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ABSTRACT

Artificial Intelligence (AI) ecosystem development has become a key indicator of national technological competitiveness, with countries worldwide establishing distinct approaches to foster AI innovation. Despite extensive research comparing the Japanese startup ecosystem with Silicon Valley, there is a notable gap in the literature examining Japan's startup landscape alongside that of the UK - another significant global economic power. This study conducts a comparison of the AI startup ecosystems in Japan and the UK, with examination based on a six-dimensional framework: access to funding, entrepreneurial spirit, talent acquisition, government support, infrastructure resources, and collaboration with large companies. The study investigates how cultural values, institutional structures, and market dynamics shape AI adoption and innovation patterns in these non-US tech powerhouses. The six-dimensional framework advances ecosystem theory by revealing how AI-specific requirements reshape fundamental innovation dynamics in ways that traditional ecosystem models fail to capture. This study combines secondary research with primary data collected through semi-structured interviews with 10 AI startups (5 each

from Japan and the UK). The data is analyzed using coding methods and thematic analysis to identify key patterns and insights. This mixed-method approach enables a comprehensive understanding of the unique characteristics and challenges within each ecosystem. The findings reveal distinct ecosystem characteristics: Japanese AI startups excel in rapid commercialization through staged equity financing, strong sales activities, excellent marketing strategies, proper enterprise relationships, and practical implementation. UK startups demonstrate notable strengths in fundamental research depth and broader international market engagement, establishing themselves as significant global innovation contributors with robust cross-border partnerships. The Japanese ecosystem favors market-driven development, while the UK accelerates innovation transfer from research to commercial applications. These insights inform cross-cultural technology transfer and ecosystem development strategies, offering frameworks for culturally adapted policy mechanisms and cross-border collaboration. The findings suggest that successful AI startup ecosystem development requires both leveraging distinct local advantages, such as Japan's rapid commercialization and the UK's research institutions, and maintaining global connectivity, such as international connections for funding, talent, and knowledge exchange.

Keywords:

AI innovation, AI ecosystem, business ecosystem, startup ecosystem, comparative analysis, Japan-UK comparison, interviews, coding analysis, thematic analysis.

INTRODUCTION

The global artificial intelligence (AI) industry is experiencing unprecedented growth and transformation, with different regions developing distinct ecosystems to support AI innovation (Klinger et al., 2018; Chui et al., 2023). AI startup ecosystems have emerged as critical determinants of national competitiveness in the global technology landscape, with significant variations in development trajectories across regions (Qin et al., 2024). These ecosystems represent complex networks of actors, resources, and institutions that collectively shape AI innovation capacity (Chin, 2024).

While previous research has focused on comparing various AI ecosystems with Silicon Valley (Lee, 2018), there remains a notable gap in comparative analyses between Japan and the UK - two non-US technological powerhouses with distinct cultural and economic backgrounds (Suzuki et al., 2002; Hall and Pesenti, 2017; Lee et al., 2017; Schaede and Shimizu, 2022). The comparative analysis between the AI ecosystems of Japan and the UK presents compelling theoretical and practical significance in the current global technological landscape, offering insights into alternative pathways to AI innovation success.

As mature economies pursuing distinct AI development paths while operating within the global technology ecosystem, these nations offer unique insights into alternative approaches to AI ecosystem evolution (Zhang et al., 2021; Maqsood et al., 2023; Liebig et al., 2024). The Japanese model, characterized by corporate partnerships and a focus on practical implementation, stands in marked contrast to the UK's research-oriented, internationally focused ecosystem (Brown and Mason, 2014;

Kimura, 2019; Schaede, 2020; Arimoto, 2024).

This research conducts a comparison of AI startup ecosystems between Japan and the UK, examining six dimensions: access to funding, entrepreneurial spirit, talent acquisition, government support, infrastructure resources, and collaboration with large companies. This comparative framework advances our understanding of how national AI ecosystems influence AI startup development patterns and how different combinations of ecosystem elements can lead to successful AI startup development (Shaw and Allen, 2018; Granstrand and Holgersson, 2020; Stam and Van, 2021).

The research design encompasses systematic analysis of secondary data sources, complemented by primary data gathered through in-depth semi-structured interviews conducted with a purposive sample of AI enterprises (n = 5 from each country). The qualitative data corpus is subjected to rigorous thematic analysis and systematic coding procedures to surface emergent patterns and derive meaningful insights into the ecosystem dynamics of both nations, identifying key differences and similarities across these six critical dimensions. This paper makes the following contributions:

i. Provides the first comprehensive comparative analysis of AI startup ecosystems between Japan and the UK, offering insights into how different cultural, institutional, and market contexts shape AI innovation;

ii. Develops a novel analytical framework for evaluating AI startup ecosystems across six dimensions, enabling systematic cross-national comparison;

iii. Identifies specific barriers and enablers in both ecosystems through primary interview data with AI startup founders and executives;

iv. Offers evidence-based recommendations for policymakers and practitioners to enhance AI startup ecosystem development in both countries;

v. Challenges the "Silicon Valley-centered" view of AI innovation by demonstrating how countries can develop successful AI ecosystems aligned with their unique strengths.

The remainder of this paper is organized as follows: Section 2 reviews relevant literature on ecosystems theory, AI ecosystem characteristics, and current research on AI development in Japan and the UK. Section 3 proposes a six-dimensional analysis framework for comparing AI startup ecosystems. Section 4 details research methodology, including interview protocols and data analysis approaches. Section 5 presents the results from the interview data analysis conducted in both Japan and the UK. Section 6 discusses our findings and comparative analysis of the Japanese and UK AI ecosystems across six dimensions. Finally, Section 7 concludes with key insights, practical recommendations, and directions for future research.

