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# How Entrepreneurial are Universities? A Typological Analysis of Swedish Higher Education Institutions

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## Abstract

Swedish universities vary significantly in their levels of market and entrepreneurial orientation as well as in their degree of institutional autonomy and strategic intent. This four-part typology helps policymakers better understand these differences and tailor policy instruments accordingly. The typological mapping provides a shared conceptual framework for aligning higher education policy with institutional realities. The study identifies four distinct university types: (i) Proactive entrepreneurial universities, (ii) Mission-driven academic universities, (iii) Traditional public universities, and (iv) Market-following universities. A total of 28 Swedish universities were included to reflect the core structure and diversity of the national higher education system. These institutions were systematically mapped within the typology. The resulting framework offers a comparative lens for analyzing institutional profiles, supporting both scholarly insight and policy development. By visualizing how universities differ in market orientation and strategic autonomy, the typology enables more informed dialogue about institutional diversity and illustrates how various university types contribute differently to innovation ecosystems and societal needs.

**Keywords** Universities · Higher education institutions · Typology · Entrepreneurial orientation · Policy · Institutions

## Introduction

An ongoing debate in the academic literature concerns how universities worldwide are undergoing transformation into more entrepreneurial, innovative, and digitally oriented institutions (Al-Atabi and DeBoer, 2014; Klofsten et al., 2019). This shift reflects broader changes in the role of higher education in response to technological advancement, societal needs, and economic imperatives. Governments across the world are increasingly striving to establish the necessary conditions and frameworks

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to foster more entrepreneurial universities. This ambition has attracted scholarly attention, with researchers examining both intra-university entrepreneurship and specific entrepreneurship education initiatives (Laukkanen, 2000; Shane, 2004). A crucial yet sometimes overlooked dimension in this transformation is the role of university culture—encompassing shared attitudes, values, and norms (Birley, 2002).

Today, the role of the university extends well beyond its traditional mission of enlightening society. It is now equally responsible for generating and disseminating knowledge that contributes to societal and economic development. At the same time, universities are confronted with significant political and financial pressures, alongside growing expectations to contribute directly to national progress. These evolving demands have led to profound institutional transformations. One of the most pronounced responses to this shifting landscape is the emergence of what Clark (1998a, b) terms “entrepreneurial universities.” This concept reflects universities that have undergone fundamental changes in their internal culture, organizational structures, and external relationships, as a strategic reaction to mounting environmental pressures. The rise of such institutions can be understood as the outcome of both internal dynamics and external forces, particularly the expanding significance of knowledge-driven innovation in contemporary society.

The concept of the entrepreneurial university plays a central role within the Triple Helix model, where it represents a key dimension in the evolving relationship between academia, industry, and government. According to Etzkowitz (2003), the so-called *third mission*—complementing the traditional roles of education and research—is to actively contribute to economic development. This expanded mission entails a fundamental transformation in the organizational structures and operational activities of universities (Etzkowitz, 2019). Such transformation can manifest through various processes, including joint research initiatives, the commercialization of research via patents and licensing, and other forms of university–industry collaboration (Fuster et al., 2019; Feldman et al., 2019; Feola et al., 2021).

Universities are often described as loosely coupled systems (Musselin, 2006), where organizational sub-units such as faculties or departments maintain distinct identities that may diverge from that of the central university (Meek et al., 2010). Despite this internal diversity, universities commonly adopt institution-wide strategies, particularly concerning the acquisition, allocation, and use of resources (Deiaco et al., 2012). Moreover, institutions tend to develop their own cultural identity around external engagement, which may shape how collaboration and outreach are prioritized across the organization (Uyarra, 2010). McNay (1995) identified four evolving patterns of internal university governance: collegial, bureaucratic, corporate, and entrepreneurial models. This evolution reflects a broader shift from state control to institutional self-regulation, wherein the state assumes a supervisory role rather than a directive one (Clark, 1983; Van Vught, 1988). This transition is closely tied to the concept of institutional autonomy, which can be analyzed along two key dimensions: purpose (cultural vs. utilitarian) and authority (centralized vs. decentralized). These dimensions give rise to distinct models of state–university relations and define the scope of institutional agency (Askling et al., 1999).

Universities, as institutionalized organizations, tend to be shaped not only by internal strategies but also by the expectations of governments, funders, industries,

and civil society. In the context of higher education, the concept of the entrepreneurial university (Clark, 1998a, b, c; Etzkowitz, 2002) describes institutions that move beyond traditional academic functions to actively engage in innovation, commercialization, and societal impact. However, entrepreneurial transformation is not uniformly attainable or desirable for all institutions. Structural constraints, historical missions, and regulatory frameworks shape an institution's capacity to develop entrepreneurial features. Although the literature on entrepreneurial universities has expanded significantly over the past 2 decades (Clark, 1998a; Etzkowitz and Leydesdorff, 2000; Benneworth and Jongbloed, 2010; Kohn Rådberg and Löfsten, 2024), most existing frameworks either assume a linear model of transformation or focus narrowly on individual case studies of entrepreneurial success.

A substantial body of research has examined various aspects of the entrepreneurial university (Breznitz and Feldman, 2012; Guerrero and Urbano, 2012; Carayannis et al. 2016; Guerrero et al., 2016a, b; Teece, 2018; Etzkowitz et al., 2019; Kohn Rådberg and Löfsten, 2024), academic entrepreneurship (Klofsten and Jones-Evans, 2000; Lindelöf and Löfsten, 2005; Löfsten and Lindelöf, 2005; De Silva, 2016), and the motivations driving academic engagement with industry (Perkmann et al., 2021), as well as their roles within broader innovation ecosystems (Brem and Radziwon, 2017). Numerous studies have explored how universities, particularly within European regions, have undergone transformations to foster innovation and entrepreneurial activity. These transformations include the establishment and development of academic spin-off firms, the creation of technology transfer offices, the promotion of entrepreneurial orientation, and the integration of support structures such as science parks and incubators (Grimaldi and Grandi, 2001; Fernandez-Alles et al., 2018; Rothaermel et al., 2007; Fuster et al., 2019; Feola et al., 2021; Löfsten and Klofsten, 2024). Furthermore, typological approaches to university classification have primarily been applied at the geographic location, institutional size, legal status, stakeholder focus, external engagement (Van Vught et al., 2010; Seeber et al., 2012; Lepori et al., 2016; Torre et al., 2018).

The emergence of the entrepreneurial university reflects a broader shift in how higher education institutions navigate societal, technological, and economic complexity. Beyond structural autonomy or responsiveness to market signals, the ability to act entrepreneurially depends on the alignment between strategic intent (vision, leadership, governance) and functional capacity (resources, incentive systems, support structures). Following Audretsch and Belitski (2022), this alignment—termed strategic and functional congruence—is crucial for universities to engage in innovation, regional development, and knowledge transfer without compromising their core missions.

This typological approach draws on institutional theory, which explains how organizations respond to norms, rules, and external pressures (DiMaggio and Powell, 1983). By linking institutional logics, autonomy, and market and entrepreneurial orientation, the typology reveals how different university types respond to policy reforms and funding incentives. In Sweden, despite a unified legal framework, universities pursue diverse missions and strategies. Typological mapping helps explain how universities position themselves in relation to governance capacity and external demands, offering a more nuanced, evidence-based foundation for policy. This study

addresses a gap in the literature by providing a theory-informed and empirically grounded classification of Swedish universities. The research questions can therefore be formulated as:

**RQ1** What institutional types of universities can be identified through typological mapping?

**RQ2** How do different university types respond to policy incentives for entrepreneurship and third mission activities based on their market orientation and institutional autonomy?

Swedish higher education institutions vary significantly in their missions, governance structures, and external engagement strategies. To better understand this diversity, this study maps universities and university colleges along two key dimensions: *market and entrepreneurial orientation* and *institutional autonomy and strategic intent*. This typological approach helps uncover strategic patterns and provides a basis for more differentiated and effective policy design. It recognizes that institutions fulfill different roles and operate under varying constraints. This understanding is essential to avoid one-size-fits-all solutions and to build a resilient, diverse, and effective university system.

The structure of this paper is as follows: Section "[Review of Literature and Conceptual Framework for Typologizing Higher Education Institutions](#)" reviews the existing literature, providing an overview of research on entrepreneurial universities, university classifications, and typological dimensions. Section "[Methodology and Sample](#)" outlines the methodology and describes the sample of universities included in the study. Section "[Empirical Classification of University Types](#)" presents the typological classification of 28 universities. Section "[Analysis](#)" discusses the policy and governance implications of the findings. Finally, section "[Conclusions](#)" offers concluding remarks.

