in the form of value creation, institutional reputation, and

socio-economic impact. The main driving factors behind the emergence of U-BEE include government policy support, an innovation-oriented culture, entrepreneurial infrastructure, external partnerships, and the quality of human resources. Conversely, significant challenges include funding constraints, institutional fragmentation, rigid regulations, and a low level of collective awareness regarding the vision of an entrepreneurial university.

The strategic implications of this study suggest that PTNBHs require not only structural autonomy but also institutional mindset transformation and actor integration within the entrepreneurial ecosystem. These findings reinforce the entrepreneurial university literature and provide practical contributions for designing innovation- and entrepreneurship-based institutional transformation strategies in Indonesian state universities.

This study has several limitations that should be considered for future research development. The research was conducted in a single institution characterized as an LPTK-PTNBH. Generalizing findings to other institutions requires caution due to differences in organizational culture, institutional history, and institutional strategies. The study did not employ a longitudinal approach to capture changes in attitudes, structures, and outputs over a broader timeframe. Future research directions may include: (a) comparative studies across PTNBHs in Indonesia; (b) integration of the entrepreneurial university model with sustainable development goals; (c) the impact of digitalization on the dynamics of campus entrepreneurial ecosystems; and (d) exploratory modeling approaches.

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