LITERATURE REVIEW

Ecosystem Theories

Research on business ecosystems has evolved significantly, from Moore's (1993) conceptualization of cooperative-competitive networks to Iansiti and Levien's (2004) ecosystem health framework measuring productivity, robustness, and niche creation (Wareham et al., 2014). Advanced ecosystem strategy theory provides actionable frameworks for analyzing strategic decisions within business ecosystems and navigating complex relationships in technology sectors (Kapoor and Lee, 2013; Adner,

2017; Jacobides et al., 2018).

The theoretical foundations of entrepreneurial ecosystems offer increasingly sophisticated frameworks for understanding the complex dynamics of entrepreneurial activity (Colombo et al., 2019). Isenberg's (2011) influential conceptualization delineates a six-domain framework: policy, finance, culture, support networks, human capital, and markets, which explicates the multifaceted nature of entrepreneurial environments and has been instrumental in subsequent theoretical developments (Brown and Mason, 2017; Autio et al., 2018). Building upon this foundation, Spigel (2017) proposed a more nuanced framework that synthesizes cultural, social, and material attributes into a cohesive model of entrepreneurial ecosystem dynamics, demonstrating how different attributes coalesce to produce varying entrepreneurial outcomes across regional contexts (Sternberg, 2022).

However, several scholars have highlighted limitations in applying these traditional ecosystem theories to rapidly evolving technological domains like AI. Roundy and Bayer (2019) argue that conventional ecosystem frameworks often underestimate the dynamic, non-linear relationships between technological innovation and ecosystem development. Similarly, Acs et al. (2017) challenge the spatial boundedness assumptions inherent in many ecosystem theories, suggesting that AI ecosystem development transcends traditional geographic constraints through digital networks and global talent flows. This spatial reconfiguration requires theoretical reconceptualization of ecosystem boundaries and governance mechanisms.

The application of traditional ecosystem theories to AI startups presents particular

challenges. Sussan and Acs (2017) highlight the inadequacy of conventional frameworks in capturing the unique characteristics of digital ecosystems, including data network effects, algorithmic governance, and platform-based value creation. This critique is extended by Nambisan et al. (2019), who emphasize that AI startups operate within distinctly different innovation logics compared to traditional technology ventures, requiring theoretical adaptations to account for their unique development trajectories.

Building upon foundational ecosystem theories, this study advances our understanding of AI startup ecosystem development through a novel cross-national analysis. Drawing on Moore's (1993) business ecosystem framework, Isenberg's (2011) six-domain entrepreneurial model, and Spigel's (2017) structural synthesis, while addressing the critical perspectives highlighted by more recent scholarship (Nambisan et al., 2019), we examine the distinct dynamics of AI startup ecosystems across other non-US technological powerhouses.

Understanding AI Startup Ecosystems

AI business ecosystems differ fundamentally from traditional ones due to their heightened platform dependency and data-centric nature. As Iansiti and Lakhani (2020) illustrate, these ecosystems feature accelerated iteration cycles and elevated technical barriers (Parker et al., 2021). Innovation patterns differ markedly between ecosystem types. AI ecosystems predominantly feature technology-driven disruptive innovation, while traditional ecosystems focus on incremental improvements (Teece, 2021). AI ecosystems tend toward business model innovation, whereas traditional

ecosystems prioritize product and service enhancement (Zott & Amit, 2022). Resource requirements demonstrate notable variations. AI ecosystems are technology-intensive rather than capital-intensive (Adner and Kapoor, 2021). In governance, Cusumano et al. (2021) highlight novel ethical considerations and regulatory challenges in AI ecosystems, departing from traditional ecosystems' established frameworks.

Empirical studies have begun to test these theoretical perspectives in AI contexts. Valdez-De-Leon (2019) demonstrates how traditional ecosystem stage models inadequately capture the accelerated development patterns of AI ecosystems, while Radziwon and Bogers (2019) highlight the limitations of conventional ecosystem boundary definitions when applied to AI startups that simultaneously operate across multiple technological domains.

These findings hold significant implications for both theory and practice. They suggest a fundamental reconceptualization of ecosystem dynamics in the AI era, while highlighting the need for organizations to develop new capabilities and governance mechanisms appropriate to their ecosystem type.

AI Startup Ecosystem Development in Japan and the UK

The global AI landscape comprises diverse regional ecosystems with distinctive characteristics. The US, centered around Silicon Valley, maintains dominance through unparalleled research capabilities, venture capital, and talent concentration. China presents a contrasting model with strong government direction, extensive data resources, and rapid commercial implementation, particularly in computer vision and

consumer applications. Europe emphasizes regulatory frameworks and ethical development, prioritizing responsible AI alongside innovation. Emerging hubs in Canada, Israel, and Singapore demonstrate specialized strengths in fundamental research, security applications, and regional coordination respectively. While comparative analyses between US, Chinese, and European models abound, less attention has been paid to other significant AI ecosystems. Japan and the UK represent two mature, non-US economic powers that have developed distinctive approaches to AI innovation through different institutional structures and cultural contexts, offering valuable comparative insights for understanding alternative development pathways.

Japan AI Startup Ecosystem Development. The evolution of Japan's AI startup ecosystem presents a complex interplay of technological advancement, industrial development, and corporate strategy adaptation (White Paper on Information and Communications, 2024). Morikawa (2016) shows the strong interest by Japanese firms in AI adoption, especially in services, based on data from 3,000+ companies. However, Motohashi and Kim (2024) find that despite this enthusiasm, few organizations achieve significant effectiveness, mainly due to HR and organizational challenges. This gap between adoption intent and implementation success highlights the need for enhanced organizational capabilities in Japan's AI ecosystem. The AI industry shows increasing commercialization across manufacturing, retail, financial, and healthcare sectors, while academic research trails behind practical applications. Japan's AI startup ecosystem presents a particularly understudied case. Ryan (2024)

identifies a paradox where conservative investment practices coexist with accessible AI funding opportunities. This unique market environment, shaped by institutional conservatism, offers insights into how national characteristics influence AI development. The limited empirical research in this domain highlights the need for systematic investigation of Japan's AI startup landscape.