## **Review of Literature and Conceptual Framework for Typologizing Higher Education Institutions**

### **The Expanding Role of Entrepreneurial Universities: From Commercialization to Intrapreneurship**

The university sector is undergoing a continuous transformation that expands the scope and functions of higher education institutions, with entrepreneurial practices gaining increasing significance. Universities are increasingly engaged in partnerships, technology transfer, and commercialization, transforming their organizational structures and roles (Van Vught, 1999; Etzkowitz, 2003; Fuster et al., 2019; Feola et al., 2021). This shift reflects their expanded third mission, complementing education and research with societal and industrial impact (Clark, 1998a, b; Etzkowitz, 2004; Rothaermel et al., 2007). The literature emphasizes that entrepreneurial

performance should be evaluated across all core activities—teaching, research, and external engagement (Schulte, 2004; Guerrero and Urbano, 2012).

The concept of the entrepreneurial university refers to institutions capable of adapting to complex and dynamic environments (Clark, 2001). While some scholars have expressed concerns about the commercialization of academia (Pelikan, 1992), others argue that teaching and research remain core academic functions and can coexist with external engagement and innovation (Clark, 1998a, b, c; Wissema, 2009). Entrepreneurial universities now play an active role in economic development (Feola et al., 2021), serving as drivers of competitiveness and innovation (Mian, 2011; Etzkowitz and Leydesdorff, 2000). Entrepreneurial universities not only foster innovation and economic value (Audretsch et al., 2008) but also cultivate student mindsets and contribute to societal problem-solving (Montiel-Campos, 2018; Wood, 2011). Their evolution reflects broader systemic changes in higher education (Guerrero et al., 2016a, b; Klofsten et al., 2019).

At the same time, the academic discourse presents a wide range of definitions regarding what constitutes an entrepreneurial university. These definitions commonly emphasize the institution's ability to adapt to environmental changes, assume new societal responsibilities, foster an entrepreneurial culture, contribute to economic development, and engage in the commercialization of research outputs (Clark, 1998a, b; Etzkowitz, 2003; Jacob et al., 2003; Audretsch et al., 2021). According to Abreu et al. (2016), the primary distinction between academic entrepreneurship and intrapreneurship lies in their orientation toward commercialization.

Recent studies also highlight intrapreneurship—innovative initiatives by non-academic staff—as an underexplored but vital part of university entrepreneurship (Klofsten et al., 2019; Valka et al., 2020). Intrapreneurship refers to entrepreneurial efforts that occur within established organizations (Antonicic and Hisrich, 2003; Abreu and Grinevich, 2013; Klofsten et al., 2021), and it represents a vital but often underexplored facet of university entrepreneurship. Academic entrepreneurship typically emphasizes commercial outcomes, whereas intrapreneurship is more broadly concerned with fostering innovation within existing organizations. As Antonicic and Hisrich (2001, p. 498) describe, intrapreneurial activity encompasses a range of innovative efforts, such as “services, technologies, administrative techniques, strategies, and competitive postures”. However, Valka et al. (2020) highlight a relative lack of attention to intrapreneurial activities—entrepreneurial initiatives carried out by individuals in non-academic roles within universities—compared to those undertaken by academic staff.

As universities become more responsive to societal needs, they face increasing pressure to generate revenue, prompting debates about how commercialization may affect academic priorities (Provasi et al., 2012; De Zilwa, 2005). One key manifestation of entrepreneurial activity within universities is the academic spin-off, which originates from research-based academic environments and serves as a key mechanism for technology transfer (Lindelöf and Löfsten, 2005). These spin-offs are widely recognized for their economic contributions, particularly in advancing technological capabilities and promoting national economic development (Di Gregorio and Shane, 2003; Rizzo, 2015).

The academic literature consistently highlights a significant transformation in the role of universities—from institutions primarily focused on knowledge dissemination to key actors in the entrepreneurial commercialization of science (Chen and Lin, 2017). This shift has resulted in a deepened connection between universities, innovation processes, and the broader entrepreneurial or knowledge ecosystem. According to Siegel and Wright (2015) and Fuster et al. (2019), entrepreneurial universities have the potential to foster academic success through the promotion of entrepreneurship and the cultivation of a dynamic entrepreneurial environment. Carayannis et al. (2016) further emphasize the importance of context, arguing that the entrepreneurial university serves as a multiplier within the ecosystem, enhancing its capacity for innovation and economic development. Research in regional economic development has shown that many universities are increasingly eager to position themselves as entrepreneurial institutions. Within this context, participation in third mission activities—such as the creation of spin-offs and spin-outs, as well as technology and knowledge transfer—has gained prominence (Gordon et al., 2012; Johnstone and Huggins, 2016). However, these support processes can take various forms within universities (Fini et al., 2011). One prominent example is entrepreneurship education, which has gained significant attention across higher education institutions. Through such initiatives, students are encouraged to cultivate entrepreneurial mindsets and capabilities (Clark, 2004; Guerrero and Urbano, 2012; Barba-Sánchez and Atienza-Sahuquillo, 2018; Turner and Gianodis, 2018).

### Earlier Approaches in Differentiating Universities

Various classification schemes have been developed to account for institutional diversity in higher education. Examples include geographic location (e.g., central vs. provincial; Seeber et al., 2012), institutional size (small, medium, large, very large; Van Vught et al., 2010), and legal status (public, private, or publicly funded private institutions; Raponi et al., 2016). These classifications are typically designed to control for specific sources of heterogeneity that may otherwise introduce bias or produce misleading conclusions in empirical studies (Torre et al., 2018). In addition to predefined typologies, some scholars have developed ad hoc or one-dimensional classifications using a descriptive or ex post approach. In these cases, universities are grouped based on shared characteristics, and typologies are defined after analyzing patterns of similarity and difference across institutions. One of the most commonly used methods for producing such classifications is cluster analysis, which enables the identification of meaningful institutional groupings based on multiple variables (Torre et al., 2018).

A key distinction between university engagement models lies in their stakeholder focus (Meerman and Davey, 2025). The entrepreneurial university conceptualization treats knowledge as a commodity to be exploited for institutional gain (Goldstein, 2008), emphasizing commercialization and industry collaboration as central objectives (Davey, 2017). In contrast, the engaged university and civic university frameworks conceptualize the university's role primarily in terms of its public good function (Goldstein, 2008). These models prioritize collaboration

with public and social organizations and emphasize contributions to society at large (engaged) or to the regional context more specifically (civic) (Sánchez-Barrioluengoa and Benneworth, 2019). The civic university, in particular, places public contribution at the core of its identity, rather than viewing local industry partnerships as the primary vehicle for civic engagement (Vallance, 2016). Collectively, these frameworks outline a conceptual typology of external engagement, highlighting that universities adopt different profiles based on their stakeholder orientation and forms of collaboration (Meerman and Davey, 2025).

Entrepreneurial universities are not homogeneous, nor are they uniformly positioned along the developmental path toward entrepreneurial transformation. There is increasing recognition of the need for a valid and empirically grounded typology to distinguish between different types of entrepreneurial universities (Moroz et al., 2011). Reflecting this need, Armbruster (2008) has identified several conceptual variations in the literature, including the adaptive university (Sporn, 2001), the self-regulative university (Hölttä, 1995), the enterprise university (Hay et al., 2002; Marginson and Considine, 2000), as well as broader references to innovative or discovery universities (Garnsey and Heffernan, 2005). These classifications highlight the diverse institutional trajectories and strategic models that fall under the umbrella of the entrepreneurial university.

Radko et al. (2022) theoretically developed and empirically tested a model that categorizes stakeholders into four types—knowledge enablers, creators, codifiers, and facilitators—and examined their roles across three different university types: Russell Group universities, teaching-focused institutions, and former polytechnics. Their findings reveal significant variation in how these stakeholder groups contribute to knowledge spillover entrepreneurship, with the nature and impact of stakeholder engagement differing notably depending on the institutional type. Torre et al. (2018) developed a typology of universities based on institutional diversity (measured through 38 variables) and mission-specific efficiency (assessed using 21 performance indicators). Their objective was not to rank universities by performance, but rather to propose an alternative evaluation framework that acknowledges institutional heterogeneity and offers valuable insights for policy development and strategic planning within higher education systems. The authors identified six distinct university types, each characterized by different combinations of mission focus and institutional attributes.