Japan's AI governance has evolved through strategic initiatives, with the government establishing AI Strategy Councils and facilitating cross-ministerial collaboration between Ministry of Internal Affairs and Communications (MIC) and Ministry of Economy, Trade and Industry (METI). These efforts involve diverse stakeholders from academia, industry, and legal sectors in regular deliberative processes. The 2024 AI Guidelines for Business marks a pivotal development, establishing principles for responsible AI development and exemplifying Japan's balanced approach to AI regulation—one that harmonizes technological advancement with ethical considerations while maintaining industrial competitiveness.

Recent research on AI startup ecosystems in Japan reveals an emerging research focus, University of Tokyo's Institute for Future Initiatives examines Japan's AI startup ecosystems, drawing parallels with the Toronto-Waterloo corridor. Kanaya (2022) established ecosystem analysis frameworks, while Watanabe et al. (2024) proposed globalization policies. However, research specifically examining AI startup ecosystem characteristics remains limited.

While comprehensive studies exist on general business ecosystems (Inoue, 2024) and regional innovation systems (Nishizawa et al., 2012), scholarly attention to

AI-specific startup ecosystems remains limited. Although Serizawa and Watanabe (2019) and Matsuzaki (2022) examine ecosystem formation and digital management respectively, their work does not specifically address AI startup dynamics. Similarly, while the Japan Open Innovation Council (JOIC) and New Energy and Industrial Technology Development Organization (NEDO) (2018) offer comparative analyses of innovation ecosystems, and Schmidt et al. (2018) provide narrative accounts of AI startups, a systematic analysis of Japan's AI startup ecosystem remains unexplored. This research gap likely stems from AI's nascency as a business domain, limited access to AI startup leadership, and the field's predominant focus on technical rather than managerial aspects. This study addresses these gaps through primary research with AI startup executives, utilizing a six-dimensional analysis framework for comparative insights.

The UK AI Startup Ecosystem Development. The UK stands as a global leader in AI research and commercialization, renowned for its world-class universities, thriving startup ecosystem, and strong government support (Westgarth et al., 2022). With initiatives like the National AI Strategy, the country fosters groundbreaking research, promotes ethical AI development, and accelerates the adoption of AI across diverse industries (Kazim et al., 2021). This leadership extends to international collaboration, ensuring the UK's influence in shaping global AI standards and driving sustainable, technology-driven economic growth. Its robust infrastructure and talent pool further solidify its position (Hannigan et al., 2022).

AI startups in the UK operate across diverse sectors including healthcare, finance, and

manufacturing (Economics, 2022). Concentrated in innovation hubs like London and Cambridge, these companies benefit from proximity to universities and venture capital networks (Vogl et al., 2020). They typically emerge as either technology-driven firms focusing on AI research or business-driven ventures commercializing targeted market solutions. The UK's AI startup ecosystem is primarily driven by venture capital funding, government support through programs like Innovate UK, and university incubators. Investment focuses on healthcare, fintech, and autonomous systems (Lockett et al., 2002; Chui and Francisco, 2017; McLeod, 2022). While these diverse funding sources fuel innovation and scalability, startups face persistent challenges in securing early-stage capital and meeting investor expectations for quick returns. Collaboration networks drive innovation in the AI startup ecosystem through strategic partnerships. Universities and research institutions provide essential bridges between academic research and commercial applications, while industry alliances and multinational corporations contribute funding and market access (D'Este and Patel, 2007; Vick and Robertson, 2018; Nsanzumuhire and Groot, 2020). International collaborations facilitate knowledge exchange and standard alignment, creating a dynamic environment that accelerates innovation commercialization and sustainable growth (Fischer et al., 2021; Rossoni et al., 2024).

While Saxenian (1994), Lee et al. (2000), and Martin (2000) extensively studied Japan-Silicon Valley ecosystem comparisons, analyses of Japanese and UK AI ecosystems remain limited, with only fragmentary insights (Suzuki et al., 2002; Nishizawa et al., 2012; JOIC and NEDO 2018).

SIX- DIMENSIONAL AI ECOSYSTEM ANALYTICAL FRAMEWORK

The AI startup ecosystem encompasses three core components: key players, structural characteristics, and interaction patterns (Cohen and Winn, 2021). The ecosystem features five essential participants: startups, investors, tech corporations, research institutions, and government agencies. Its hierarchical structure comprises technology provision, application development, and service delivery layers (Autio and Thomas, 2014; Kenney and Zysman, 2016). These layers interact through competitive, collaborative, and symbiotic relationships, creating a dynamic system where resources, knowledge, and value flow continuously (Adner and Kapoor, 2010; Mazzucato and Semieniuk, 2017). Building upon foundational ecosystem theories and the tripartite framework of players, structure, and interactions (see Figure 1), this study develops a comprehensive six-dimensional analytical framework specifically tailored for AI startup ecosystems. Each dimension represents a critical aspect of ecosystem functionality and development:

Access to Funding. This dimension examines the financial mechanisms supporting AI startup growth, including venture capital, bank financing, and government funding. The analysis encompasses both the availability and accessibility of different funding sources, recognizing that AI startups require distinct financing patterns due to their extended development cycles and high initial capital requirements. The funding dimension interacts with the structural characteristics of the ecosystem through investment institutions' risk assessment practices and capital allocation strategies.

Entrepreneurial Spirit. This dimension analyzes the cultural and institutional factors

that influence AI entrepreneurship. It examines how societal attitudes toward risk-taking, innovation, and failure shape startup formation and growth. The entrepreneurial spirit dimension particularly influences the ecosystem's interaction patterns by affecting how founders approach market opportunities and strategic partnerships.

Talent Acquisition. The talent dimension focuses on the ecosystem's capacity to attract, develop, and retain specialized AI expertise. This includes both technical talent for AI development and business talent for commercialization. The dimension reflects the structural characteristics of the ecosystem through educational institutions' role in talent development and the interaction patterns through labor market dynamics.

Government Support. This dimension examines how regulatory frameworks and policy initiatives shape AI startup development. It encompasses direct support mechanisms like grants and tax incentives, and indirect support through research funding and infrastructure development. The government support dimension particularly influences the ecosystem's structural characteristics through policy frameworks and regulatory environments.

Infrastructure Resources. The infrastructure dimension analyzes the technical and operational foundations supporting AI startup development. This includes computing resources, data access, and development platforms. The dimension reflects the ecosystem's hierarchical structure through the technology provision layer and influences interaction patterns through resource sharing and platform dependencies.

Collaboration with Large Companies. This dimension explores the interaction

dynamics among ecosystem participants, with particular emphasis on the relationships between startups and established large companies. The involvement of large, incumbent large companies plays a critical role in shaping the health and maturity of the ecosystem. These large companies engage with startups through a range of mechanisms, including business transactions, strategic alliances, and equity investments. The frequency, quality, and ease of these engagements—whether facilitated or hindered by systemic barriers—significantly influence the ecosystem's capacity for innovation, scalability, and long-term sustainability. It particularly reflects the ecosystem's interaction patterns through competitive, collaborative, and symbiotic relationships.

These six dimensions are interconnected and mutually reinforcing. For example, strong government support can enhance infrastructure resources, which in turn attracts talent and encourages entrepreneurship. Similarly, robust collaboration with large companies can improve access to funding through partnership opportunities. The framework provides a structured approach for analyzing how these dimensions collectively shape AI startup ecosystem development in different national contexts.

Insert Figure 1 about here

RESEARCH METHODOLOGY

Research Design

This study employs qualitative research through semi-structured interviews with

senior executives from 10 AI startups across Japan and UK. The comparative case study design allowed for systematic analysis of similarities and differences between the two ecosystems while maintaining sensitivity to national contexts. The data undergoes rigorous three-stage coding: open coding for key concepts, axial coding for thematic relationships, and selective coding for theoretical integration. Findings are validated through member checking and supplemented with company documents and industry reports to ensure comprehensive ecosystem analysis.

Case Study Selection

The research employed purposive sampling to select ten AI companies—five each from Japan (see Table 1) and the UK (see Table 2)—that collectively provide comprehensive insights into their respective ecosystems. We established a sampling frame using multiple criteria to capture ecosystem diversity: (1) company age (ranging from early-stage startups to established enterprises), (2) organizational scale (measured by employee count and revenue), (3) funding stages (from seed to public listing), (4) AI application domains (covering enterprise solutions, consumer technology, legal technology, sustainability, and education), and (5) geographical location within each country's innovation hubs. This multi-dimensional framework ensured our sample captured the heterogeneity of AI startup trajectories.

The Japanese cohort ranges from early-stage startups (J-A, est. 2021) to public companies (J-E, est. 2005), with employee counts spanning 9-650 and capital stock amount from ¥100M to ¥17.85B (refers to the amount of funding raised, not the capital stock amount). These companies represent diverse sectors including enterprise

solutions (J-A, J-E), consumer technology (J-B), legal technology (J-C), and sustainability (J-D).

Similarly, the UK sample demonstrates comparable diversity, from nascent startups (UK-A, est. 2023, 5 employees, £50K seed funding) to established enterprises (UK-C, est. 2004, 400 employees, £20M capital). The UK companies span education technology (UK-A), environmental sustainability (UK-B), and enterprise IT solutions (UK-C, UK-D, UK-E), with revenues ranging from £30K to £80M.

Both samples feature comparable distributions across development stages, scale, capital structure, and industry applications, while maintaining geographic concentration in respective technology hubs. This balanced construction enables robust cross-cultural comparison while ensuring methodological consistency, supporting meaningful analysis of AI ecosystem characteristics and development patterns in both markets.

Insert Table 1 about here

Insert Table 2 about here

Data Collection

Semi-structured interviews were conducted with AI company executives in Japan and the UK, with each session lasting 60 minutes. Initial contact was made via email,

during which the formal research details were explained, and schedules were coordinated. Subsequently, the interviews were conducted using video conferencing platforms (Zoom, Google Meet). The interviews explore six-ecosystem dimensions. Interviews follow a systematic protocol, conducted in participants' preferred language (Japanese/English), with professional translation services utilized for Japanese interviews. Key quotes and insights are highlighted during the initial review process to facilitate analysis. Data storage and management follow strict security and organization protocols.

The interview questions systematically examine six dimensions of AI ecosystem development: funding accessibility (exploring both equity and debt financing options), entrepreneurial spirit (investigating cultural attitudes toward risk and innovation), talent acquisition (examining the availability of technical and managerial expertise), government support (evaluating policy effectiveness), infrastructure resources (assessing technical and operational foundations), and collaboration with large companies (investigating startup-corporate relationships) (see Table 3). The questions investigate key aspects such as financial market maturity, cultural attitudes toward innovation, technical expertise availability, and startup-corporate relationships.

Insert Table 3 about here

Coding Concept

The research employs a systematic three-phase coding approach to analyze interview

data from Japanese and UK AI companies (Eisenhardt, 1989; Nelson, 1993; Williams and Moser, 2019). The process begins with open coding, breaking down interview transcripts from 10 companies across six dimensions to identify initial patterns. In the axial coding phase, following the concept-indicator model, we examine relationships between patterns to create broader categories, such as "investment environment characteristics" within the funding dimension. Finally, selective coding integrates these categories into cohesive theoretical constructs explaining ecosystem differences between Japan and the UK. This systematic approach reveals how cultural values, institutional structures, and market dynamics shape AI ecosystem development in each country, while ensuring methodological rigor in identifying and interpreting essential themes that contribute to the associated literature.