There has been a global expansion of university-led technology commercialization (Thursby and Thursby, 2002), prompting institutions to adopt new approaches to their business models. One influential framework is the three-ring entrepreneurial university, which conceptualizes universities as balancing three core functions: teaching, research, and entrepreneurship (Aldridge and Audretsch, 2010; Miller et al., 2014; McAdam et al., 2017). This third ring—entrepreneurial activity—facilitates knowledge transformation and commercialization through collaboration with industry (Grimaldi et al., 2011; Abreu et al., 2016). While this model offers a dynamic response to internal and external pressures, a key challenge lies in maintaining the integrity of the traditional academic core—teaching and research—alongside new entrepreneurial demands (Fitzgerald and Cunningham, 2016).

Successfully adopting this model requires greater alignment between knowledge capital (e.g., academic outputs, R&D investment) and entrepreneurial (Audretsch, 2007). This reflects the heterogeneity among entrepreneurial universities and the need for institution-specific strategies.

Universities differ in how they implement entrepreneurial strategies, shaped by historical missions, internal governance, and national policy environments (Slaughter and Leslie, 1997; Teece, 2018). While most research focuses on academic entrepreneurship and commercialization (Löfsten and Lindelöf, 2005; De Silva, 2016; Perkmann et al., 2021), others stress the broader institutional transformation through spin-offs, incubators, and innovation ecosystems (Grimaldi and Grandi, 2001; Fernandez-Alles et al., 2018; Löfsten and Klofsten, 2024). Still, external collaboration enhances institutional relevance and capacity (Rinaldi et al., 2018; Ardito et al., 2019). Finally, typological approaches and institutional theory offer useful tools for understanding this diversity, particularly in systems where universities face similar regulations but adopt varying strategies (Van Vught et al., 2010; Torre et al., 2018).

### **Dimensions and Types in the University Typology**

This section will address RQ1. The typological approach draws on institutional theory, which emphasizes how organizations conform to prevailing norms, rules, and logics in their environments (DiMaggio and Powell, 1983). Universities, as institutionalized organizations, tend to be shaped not only by internal strategies but also by the expectations of governments, funders, industries, and civil society. In the context of higher education, the concept of the entrepreneurial university (Clark, 1998a, b, c; Etzkowitz and Leydesdorff, 2000; Etzkowitz 2003) describes institutions that move beyond traditional academic functions to actively engage in innovation, commercialization, and societal impact. However, entrepreneurial transformation is not uniformly attainable or desirable for all institutions. Structural constraints, historical missions, and regulatory frameworks shape an institution's capacity to develop entrepreneurial features. Typological mapping thus bridges institutional theory with strategy and policy analysis. It highlights how institutional logics and degrees of autonomy interact with market orientation to produce distinct organizational types. These types, in turn, influence how universities respond to reform agendas, funding mechanisms, and innovation policies.

The classification of universities into typological categories followed a structured, multi-step process: (i) Conceptual framework alignment: Institutions were classified according to a clearly defined typology based on two dimensions (ii) market and entrepreneurial orientation, and institutional autonomy and strategic intent. These dimensions were grounded in established theories of institutional behavior (DiMaggio and Powell, 1983; Clark, 1998a, b, c). As regions have gained greater institutional and economic autonomy, universities' roles in innovation-led development have been increasingly recognized and supported by local authorities—particularly in regions facing economic challenges or undergoing industrial restructuring (Huggins and Kitagawa, 2012; Cowan and Zinovyeva, 2013; Kempton, 2015).

Market and entrepreneurial orientation captures the extent to which an institution responds to external demands such as labor market trends, industry needs, and funding competition. Highly market-oriented universities design programs aligned with employability, pursue entrepreneurial partnerships, and prioritize applied knowledge and innovation (Clark, 1998a, b, c; Etzkowitz, 2002). However, market orientation alone does not guarantee proactive behavior; some institutions adapt passively to external pressures. Entrepreneurial orientation, derived from strategic management literature (Lumpkin and Dess, 1996), reflects an institution's proactivity, innovation, and capacity for internal transformation. Institutions with high entrepreneurial orientation act strategically, investing in future-oriented initiatives and maintaining agility in governance. Conversely, lower entrepreneurial orientation suggests reactive behavior and limited strategic coherence. Institutional autonomy and strategic intent measure the university's governance freedom and ability to formulate and execute a long-term vision. High autonomy implies independence from political micromanagement and the ability to set internal priorities. Low autonomy indicates strong dependence on external actors and a reactive, compliance-driven institutional behavior. The summary of the dimensions in the typology is as follows:

X-axis: Degree of market and entrepreneurial orientation

Low → Academically driven, traditional focus

High → Strong industry alignment, innovation-driven

Y-axis: Institutional autonomy and strategic intent

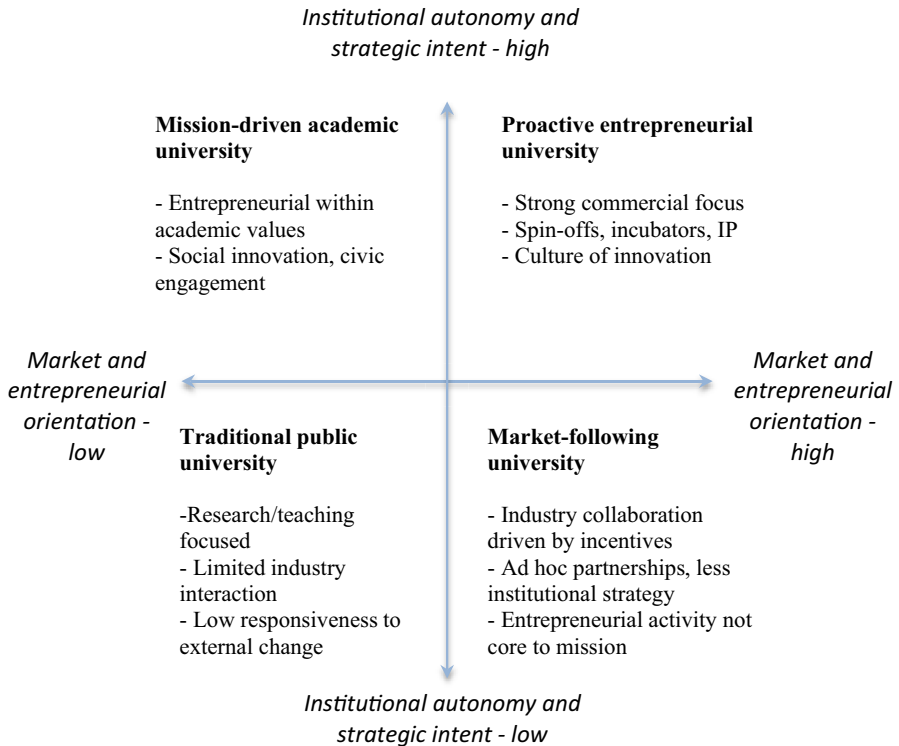
Low → Reactive, policy- or funding-dependent

High → Proactive, strategically entrepreneurial

The typology offers a visual framework for comparing institutions and it facilitates dialogue about institutional diversity and informs policy on how different universities contribute to innovation systems and societal needs. The typology places institutions into four broad types. Figure 1 below illustrates how universities and university colleges are positioned based on their levels of market orientation and institutional autonomy and strategic intent. Each institution is a typological category (type). This visual representation supports strategic dialogue and facilitates comparative analysis across institutions. The typology demonstrates that entrepreneurial capacity is unevenly distributed, shaped by autonomy, governance, and historical path dependencies. Institutions with higher autonomy are better positioned to engage in transformative change, while others remain tethered to established norms.

*Proactive entrepreneurial university* (top-right) actively drive innovation ecosystems and combine high autonomy with strong market orientation. These institutions engage in institutional entrepreneurship (Battilana et al., 2009), actively shaping their environments through innovation hubs, incubators, and strategic partnerships. Proactive entrepreneurial universities exhibit strong innovation ecosystems, strategic external partnerships, and high degrees of governance autonomy. Many are foundation-run or technologically focused, with clearly articulated strategic priorities.

*Mission-driven academic university* (top-left): A university deeply rooted in solving societal issues via entrepreneurship (e.g., social enterprise incubators). Mission-driven academic universities maintain civic or academic logics while selectively engaging with market pressures. Their autonomy supports public value creation and interdisciplinary goals, reflecting selective coupling (Pache



**Fig. 1** University typology

and Santos, 2010). Mission-driven academic universities are research-intensive institutions with a clearly defined academic mission. Their high autonomy supports strong internal governance and long-term strategic planning, although their market engagement is often moderate.

*Traditional public university* (bottom-left): Focus remains on teaching and classical research, with limited entrepreneurial ambition. Traditional public universities conform to public-sector norms and emphasize disciplinary excellence and academic freedom. Their behavior reflects institutional persistence (Scott, 2008), often resisting pressures for entrepreneurial transformation. Traditional public universities tend to follow national policy agendas and maintain strong public missions, but generally lack entrepreneurial orientation and institutional dynamism.

*Market-following university* (bottom-right): More reactive to market pressures, e.g., chasing grants or industry ties without a long-term vision and respond to market incentives but lack strategic autonomy. Their reactive behavior exemplifies isomorphic adaptation (DiMaggio and Powell, 1983), adjusting to environmental expectations without redefining institutional identity.

Market-Following Universities are characterized by high responsiveness to regional and market demands, but limited internal strategic capacity or long-term autonomy.

## Methodology and Sample

### Case Selection

This study focuses on 35 Swedish universities and university colleges (Higher Education Institutions: HEIs). The selection includes all public universities, all foundation-governed universities, and a representative sample of university colleges recognized by the Swedish Higher Education Authority (Universitetskanslersämbetet, UKÄ). The institutions were chosen to reflect the full range of organizational missions, governance structures, regional roles, and strategic profiles present in the Swedish higher education system. The inclusion criteria were (i) Institutions classified as either universities (*universitet*) or university colleges (*högskolor*) offering advanced-level degrees (ii) Institutions of both public governance and private foundation models, and (iii) Geographical distribution across major regions in Sweden to capture both urban and regional institutions. This approach ensures broad system coverage while maintaining analytical tractability. This mapping was conducted through a review of institutional profiles, mission statements, strategic plans, and governance structures, supported by secondary literature and national policy documents. Classifications were determined qualitatively based on public data and expert-informed judgment. The typology does not rank institutions but highlights functional diversity to inform more intelligent and context-sensitive policymaking.

Seven institutions were excluded from the analysis to maintain coherence and comparability within the typology framework. The following universities and university colleges were removed: Swedish Defence University, Swedish School of Sport and Health Sciences, Beckmans College of Design, Konstfack University of Arts, Crafts and Design, Royal Institute of Art, Royal College of Music in Stockholm, and Stockholm University of the Arts. These institutions were excluded based on the following considerations: First, they represent highly specialized educational profiles (in defense, sports science, art, design, or music) that diverge significantly from the broader academic, multidisciplinary missions typical of the universities included in the study. Second, their organizational structures, stakeholder relationships, and strategic priorities are often fundamentally different from those of general universities. For example, artistic universities follow educational and research logics focused on individual creative practice, while the Swedish Defence University is closely aligned with national defense objectives rather than broader market or innovation dynamics. Third, their inclusion would distort the comparative analysis of institutional autonomy and market and entrepreneurial orientation, which assumes engagement with broader academic fields, diversified research agendas, and public-private interaction beyond narrowly defined sectors. By focusing on comprehensive and regionally

representative universities, the study ensures a more robust and meaningful typological classification.

The 28 universities and university colleges included in the study were selected to represent the core of the Swedish higher education system: Blekinge Institute of Technology, Chalmers University of Technology, Dalarna University, Halmstad University, Jönköping University, Karlstad University, Karolinska Institutet, Kristianstad University, KTH Royal Institute of Technology, Linköping University, Linnaeus University, Luleå University of Technology, Lund University, Malmö University, Mid Sweden University, Mälardalen University, Stockholm School of Economics, Stockholm University, Swedish University of Agricultural Sciences (SLU), Södertörn University, University of Gävle, University of Skövde, University West, University of Borås, University of Gothenburg, Uppsala University, Umeå University, and Örebro University.

These institutions offer (i) broad academic programs and conduct research across multiple disciplines (ii) Engage in regional development, innovation, and public service, aligning with the study's focus on market and entrepreneurial orientation and institutional autonomy and strategic intent (iii) Reflect diverse governance models (public and foundation) and varying strategic profiles, providing a rich basis for typological classification, and (iv) Operate within the national higher education policy framework, making them comparable in terms of regulatory environment, funding structures, and performance expectations. Their inclusion ensures that the typology captures the full institutional diversity of comprehensive and strategically relevant higher education institutions in Sweden.

## Data Collection

This study employs secondary data analysis, a flexible methodological approach involving both procedural and evaluative steps (Doolan and Froelicher, 2009), although the literature offers no universally standardized framework for its execution (Johnston, 2014). A principal limitation of secondary data is the researcher's absence from the original data collection process, requiring reliance on alternative documentation such as technical reports, research articles, and institutional publications (Dale et al., 1988). Secondary data sources, typically external to the researcher, include public libraries, government departments, and industry associations. Particular attention must be given to the timing of data collection (Boslaugh, 2007; Stewart and Kamins, 1993) and the critical evaluation of data validity and reliability (Clarke and Cossette, 2000) to ensure methodological rigor.

Data for classifying the institutions were collected from secondary sources, including: (i) Official institutional websites (mission statements, strategy documents, innovation platforms) (ii) Annual reports and strategic plans published between 2020–2024 (iii) Policy documents from the Swedish Higher Education Authority (UKÄ) and the Ministry of Education (iv) Participation in national or international innovation programs (e.g., Vinnova, Horizon Europe) (v) Research on institutional governance forms (e.g., public vs. foundation status) (vi) Secondary literature on

**Table 1** Data collection—overview

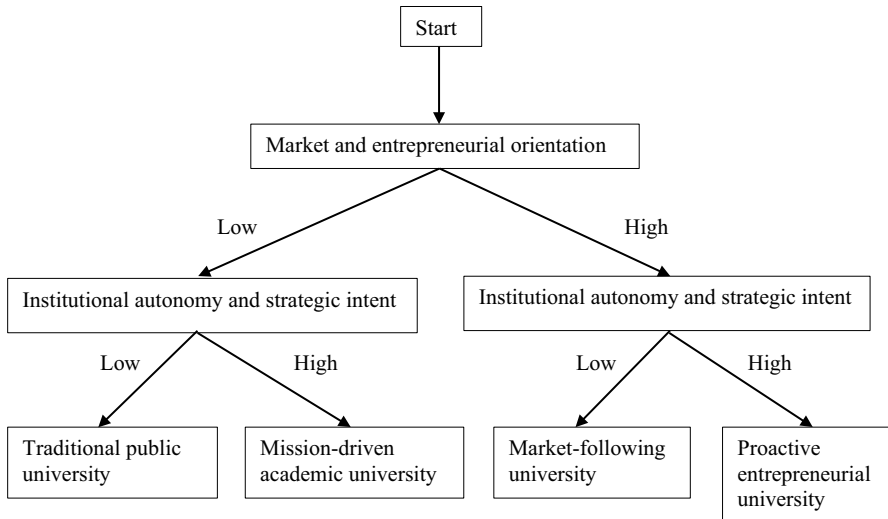
Source type	Purpose in classification
Institutional mission statements	Assess institutional values and priorities
Strategic plans (2020–2024)	Evaluate strategic autonomy and long-term direction
Annual reports	Analyze operational focus and resource allocation
UKÄ institutional profiles	Confirm institutional status and mandate
Participation in National/International Innovation Programs	Measure external engagement and entrepreneurial activity
Governance model documentation (Public/Foundation)	Identify governance structure and degree of autonomy
Secondary literature (Higher Education Research)	Support theoretical framing and background analysis
Institutional websites (news and updates)	Capture recent initiatives and dynamic developments

Swedish higher education and universities (Benner, 2020a, b). Document analysis was complemented by reviews of performance indicators, including research funding profiles, commercialization activities, and regional collaboration initiatives, where available. A summary of the data collection is presented in Table 1.

To ensure the reliability and robustness of the data informing university classification, several steps were implemented (i) Temporal consistency: Data were collected primarily for the period between 2020 and 2024 to ensure contemporary relevance and to account for recent strategic changes (ii) Critical evaluation of secondary sources: All secondary data were critically assessed for credibility, origin, and recency (Johnston, 2014; Boslaugh, 2007). Priority was given to official governmental and institutional reports over media or commercial summaries. Despite the rigorous approach, the classification remains subject to interpretive judgment, particularly for universities undergoing rapid strategic transformation. Additionally, institutional strategies expressed in public documents may not always fully reflect internal realities.