Insert Figure 2 about here

INTERVIEW DATA ANALYSIS

The analytical framework builds on six-ecosystem dimensions, refined through an iterativecross-case comparison of Japan and the UK. Theme development follows a systematic process of pattern identification, validated through rigorous methods: intercoder reliability checks, member checking with interview participants, and expert validation from both academic and industry specialists in AI ecosystem development (see Figure 3).

Japan Interview Data Analysis and Results

Access to Funding Analysis. Early-stage AI startups in Japan benefit from accessible bank financing through public and private programs. As J-A, J-B, J-C, and J-D noted, "In Japan, it is easy to obtain bank loans in the startup phase." However, J-A emphasized that "Later on, when the J-curve is followed by losses due to prior development investment, bank loans are less likely to be available."

In terms of equity finance, Japan exhibits both notable strengths and unique challenges. The Japanese startups interviewed reported relatively smooth equity fundraising. In particular, J-A, J-C, and J-E have been able to secure the necessary funding at the necessary times without significant difficulty. J-B and J-D also mentioned facing some difficulties in fundraising; however, they have still been able to secure a certain level of equity-based funding. These cases suggest that Japan's startup ecosystem provides a well-established environment for equity-based financing.

By contrast, while J-C raised "approximately 18 billion yen," J-B observed that "the small size of Japanese investors' one-time investments makes it difficult to develop large, full-scale projects like those in the U.S." This often necessitates seeking international capital, as J-C stated: "When trying to raise a large amount of money at a later stage, Japanese investors cannot meet the demand, so we have to rely on U.S. investors."

Additionally, J-D's experience highlights conservative technology assessment practices in Japanese venture capital, despite having "a CEO who was a top engineer at a world-renowned AI company," noted they "dare not raise funds from venture

capital firms because we do not yet have established services or products". These insights contribute to our understanding of how national institutional contexts shape AI startup funding dynamics, particularly in non-Western ecosystems.

Entrepreneurial Spirit Analysis. The AI entrepreneurship landscape in Japan demonstrates an evolving balance between traditional risk-aversion and innovation imperatives. While "Japanese people have a positive outlook on AI," organizational barriers persist, with "large Japanese companies have[ing] a very low tolerance for failure... demanding a success rate of 99.6% for a service" (J-A). This manifests in conservative project management, where stakeholders "prolong projects simply because they do not want to be accused of having failed" (J-B). In Japan, top university graduates traditionally seldom pursued entrepreneurship, largely due to the Japanese-style employment system—characterized by lifetime employment and seniority-based promotion—and a generally conservative social culture. However, in recent years, a growing number of top university graduates and workers at prestigious large companies have begun launching startups. This shift is noted by both J-B and J-C.

Professional credentials remain crucial legitimizing factors. One founder credits success to "graduating from a prestigious university and worked for a top-tier company... credibility as a serial entrepreneur" (J-B), while another emphasizes professional security: "Since I'm a lawyer, I knew that even if the business failed, I could still make a living" (J-C).

Additionally, the ecosystem is evolving, as "large companies are starting to recognize

and appreciate people who take risks" (J-D). This shift is evident in the sector's maturation: "When we founded our company, there was no market for AI... but by the time our company became an IPO, AI startups were more established" (J-E). Interview data reveals a gradual transformation in both entrepreneurial mindsets and institutional responses.

Talent Acquisition Analysis. In Japan, due to a declining birthrate, an aging population, and the rapid growth of the IT industry, many companies commonly face challenges in recruiting talent, particularly engineers. However, J-A stated, “After a well-known CTO in the AI field joined our company, many engineers who wanted to work with that person also joined.”

Similarly, J-B noted, “Since our CEO previously served as the CTO of a rapidly growing startup, engineers who had worked with him before joined us through those connections.” J-C also shared, “At first, we struggled to hire top talent, but once one excellent person joined, it became a catalyst — more employees joined one after another, and we eventually grew to 650 people.” This highlights a notable characteristic: these companies have successfully acquired talent by bringing in key individuals. Leadership credentials play a crucial role, with one company highlighting that "A team of highly skilled AI experts, led by a CEO from a top AI company based in the UK" (J-D) enhances recruitment success. In other words, there is a clear pattern of growth through network-based hiring.

In addition to attracting talent with a compelling vision, some companies have also succeeded in recruitment through high compensation and stock options. J-C

mentioned, “We presented a promising vision that attracted top talent. At the same time, we offered high salaries for engineers and granted stock options.”

Talent acquisition strategies in Japanese AI companies reveal complex patterns of adaptation to global workforce dynamics. Companies actively pursue global talent diversity, as one firm notes: "We are actively hiring foreign professionals living in Japan, including those from Turkey, India, Taiwan, and Spain" (J-A).

Language adaptation emerges as a key organizational challenge. One executive reports that "English, not Japanese, has become the official language within the company," though "there are few Japanese people who can handle conversations in English with highly skilled AI professionals" (J-D). This linguistic dimension introduces additional complexity to compensation structures and talent pool accessibility.

These findings indicate that successful talent acquisition requires fundamental organizational changes to bridge global talent pools with traditional Japanese business practices.

Finally, J-E stated that they adopted a unique talent strategy: “Since there aren’t many AI engineers in Japan, our company has chosen not to hire AI engineers directly, but instead to recruit general IT engineers and train them to become AI engineers. As a result, we have grown to over 100 employees within three years of our founding.” This approach to talent acquisition and development is also a distinctive feature.