### Operationalization of Typology Dimensions

For each dimension, publicly available data were collected and reviewed (including annual reports, UKÄ statistics, strategic documents, and university websites). Institutions were coded as exhibiting either high or low intensity on each axis. Classification into one of the four quadrants was made accordingly. In ambiguous cases, a conservative assignment rule was applied, favoring the lower-intensity category unless robust supporting evidence suggested otherwise. Each university was evaluated on both dimensions using a five-point scale (1–5). A score of three was considered a borderline case and subjected to closer scrutiny. Following the principle of caution, borderline cases (score 3) were classified as *Low* (1) Assess each university based on publicly available sources (2) Code both dimensions separately: *High* or *Low* for each, and (3). Assign quadrant: High + High → Proactive entrepreneurial, Low +



**Fig. 2** Decision tree and assignment rule

High → Mission-driven, Low + Low → Traditional, and High + Low → Market-following. The decision tree (Figure 2) provides a step-by-step guide for classifying Swedish higher education institutions into one of four university types based on two core dimensions: Market and entrepreneurial orientation and Institutional autonomy and strategic intent. Each branching point in the tree poses a simple diagnostic question using observable indicators. This visual model enhances transparency in the classification process by clarifying how institutional characteristics translate into typological assignments. It serves as both a methodological aid and a policy tool for stakeholders aiming to understand how different universities respond to external pressures and internal strategic goals.

To ensure consistency, an internal test-coding procedure (solo calibration) was conducted. A sub-sample of institutions was reviewed twice over a 1-week interval to evaluate stability in quadrant assignments. Each axis was operationalized based on prior literature in higher education governance, entrepreneurship, and innovation policy (Guerrero et al., 2016a, b). A conservative assignment rule was applied in ambiguous cases: when evidence was mixed or unclear, institutions were placed in the lower-intensity category unless multiple sources confirmed otherwise. Due to the exploratory nature of the study, no intercoder reliability assessment was applied. Furthermore, borderline cases were documented and reviewed carefully:

*Linköping University*: Although it has strong research capacity and industrial ties (e.g., defense, Ericsson), its core orientation remains rooted in academic and civic missions, with commercialization playing a secondary role. Hence, it's placed in the mission-driven academic group. *Stockholm School of Economics*: As a private institution, Stockholm School of Economics enjoys full autonomy and elite status but maintains a long-term academic vision rather than emphasizing rapid market responsiveness or entrepreneurial outputs. *Umeå University*: Large and

comprehensive, Umeå focuses mainly on teaching and traditional research. Some signals of innovation exist (e.g., in medicine or sustainability), but limited governance flexibility and entrepreneurship justify a conservative classification. *Mid Sweden University*: Displays limited third-mission engagement and follows a path-dependent trajectory with little strategic autonomy. It remains close to the traditional public university type. *University of Gävle*: Regional mission-focused with growing interest in collaboration, but lacks strategic depth and autonomy to be considered entrepreneurial. Reactive rather than strategic. *Kristianstad University*: Engagement largely shaped by external funding and policy incentives. Lacks the internal governance structure and entrepreneurial ambition needed for proactive positioning. *Örebro University*: Actively engages with regional industry and funding opportunities. However, it retains a traditional governance model that limits strategic clarity. Thus, categorized conservatively as market-following. *Karlstad University*: Similar to Örebro, Karlstad shows increased regional engagement and responsiveness. However, strategic third-mission leadership is still underdeveloped. Also placed in market-following. *Mälardalen University* demonstrates strong engagement with regional innovation systems and applied research, reflecting a clear external orientation. However, its strategic autonomy appears somewhat constrained, which limits its positioning in the most entrepreneurial category. Based on this combination, the university is best placed within the Market-following university type. *Halmstad University* showed relatively high external engagement but unclear strategic autonomy and was therefore placed in the Market-following category.

## Empirical Classification of University Types

This typology provides a conceptual framework for classifying universities along two key dimensions: degree of market and entrepreneurial orientation (horizontal axis) and institutional autonomy and strategic intent (vertical axis). By mapping Swedish universities into this matrix, we can observe how diverse strategic approaches manifest across national and institutional contexts. Rather than treating the university system as monolithic, the classification draws attention to the diverse missions, strategies, and regional roles that shape the behaviour of higher education institutions across Sweden. At one end of the spectrum, Proactive entrepreneurial universities such as Chalmers, KTH, and Jönköping University demonstrate a high degree of institutional autonomy and strategic intent. These universities exhibit strong links to industry, often operate under foundation governance models, and are closely integrated into national and regional innovation systems (See Table 2). Their governance structures allow for long-term planning, agile decision-making, and an explicit commitment to entrepreneurship, technology transfer, and applied research. Many of them are also geographically located in regions with established innovation ecosystems—such as Stockholm and Västra Götaland—which further reinforces their ability to act as engines of growth and innovation. Institutions like Chalmers University of Technology, and KTH, are characterized by a strong commercial orientation and high strategic autonomy. These universities often act as innovation hubs, engaging actively in patenting, spin-off creation, and close collaboration with

**Table 2** Typology classification: proactive entrepreneurial university (top-right)

University	Market and entrepreneurial orientation	Institutional autonomy and strategic intent	Rationale for classification
Chalmers University of Technology (Foundation)	High (5)	High (5)	Strong strategic orientation, active external engagement, high research income. Strong industry linkages, autonomy through foundation status, emphasis on innovation, IP, and entrepreneurship
KTH (Royal Institute of Technology) (Public)	High (5)	High (5)	Strong links with industry and international collaborations. Well-developed innovation offices, major participation in national tech initiatives, strong market focus
Jönköping University (Foundation)	High (4)	High (4)	Private foundation model with strong autonomy and applied focus. Privately governed, applied focus, extensive collaboration with regional industries.
Luleå University of Technology (Public)	High (5)	High (4)	Regional development focus with strong industry links. Close links with mining and energy sectors, proactive third mission strategy

industry. They have developed internal ecosystems—such as incubators and technology transfer offices—that institutionalize entrepreneurial behavior.

In contrast, Mission-driven academic universities such as Lund, Uppsala, Karolinska Institutet, and SLU combine high institutional autonomy with a lower degree of market orientation. These universities maintain strong scientific traditions and civic missions, often prioritising public value over market responsiveness. Their entrepreneurial activities are typically embedded within broader academic or societal goals—for instance, sustainability, public health, or interdisciplinary excellence. These institutions, often publicly governed, reflect a classical model of the research university but are nonetheless capable of institutional innovation when aligned with mission-led goals. Uppsala University represents a more values-driven form of academic entrepreneurship. While less focused on market outcomes, it pursues entrepreneurial activity aligned with its academic mission—emphasizing social innovation, civic engagement, and interdisciplinary collaboration. These universities leverage their autonomy to pursue non-commercial but societally impactful goals (See Table 3).

Traditional public universities—including Umeå, and Stockholm University—occupy a position characterised by low market orientation and limited strategic autonomy. Their operations tend to align with national education policy rather than institutional entrepreneurship, and they are often deeply rooted in disciplinary traditions. While some are engaged in innovation or externally funded research, their core identity remains centred around broad public service and academic excellence. These institutions are important for maintaining a diversified higher education landscape, but they may face increasing pressure to demonstrate relevance in a policy environment that increasingly favours entrepreneurial outcomes (See Table 4). These institutions generally have low market orientation and limited strategic emphasis on entrepreneurship. While individual researchers may engage in entrepreneurial initiatives, institutional frameworks to support such activities are often underdeveloped.

Finally, the Market-following universities form a distinct category marked by their high sensitivity to labour market and regional demands, but relatively low levels of institutional autonomy and strategic coherence (See Table 5). Universities like Halmstad, Borås, and Dalarna are generally more reactive than proactive; their entrepreneurship is often pragmatic, project-based, and externally funded. These institutions play a critical role in regional development and applied education but often lack the governance capacity to drive long-term entrepreneurial strategy. This suggests a potential mismatch between their external expectations and internal capabilities, highlighting a key area for policy support and institutional development. Universities like Linnaeus University, and University of Skövde, show signs of entrepreneurial activity, but largely in response to external pressures or funding opportunities rather than as part of a coherent strategy. Industry collaborations are often project-based, and while innovation is present, it tends to be peripheral to the university's core mission.