Government Support Analysis. The case of J-B exemplifies successful government resource engagement, having "secured subsidies from the deep tech startup ecosystem

for three consecutive years, totaling around 80 million yen." This contrasts with firms like J-A, who notes that "startups that don't rely on government support might be stronger in terms of resilience and independence." Japan is often perceived as a country where the government provides extensive support to small and medium-sized enterprises. However, when it comes to startups, most promising startups operate within market mechanisms and grow independently without relying on government support.

In nascent technology domains, strategic government intervention proves crucial. J-C's case illustrates this through regulatory clarification: "The government issued a statement that this did not constitute a violation of the Attorney Act." Additionally, international market access support through JETRO has been significant, as evidenced by J-B: "JETRO supported us in exhibiting at a large trade show in the U.S. As a result, we received offers for alliances from overseas." Recent institutional evolution shows promise, with J-B noting that "A new system has been established where Japan's government organization, NEDO, collaborates with certified venture capital firms," though challenges persist in program accessibility.

Infrastructure Resource Analysis. The findings indicate widespread dependence on major U.S. cloud providers. As J-A notes, integration with "development platforms of major U.S. IT companies" is standard practice. J-C emphasizes security considerations, stating they "handle it with strict security, and have set up our own clean room." J-D reinforces this pragmatic approach: "Since we use cloud services and development platforms from major US IT companies, unless something

extraordinary happens, there's no particular need for alternatives."

Cost considerations significantly influence infrastructure decisions. J-E notes: "We primarily use the development platform of major U.S. IT companies, but it is expensive." However, startup support programs help "significantly reduce the high development costs," as J-B observes. J-E reflects: "Ten years ago, the use of AI algorithms and GPU servers were very expensive, but now cloud services allow us to use these resources in smaller increments." This evolution suggests a democratization of AI development resources, though cost optimization remains a persistent challenge. The companies interviewed all unanimously stated that they have no inconvenience, as services from major U.S. IT companies are readily available.

The findings reveal an inherent strategic tension. While J-D acknowledges concerns about whether "Japanese companies should rely on services from major U.S. IT companies," they simultaneously recognize these services as "the global standard." This duality underscores a fundamental strategic dilemma within the Japanese AI ecosystem - balancing dependency risks against practical necessities.

Collaboration with Large Companies Analysis. In Japan's ecosystem, the relationship-building between large companies and startups is being actively promoted. J-C stated that "large companies are eager to collaborate with startups and have a very positive attitude toward them."

While some startups report accessibility challenges, as evidenced by J-B's observation that "doing business with large Japanese companies presents high hurdles," others acknowledge corporate openness tempered by strategic caution. This selective

approach is illustrated by J-D's insight: "I believe that large Japanese companies are open-minded, however, they do not easily form alliances because they cannot determine which AI startup is the best suited."

The preservation of strategic autonomy emerges as a critical consideration for startups. As articulated by J-C: "We have intentionally avoided investment from operating companies in Japan, as it could influence our direction." This strategic positioning reflects broader tensions between leveraging corporate resources and maintaining independence in innovative trajectories. In this way, corporate venture capital (CVC) presents a nuanced landscape of selective engagement.

Trust emergence appears as a fundamental catalyst for successful collaborations. J-D's observation that "Investments from large Japanese companies often prioritize synergy" underscores the importance of alignment in corporate-startup partnerships. This dynamic suggests that successful ecosystem development requires both structural support and cultural adaptation. Effective ecosystem growth requires balancing the engagement of large companies with startup autonomy, enabling access to resources while preserving innovative capacity.

UK Interview Data Analysis and Results

Access to Funding Analysis. The UK AI ecosystem exhibits distinct funding patterns across different company stages. Early-stage firms face significant challenges, as UK-A notes: "accessing institutional funding in the UK has significant barriers, particularly for very early-stage companies." In contrast, growth-stage companies like UK-B (£750K capital) find that "obtaining funding in the UK is relatively

straightforward once you've completed the company registration."

Mature companies demonstrate diverse strategies. UK-C (£20M capital) opted for private founder investment, while UK-D chose organic growth "through a project-by-project approach." This aligns with UK-E's observation that "European entrepreneurs tend to prioritize steady growth and maintaining decision-making control" reflecting a broader pattern of preferring sustainable growth over rapid scaling. This is further reinforced by UK-C's insight that "the difference isn't in the tolerance for failure or risk-taking attitude - it's about capital availability," highlighting how structural factors shape funding strategies.

The UK-US funding comparison reveals structural differences. While UK-B considers the UK "one of the best environments for startup funding," UK-C notes that "US investors can take a portfolio approach where they invest in multiple companies knowing that success from just one investment can provide sufficient returns." As UK-E observes, "getting government investment in Europe is notably difficult," leading companies to adapt their funding strategies accordingly.

Entrepreneurial Spirit Analysis. The UK AI startup ecosystem exhibits a entrepreneurial character that balances innovation with sustainable growth. As UK-A notes, the environment is "very supportive" with "various incentives, available capital, and government encouragement" across both urban and rural regions.

The ecosystem positions uniquely between American and European approaches. UK-C observes that "many innovative products are actually conceived and developed by talented individuals in Europe, the UK, or Asia, before being taken to the US for

investment and global scaling." This relationship with the US market is further emphasized by UK-E's observation of companies "send[ing] their employees to the US to learn about the latest technological developments."

Contrary to common perception, UK's risk tolerance shows complexity. UK-C argues that "The difference isn't in the tolerance for failure or risk-taking attitude - it's about capital availability." This view is supported by UK-B's observation of higher risk tolerance in AI sectors, backed by government support making it "more acceptable to take entrepreneurial risks."

Growth strategies often favor sustainability over rapid scaling. UK-D demonstrates this through "organic growth through a project-by-project approach," while UK-E characterizes it as being "small but beautiful." The professional environment features strong networking, with UK-A highlighting how "networking at various events" provided "substantial practical help."

Talent Acquisition Analysis. As UK-B notes, "finding talented individuals in the AI field has been relatively straightforward in the UK," while UK-C affirms that "Europe and the UK have some of the best initial innovative talent globally."

Recruitment metrics demonstrate strong market interest, with companies like UK-D receiving "around 400 applications" per position. However, intense competition, particularly from established tech firms, shapes the talent landscape. UK-E emphasizes that "technical talent has extensive opportunities available to them - from major U.S. IT companies to well-funded startups offering competitive salaries."

Companies employ diverse retention strategies to address these challenges. UK-A

implements "a continuous anonymous survey system to understand our employees' work satisfaction and needs." Alternative value propositions prove effective, with UK-D noting that "while we might not offer the highest salaries in the market, we provide significant value through our flexible work environment."

International competition, especially from the US market, presents ongoing challenges. UK-C observes that "the challenge lies in keeping this talent in the UK when the US market can offer more attractive compensation packages." Companies respond through innovative approaches to professional development and workplace culture. As UK-B states, "when it comes to keeping talented team members, salary is the main factor, along with workplace culture and environment."

Government Support Analysis. The UK AI startup ecosystem's government support landscape reveals varying effectiveness across different company stages. Early-stage startups face significant challenges, as UK-A notes: "accessing institutional funding in the UK has significant barriers, particularly for very early-stage companies," with most programs "requiring companies to be operational for at least one year."

Tax policy emerges as a consistent strength, with UK-A highlighting that "companies don't have to pay taxes until they become profitable," a feature UK-B confirms as "very beneficial for early-stage companies." The regulatory environment also provides advantages, with UK-C emphasizing "a more flexible legal framework compared to other European countries."

Program accessibility shows contrasting experiences based on company maturity. While UK-B reports that "once your company is registered and meets the required

standards, the evaluation process is quite straightforward," UK-E counters that "obtaining government support is quite challenging," leading many to "focus on private funding channels."

Awareness levels vary significantly among entrepreneurs. UK-D admits: "I wasn't fully aware of many government startup funding opportunities until recently," despite a decade of operation. However, targeted programs show impact, with UK-A benefiting from "the Climate Action Program scholarship" and "a government-sponsored online course specifically designed for female entrepreneurs."

In the international context, UK-B positions the UK among "one of the best environments for startup funding," alongside Europe and the United States. However, regional variations appear minimal within the UK itself, with UK-A noting similar entrepreneurial environments across urban and rural areas. Established companies like UK-C, with "20 years" of operation, often become less dependent on government support, having "grown entirely through private founder investment."

Infrastructure Resource Analysis. The UK AI startup ecosystem's infrastructure landscape reveals a mature environment dominated by commercial solutions rather than government-provided resources. As UK-A notes, while "the UK government doesn't directly provide physical facilities," this isn't considered limiting due to diverse startup needs. Digital infrastructure adequacy is consistently highlighted across companies. UK-E emphasizes that "digital infrastructure support has been largely consistent across regions due to our reliance on commercial cloud services." Cloud provider preferences show strategic diversity, with UK-D noting "AWS

remains our primary choice" while incorporating "major U.S. IT services for better usability."

Companies demonstrate adaptability in infrastructure utilization. UK-D operates on "a fully remote work model," showcasing how modern AI companies can thrive with minimal physical infrastructure. Network capabilities meet industry needs, with UK-B affirming that "digital infrastructure in the UK is highly advanced and more than adequate."

Cost considerations drive infrastructure decisions, as UK-E explains their strategy of "focusing on purchasing commercialized private services rather than depending on government-supported infrastructure." The ecosystem demonstrates maturity through effective resource utilization rather than infrastructure availability. As UK-C observes, "the key factor isn't the infrastructure itself, but rather the people who use it." This reflects a shift toward strategic infrastructure deployment over traditional physical resource requirements.

Collaboration with Large Companies Analysis. The UK AI startup ecosystem exhibits complex collaboration patterns marked by limited large company engagement and distinct regional dynamics. As UK-A notes, "the interaction between large and small companies appears to be quite limited," with unclear pathways for building collaborative relationships. Large companies primarily engage in acquisitions rather than corporate venture capital or partnerships. UK-B observes they "strongly prefer to work with companies that have established track records rather than small startups." The UK's role as an entry point for US companies into Europe

creates what UK-E calls an "intensely competitive environment."

Professional networking provides an important collaboration avenue, with UK-A highlighting that people are "very willing to exchange knowledge and share experiences." The ecosystem demonstrates a European entrepreneurial preference for maintaining company control, shaping how firms approach partnerships and growth opportunities.

Insert Figure 3 about here

FINDINGS AND DISCUSSION

The comparative analysis of AI startup ecosystems in Japan and the UK reveals distinctive patterns in value creation, capture, and distribution, alongside contrasting governance structures, mechanisms, and implementation approaches, illustrating how different national contexts shape AI startup ecosystem development pathways (see Figure 4). The value creation process in Japanese AI startups is autonomously growing within market mechanisms and demonstrating strong vitality. UK AI startups demonstrate a greater focus on fundamental research and innovation, maintaining a balance between applied solutions and technological breakthroughs, supported by strong university-industry knowledge transfer mechanisms. This fundamental difference shapes how AI innovation is conceptualized and developed in each ecosystem.

In terms of value capture, Japanese AI startups excel in rapid commercialization

through staged equity financing, strong sales activities, excellent marketing strategies, proper enterprise relationships and practical implementation, achieving sustainability with lower funding amounts but faster paths to revenue generation. Their strong domestic market validation provides a stable foundation for growth. UK startups, meanwhile, often pursue diverse revenue models and market approaches, frequently operating with longer development cycles and higher capital requirements. Their early focus on international markets reflects a different scale of ambition but also introduces additional complexity to their value capture process.