From a governance perspective, it is notable that all Market-following and Traditional universities are publicly governed, while foundation-run universities are found among the mission-driven and proactive entrepreneurial types. This suggests a correlation between governance model and institutional capacity for strategic

**Table 3** Typology classification: mission-driven academic university (top-left)

University	Market and entrepreneurial orientation	Institutional autonomy and strategic intent	Rationale for classification
Uppsala University (Public)	Low (2)	High (5)	Strong academic traditions, high scientific output, civic mission. Strong research orientation, maintains scientific mission, selective third mission engagement
Lund University (Public)	Low (2)	High (5)	Large classical university with strong research capacity. Comprehensive profile with academic prestige, societal impact through research
Karolinska Institutet (Public)	Low (2)	High (5)	Strong scientific reputation, global health research leadership. Health mission focus, high research intensity, but primarily driven by scientific rather than market logic
Swedish University of Agricultural Sciences (SLU) (Public)	Low (2)	High (5)	Civic and ecological mission orientation. Focus on sustainability and societal missions, with limited market-driven positioning
Linköping University (Public)	Low (3)	High (4)	Interdisciplinary research and societal focus. Strong industrial collaborations, especially with defense and telecom, still driven by long-term mission logic
Stockholm School of Economics (Foundation)	Low (3)	High (5)	Private governance, elite research orientation. Private and autonomous, but values academic freedom and long-term societal impact over rapid commercialization

**Table 4** Typology classification: traditional public university (bottom-left)

University	Market and entrepreneurial orientation	Institutional autonomy and strategic intent	Rationale for classification
Stockholm University (Public)	Low (2)	Low (2)	Large education-focused university, limited third mission. Research- and teaching-focused with minimal entrepreneurial infrastructure
University of Gothenburg (Public)	Low (2)	Low (2)	Dispersed governance, slow strategic change. Large comprehensive university with centralized governance and limited entrepreneurial emphasis
Umeå University (Public)	Low (3)	Low (3)	Focus on teaching and core research, low innovation intensity. Large comprehensive university with centralized governance and limited entrepreneurial emphasis
Mid Sweden University (Public)	Low (3)	Low (2)	Limited entrepreneurial initiatives, traditional mission. Limited strategic capacity, largely path-dependent regional role
Södertörn University (Public)	Low (2)	Low (2)	Mission-driven in a civic sense, but low entrepreneurial profile. Focuses primarily on education and societal critique with limited third mission engagement
University of Gävle (Public)	Low (3)	Low (2)	Mainly driven by teaching and regional engagement. Regional actor with emerging but not yet institutionalized third mission capacity
Kristianstad University (Public)	Low (3)	Low (2)	Limited strategic scope, high external dependency. Limited entrepreneurial engagement, mostly reactive to policy funding

**Table 5** Typology classification: market-following university (bottom-right)

University	Market and entrepreneurial orientation	Institutional autonomy and strategic intent	Rationale for classification
Linnaeus University (Public)	High (4)	Low (2)	High responsiveness to external funding, low internal strategic autonomy. Responsive to funding incentives, growing third mission activities but limited internal autonomy
University of Skövde (Public)	High (4)	Low (2)	Strategic following of calls and project-based funding. Industry-linked programs, yet driven by short-term adaptation rather than strategic intent
University West (Public)	High (4)	Low (2)	Work-integrated learning, externally driven. Strong applied orientation, but engagement reactive to funding schemes
Halmstad University (Public)	High (4)	Low (3)	Focus on innovation support, low autonomy. Applied programs and incubator presence, lacking comprehensive strategic autonomy
Blekinge Institute of Technology (Public)	High (4)	Low (2)	Applied programs, limited strategic independence. Small size, focused on IT but constrained in strategic flexibility
Malmö University (Public)	High (4)	Low (2)	Engaged in societal collaboration but with limited autonomy. Urban and applied profile with strong external engagement, but low governance autonomy
University of Borås (Public)	High (4)	Low (2)	Responsive to applied innovation calls. Apparel and textile innovation present, though not embedded in broader entrepreneurial governance
Dalarna University (Public)	High (4)	Low (2)	Externally dependent project profile. Limited strategic capacity; third mission driven by external incentives
Örebro University (Public)	High (4)	Low (3)	Still building innovation profile, focused on teaching. Regional collaborations exist, but strategy and autonomy still limited; follows traditional governance logic
Karlstad University (Public)	High (4)	Low (3)	Limited strategic positioning in innovation system. Engagement with regional industries exists but lacks strategic third mission leadership
Mälardalen University (Public)	High (4)	Low (3)	Applied education, innovation offices, research with commercial focus. Highly applied programs, frequent industry involvement, focus on regional innovation

entrepreneurship. Foundation universities benefit from greater managerial autonomy and strategic continuity, which may explain their stronger positioning in the entrepreneurial spectrum. Regionally, the distribution of types reflects existing economic and innovation patterns. Stockholm and Västra Götaland, Sweden's leading innovation regions, host a full spectrum of university types, whereas rural and inland regions such as Värmland, Västernorrland, and Jämtland are predominantly served by traditional or market-following universities. This points to a potential imbalance in the spatial distribution of entrepreneurial capacity within the higher education system—an issue that has implications for regional innovation and cohesion policies.

Taken together, this typology illustrates how institutional characteristics intersect with governance, geography, and policy environments to shape the strategic behaviour of universities. It offers a useful lens for policymakers to design differentiated support mechanisms and to understand where investments in strategic capacity-building or policy alignment may yield the greatest returns. Moreover, it reinforces the need for a pluralistic university system where diverse institutional missions can coexist and contribute in complementary ways to societal and economic development. Understanding where a university sits within this typology can inform policy decisions, resource allocation, and strategic development. For example, universities aspiring to shift toward a more entrepreneurial model may need to build not only external partnerships but also internal governance structures that support long-term strategic autonomy and innovation culture.

## Analysis

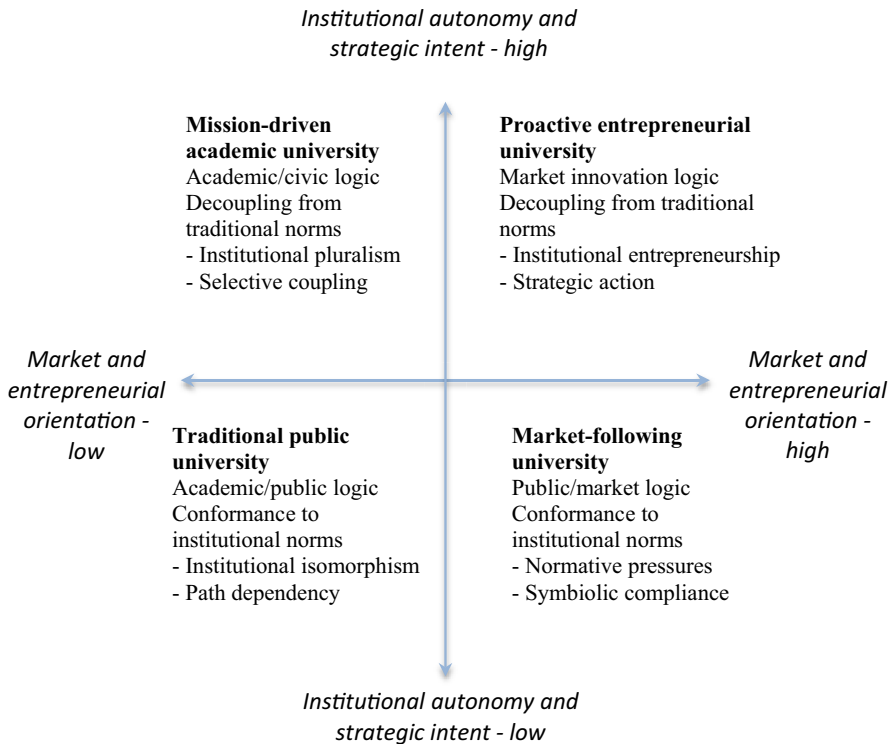
### Institutional Typology, Logics and Governance Implications

In this section "[Analysis](#)", RQ2 will be addressed. Swedish higher education institutions vary widely in their missions, governance models, and external engagement. To understand this diversity, the study maps universities along two key dimensions: market and entrepreneurial orientation and institutional autonomy and strategic intent. DiMaggio and Powell's (1983) concept of institutional isomorphism offers a useful lens for understanding the shift of universities toward more entrepreneurial orientations. This transformation is largely driven by increasing pressure to diversify funding sources and by government policies promoting third mission activities, including collaboration with external stakeholders (Abreu and Grinevich, 2013; Guerrero et al., 2015; Kitagawa et al., 2016). These developments can be interpreted as manifestations of coercive, normative, and mimetic isomorphic forces, where universities adapt to policy incentives, emulate perceived best practices, and respond to professional norms in the face of growing inter-institutional competition (DiMaggio and Powell, 1983).

The university typology and underlying institutional logics, informed by institutional theory, highlights how universities balance external pressures and internal logics in their strategic behavior. Universities operate under different institutional logics and strategic conditions (Thornton et al., 2012). Proactive entrepreneurial

universities act as institutional entrepreneurs (Battilana et al., 2009), decoupling from traditional public-sector norms to proactively drive innovation and strategic transformation. They operate within strategic action fields (Fligstein and McAdam, 2012), leveraging autonomy to reshape their roles in society. In contrast, Mission-driven academic universities retain strong academic and civic logics, engaging in selective coupling (Pache and Santos, 2010) to adapt selectively to market forces while safeguarding their public missions. Their ability to maintain institutional pluralism (Kraatz and Block, 2008) is essential for sustaining academic diversity. Traditional public universities reflect institutional isomorphism (DiMaggio and Powell, 1983), adhering closely to established norms of academic service and education. Their trajectories are often shaped by path dependency (Pierson, 2000), making transformative change challenging without external stimuli. Market-following universities display high responsiveness to policy and funding environments but do so through normative pressures (Scott, 2008) and often engage in symbolic compliance (Boxenbaum and Jonsson, 2008), adopting entrepreneurial practices superficially rather than as deep organizational change.

Overall, this typology illustrates that universities are embedded in complex institutional environments where autonomy, strategy, and market engagement are negotiated rather than assumed. Effective governance and policy frameworks must recognize and work with this institutional complexity to foster a resilient, innovative,



**Fig. 3** University typology and underlying institutional logics

and mission-diverse higher education system. The Figure 3 thus serves as a diagnostic tool for understanding how policy designs (such as funding models, innovation policies, or governance reforms) might differentially impact universities depending on their institutional type. It suggests that fostering a dynamic and resilient university system requires supporting multiple pathways of institutional development, not imposing a singular entrepreneurial model.

The university typology highlights distinct governance and policy needs across institutional types. Proactive entrepreneurial universities, with high autonomy and market orientation, benefit from flexible, performance-based policies but risk being overregulated. These institutions frequently act as institutional entrepreneurs (Battilana et al., 2009), proactively shaping their environments rather than passively adapting to external demands. Mission-driven academic universities prioritize societal value over commercialization and need funding schemes that respect academic freedom and long-term goals. Drawing on the work of Scott (2008), these institutions are crucial for preserving academic diversity and delivering broader societal value. Market-following universities are responsive but lack strategic capacity, requiring support for internal governance and leadership development. They tend to react to external funding opportunities and policy incentives without fully shaping their own strategic trajectories. Traditional public universities focus on stability and public service but risk marginalization in innovation agendas; they need gradual modernization efforts that safeguard core academic values (See Table 6). In summary, differentiated governance strategies are essential. Recognizing these institutional differences enables policymakers to support both innovation and academic diversity within a resilient higher education system.

The development of entrepreneurial courses, institutional support for technology transfer and start-ups, flexible organizational structures, and strong industry linkages are all key factors that can enhance a university's entrepreneurial capacity (Kirby, 1992; Finkle and Deeds, 2001; Katz, 2003; Löfsten et al., 2020; Löfsten and Klofsten, 2024). These initiatives influence both the regulatory and cultural dimensions of higher education institutions by linking governance, institutional diversity, curriculum design, labor market alignment, and financial structures (Witte, 2004). In this context, curricular reforms—along with efforts to internationalize graduate recruitment—are common strategic responses to increasing demands for university-based entrepreneurship (Mok, 2005). Such reforms often emphasize multidisciplinary training and a willingness to adapt, both of which are critical to cultivating an entrepreneurial institutional culture.

### **Strategic Engagement Pathways and Policy Differentiation**

The typology underscores that one-size-fits-all policies are ill-suited for a diversified higher education system. Governance models must balance incentives for entrepreneurial behavior with protections for public missions and academic diversity. Recognizing this plurality is essential. Autonomy is a key enabler for entrepreneurship, especially when paired with strategic intent. Universities that can make independent decisions about governance, partnerships, and resource allocation are

**Table 6** Policy and governance strategies by university type.

University type	Policy focus	Key risks	Recommended governance approach
Proactive entrepreneurial universities	Innovation incentives, strategic flexibility	Overregulation	Maintain autonomy, reward innovation
Mission-driven academic universities	Mission-sensitive funding, societal relevance	Marginalization	Protect diversity, support long-term research
Traditional public universities	Modernization support, academic freedom	Marginalization	Gradual engagement, safeguard traditions
Market-following universities	Capacity-building, leadership development	Mission drift, dependency	Strengthen internal governance

better positioned to act entrepreneurially. Reduce overregulation and allow institutions more discretion over internal resource distribution, third-stream funding use, and collaboration models. Entrepreneurial activity often depends on internal support structures such as innovation offices, incubators, legal/IP assistance, and interdisciplinary spaces. These must be institutionally embedded, not dependent on short-term projects. Provide long-term funding for capacity-building within universities, particularly to those seeking to evolve from Market-following to entrepreneurial leader profiles. For Market-following and Traditional universities, partnerships tend to be reactive and ad hoc. Policies should incentivize strategic, long-term collaborations that integrate education, research, and innovation—especially with regional ecosystems. Entrepreneurial performance should not be measured solely by spin-offs or patents and social innovation, policy impact, and public value creation should also count as legitimate outcomes.

To strengthen the applied relevance of the typology, the Table 7 introduces strategic engagement pathways tailored to each institutional archetype. These models are not classification criteria but instead serve as illustrative engagement strategies that universities in each quadrant could adopt or develop further, based on their institutional profile. The pathways are informed by policy practice and literature on entrepreneurial and engaged universities (e.g., Audretsch and Belitski, 2022; Belitski and Sikorski, 2024), and emphasize alignment between mission, capacity, and external collaboration mechanisms. They are intended to support reflexive institutional development and guide differentiated policy responses, rather than rigidly prescribe actions.

This table provides practical examples of how universities—based on their placement in the typology—can tailor their external engagement strategies to align with their institutional logic, structural conditions, and strategic intent. For each quadrant, the table

**Table 7** Strategic engagement pathways by university type

University type	Strategic engagement pathway
Proactive entrepreneurial	Leverage high autonomy and strong external orientation to broker challenge-driven consortia involving industry, municipalities, and NGOs (Non-Governmental Organizations). Build long-term partnerships via multi-year MOUs (Memorandum of Understanding). Establish co-located R&D spaces with firms and utilize IP-light pilots to accelerate innovation
Mission-driven academic	Channel strong institutional autonomy into civic-oriented innovation platforms, e.g. in health or sustainability. Use mission contracts where partners (e.g. hospitals, ministries) co-fund longitudinal research labs. Emphasize societal value and research-informed public services
Traditional public	Start with low-barrier, teaching-integrated collaborations, such as problem-based learning projects or capstone clinics with regional SMEs (Small and Medium-sized Enterprises) or public agencies. Focus on adjacent, trust-based partnerships and capacity-building for faculty engagement
Market-following	Address limited autonomy and strategy gaps by forming regional anchor compacts, e.g. joint TTOs (Technology Transfer Offices) or shared legal/IP services. Adopt template agreements and pool incubator resources to transition from fragmented projects to a portfolio approach to collaboration

outlines suitable partnership models and operational approaches that reflect the opportunities and constraints typical of that institutional type. These examples are intended to demonstrate the functional linkages between institutional positioning and strategic behavior, and to help policymakers and university leaders identify context-sensitive pathways to strengthen external collaboration, innovation capacity, and societal contribution.

## Strategic and Functional Congruence in University Engagement

To support differentiated models of university engagement, institutions must develop both roles and incentives that align with their strategic positioning. In proactive entrepreneurial universities, bridging functions are often formalized through joint appointments, entrepreneur-in-residence programs, or external policy fellowships, enabling smoother collaboration across sectors. These positions serve as institutional “boundary spanners,” facilitating co-creation of knowledge and multi-year engagement platforms. To ensure alignment with performance systems, it is crucial to recognize such roles in promotion criteria and to adopt partner-facing key performance indicators—such as policy briefs, social innovation pilots, or talent pipelines—in addition to traditional output metrics like spin-offs or patents.

In mission-driven academic universities, similar roles may take the form of civic innovation brokers embedded in partnerships with hospitals, municipalities, or ministries, often enabled through mission contracts. For market-following and traditional public universities, shared functions, such as joint technology transfer offices (TTOs) or regional incubator managers, may provide a scalable solution for developing bridging capacity. This institutionalization of knowledge-brokering capabilities aligns with current research emphasizing the importance of functional and strategic congruence in entrepreneurial transformation (Audretsch and Belitski, 2022), and dynamic capability building across universities (Belitski and Sikorski, 2024).

A university’s ability to evolve toward a more entrepreneurial model depends not only on external pressures or institutional autonomy, but also on its degree of strategic and functional congruence—the alignment between its mission, internal structures, and external engagement goals (Audretsch and Belitski, 2022). Strategic congruence refers to the alignment between a university’s long-term goals (e.g., fostering innovation or regional development) and its governance structures, leadership models, and incentive systems. Universities that embed entrepreneurship into their strategic vision—such as through mission statements, strategic plans, or leadership appointments—are more likely to succeed in institutionalizing entrepreneurial activity. Functional congruence, on the other hand, emphasizes the operational and day-to-day mechanisms that reinforce the strategy. This includes having flexible organizational units, cross-functional teams, internal support structures (like TTOs or incubators), and performance metrics that reward engagement beyond traditional research and teaching outputs. Institutions that exhibit both high strategic intent and operational alignment are better positioned to act as institutional entrepreneurs (Battilana et al., 2009), influencing not only their own trajectory but also broader innovation systems. In line with this perspective, the typology identifies proactive entrepreneurial universities as those that have achieved a high degree of both strategic and functional congruence. Conversely, market-following

universities, while responsive, often lack internal alignment, resulting in shallow or fragmented entrepreneurial efforts.

### **Limitations and Future Research**

While the typological classification provides a structured lens for analyzing strategic diversity within the Swedish higher education system, several limitations should be noted. While the classification is grounded in document analysis and publicly available information, it does not rely on a fully quantified model. To enhance robustness, future research should conduct structured sensitivity analyses. First, this involves testing alternative cut-off values for market orientation and strategic autonomy to assess typological stability. Second, foundation-governed universities (e.g., Chalmers, Jönköping, Stockholm School of Economics) could be temporarily excluded to explore institutional effects stemming from different legal governance models. Third, a third analytical dimension, such as research intensity could be introduced to capture vertical differentiation within the typology. These additions would help validate the framework's predictive power and classification consistency, thereby strengthening its utility for policy and strategic analysis. Fourth, the classification relies primarily on documented strategies, governance structures, and publicly available information, which may not fully capture informal practices, emerging initiatives, or internal cultural dynamics. Institutions are complex and evolving entities, and static documents might not reflect recent or unofficial changes in strategic orientation. Fifth, the typology focuses on institutional-level characteristics and does not account for internal heterogeneity. Many universities house entrepreneurial sub-units (e.g., innovation centers) even if the overall institution remains traditionally oriented.

Future research could extend this study by (i) Conducting interviews with university leadership and policymakers to validate and enrich the classifications (ii) Applying longitudinal designs to capture how institutional positioning evolves over time (iii) Expanding the typology to other national contexts for comparative analysis, and (iv) Linking typological categories to performance outcomes such as innovation outputs, student employability, or regional development impacts. Such extensions would deepen understanding of how institutional autonomy, market engagement, and entrepreneurial behavior interact in shaping the future trajectories of universities. Future research may build on this typology by developing quantitative thresholds for typology assignment and applying sensitivity analysis and robustness checks across dimensions. The typology introduced here can thus serve as a conceptual foundation for a more fully measured classification framework in subsequent studies.

To further refine institutional placement and validate typological boundaries, a third dimension—research intensity—is proposed for future incorporation (See Appendix). Research intensity captures the academic production capacity of universities and can be operationalized through metrics such as research funding per faculty, publication output, doctoral education activity, and citation impact. This addition will enhance the model's granularity and help distinguish between universities with similar external orientations but divergent research profiles. Including this dimension complements by capturing the core academic production capacity—a critical factor influencing how

universities engage with external actors and pursue entrepreneurial pathways. This approach strengthens the robustness of the typology by capturing the depth of research capacity as an institutional differentiator.

## Conclusions

The study demonstrates that Swedish universities differ significantly in their strategic orientation, governance autonomy, and market engagement. By developing and applying a university typology based on two main dimensions—(i) market and entrepreneurial orientation and (ii) institutional autonomy and strategic intent—the paper identifies four distinct institutional types: Proactive entrepreneurial universities, Mission-driven academic universities, Traditional public universities, and Market-following universities. This typological framework sheds light on how different institutions respond to external pressures, such as policy incentives, commercialization demands, and societal expectations.

A key conclusion is that entrepreneurial capacity is unevenly distributed across the higher education landscape. Institutions with greater autonomy and strategic intent are better positioned to act entrepreneurially and to shape their external environments proactively. Conversely, institutions with low autonomy and reactive governance structures often struggle to implement long-term entrepreneurial strategies, despite their responsiveness to external funding or labor market demands. The typology also reveals a strong link between governance models and entrepreneurial potential. Foundation-governed universities are positioned in the proactive or mission-driven categories, while publicly governed institutions are more common among the traditional and market-following types. This suggests that institutional autonomy and governance flexibility are critical enablers of innovation and entrepreneurial transformation. Furthermore, the paper highlights significant regional disparities. Proactive and mission-driven universities are typically located in urban centers with robust innovation ecosystems, while traditional and market-following universities are more prevalent in rural and less economically dynamic regions. These findings underscore the need for geographically sensitive policies that align higher education strategies with regional innovation goals.

Importantly, the study argues against one-size-fits-all policy solutions. It calls for differentiated governance and policy approaches tailored to the strategic capacities and missions of individual institutions. For example, proactive universities may benefit from performance-based incentives, while market-following institutions require capacity-building support and leadership development. Mission-driven universities need policy frameworks that respect academic freedom and long-term societal commitments, whereas traditional universities may need gradual modernization efforts that preserve core academic values.

Finally, the typology serves as a diagnostic and strategic tool for both policymakers and university leaders. It encourages more nuanced, evidence-based dialogue around institutional diversity and reinforces the importance of supporting multiple development pathways within the higher education system. Overall, the paper contributes to a more sophisticated understanding of how structural and strategic factors shape entrepreneurial behavior in universities and provides actionable insights for designing more

effective and inclusive higher education policy. The typology invites further empirical research, benchmarking, and dialogue between government and university leaders to promote a pluralistic and mission-sensitive higher education system. Recognizing diversity is not a barrier to progress but a condition for an innovative, inclusive, and effective higher education system.

## Appendix

### Framework for systematic coding and quantitative measurement: research intensity

Table: Framework for future studies (Research intensity).

Dimension	Indicator	Measurement unit	Data source	Coder notes	Reliability metric
Research intensity (Optional 3rd dimension)	<ol style="list-style-type: none"> <li>1. Total research expenditure per academic staff</li> <li>2. Share of external research funding</li> <li>3. Research publications per researcher. Citation impact.</li> <li>4. Share of doctoral programs</li> <li>5. Competitive research grants awarded</li> </ol>	<ol style="list-style-type: none"> <li>1. SEK/academic staff FTE</li> <li>2. % of total research funding</li> <li>3. Publications/year/FTE. Number of citations.</li> <li>4. % of doctoral students among all students</li> <li>5. SEK/year</li> </ol>	<ol style="list-style-type: none"> <li>1. UKÄ (Universitetskanslersämbetet), Annual Reports</li> <li>2. UKÄ, university annual financial reports</li> <li>3. DiVA, Scopus, Web of Science</li> <li>4. UKÄ, internal HEI data</li> <li>5. VR (Vetenskapsrådet: The Swedish Research Council), Formas, Vinnova</li> </ol>	<ol style="list-style-type: none"> <li>1. Normalize for university size. Use full-time equivalent (FTE) for faculty count</li> <li>2. Capture competitiveness and project-based intensity</li> <li>3. Focus on peer-reviewed journal articles</li> <li>4. Proxy for research culture and infrastructure</li> <li>5. Include both national and EU grants</li> </ol>	<ol style="list-style-type: none"> <li>1. Intercooder agreement (ICC or Cohen's kappa) based on secondary data coding</li> <li>2. Cross-validation with SCB or Vetenskapsrådet data</li> <li>3. Intercooder reliability if manual extraction is used</li> <li>4. Aggregated at university level—automated or confirmed via institutional stats</li> <li>5. Use time-window average (e.g., 2020–2023) to reduce volatility</li> </ol>

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## Declarations

**Conflict of interest** There is no conflict of interest to declare.

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