Value distribution patterns show distinct characteristics in each ecosystem. Japanese AI startups demonstrate effective talent acquisition through recruitment strategy based on human connections, attractive visions and global recruitment strategies while maintaining strong domestic enterprise client relationships, predominantly concentrated in the Tokyo metropolitan area. The UK ecosystem features more distributed innovation centers across London, Cambridge, and other tech hubs, facing higher talent costs but benefiting from broader skill availability and a more international client base. This geographical distribution impacts how value is created and shared among ecosystem participants.

The governance structure reveals contrasting approaches to ecosystem development. Japan's AI startup ecosystem operates through market-driven development with minimal government intervention, characterized by strong corporate engagement frameworks and self-regulating dynamics. The UK system is characterized by substantial government support and regulation, formal university-industry

collaboration frameworks, and more structured innovation support systems. These differences reflect distinct philosophical approaches to fostering AI innovation.

Governance mechanisms in Japanese AI startups emphasize commercial transactions between companies, operating with relatively small but smooth and sufficiently adequate fundraising and relationship-based business development. UK startups operate under more formal investment and partnership processes, typically securing larger funding rounds with stricter requirements and competition-based resource allocation. This creates different incentive structures and growth trajectories for startups in each ecosystem.

Based on the interview data analysis, both the UK and Japanese AI startup ecosystems face distinct challenges requiring targeted improvements. Japan's ecosystem struggles with small investment scales, slow decision-making processes, and limited global market reach, despite an efficient bank lending system for early-stage companies, a strong domestic market, and active collaboration between large companies and startups. Key improvements needed include streamlining investment processes, establishing larger funding pools for scale-ups, and encouraging international expansion. The UK ecosystem, while more internationally oriented, faces significant challenges in talent retention due to competition from global tech giants and US market attraction, alongside limited corporate-startup collaboration. The ecosystem would benefit from developing stronger talent recruitment mechanisms beyond compensation and creating structured corporate-startup engagement programs. Both ecosystems could improve through cross-border knowledge exchange and ecosystem

integration, including joint research initiatives and complementary funding mechanisms. Policy alignment between the two markets, particularly in AI regulations and development standards, could create more robust environments for AI startup growth.

At a broader level, this study demonstrates that successful AI ecosystem development depends on balancing two seemingly contradictory imperatives: leveraging unique local advantages while maintaining global connectivity. Rather than attempting to replicate a standardized model, regions should develop AI ecosystems that align with their institutional strengths while ensuring connections to global talent, funding, and knowledge networks.

Insert Figure 4 about here

CONCLUSION AND FUTURE WORK

This study provides the first comprehensive comparative analysis of AI startup ecosystems between Japan and the UK, identifying both shared characteristics and distinctive features that shape innovation trajectories outside the dominant US-China axis. While both ecosystems share common challenges in fund raising and talent recruitment, they also face similar opportunities in emerging AI applications and cross-border collaboration potential. The analysis across six dimensions: access to funding, entrepreneurial spirit, talent acquisition, government support, infrastructure resources, and collaboration with large companies - reveals how these ecosystems

have evolved unique solutions while facing similar fundamental challenges and opportunities in AI development. The Japanese ecosystem demonstrates a corporate-centric model where AI startups achieve rapid commercialization through staged equity financing, strong sales activities, excellent marketing strategies, proper enterprise relationships, and practical implementation. In contrast, the UK ecosystem exhibits a research-driven approach emphasizing fundamental innovation and international market engagement, supported by strong academic-industry linkages. The practical implications of this research are significant for multiple stakeholders. For policymakers, it provides frameworks for developing culturally adapted support mechanisms that leverage existing institutional strengths rather than attempting to replicate Silicon Valley. For business leaders, it offers insights into effectively navigating cross-border AI collaboration while accounting for ecosystem differences. For entrepreneurs, it demonstrates how to align startup strategies with local ecosystem characteristics while maintaining global competitiveness.

Future research should explore how AI startup ecosystems advance ecosystem theory beyond traditional domains. Key areas include studying how AI startup ecosystems differ from traditional technology ecosystems in their value creation mechanisms, network dynamics, and resource dependencies. The nascent nature of AI technology, combined with its transformative potential and complex technical barriers, has limited previous ecosystem research in this domain. Additional research should examine how these AI-specific characteristics interact with national innovation systems to create novel theoretical insights about ecosystem evolution and adaptation. This could lead

to more comprehensive theories that better account for the distinct dynamics of emerging technological domains.

The findings suggest that successful AI ecosystem development depends on two key factors: first, leveraging unique local advantages, such as Japan's rapid commercialization and the UK's research institutions, and second, maintaining global connectivity, such as international connections for talent, funding, and knowledge exchange. Rather than attempting to replicate Silicon Valley's model, nations should develop AI ecosystems that align with their institutional strengths while ensuring global competitiveness. As AI technology continues to evolve, understanding these ecosystem dynamics becomes increasingly crucial for maintaining technological competitiveness in the global economy. This study provides a foundation for future research into how different nations can develop distinctive AI capabilities while preserving their unique institutional characteristics.

The limitations of this study include the small sample size, with only five AI startups interviewed from each country—Japan and the UK. Future research should expand to at least 20 companies per country to reduce selection bias. Additionally, the current study lacks data-driven quantitative analysis. Subsequent research would benefit from incorporating numerical data and comparative analyses using quantitative indicators. Finally, while this study focuses specifically on Japan and the UK, future work should position these ecosystems within a broader global context. Comparative studies with other countries developing distinctive AI strategies would provide valuable additional insights.

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TABLE 1 *
Overview of 5 Selected Japanese AI Startup Companies

Company	Establishment	Capital	Employees	Revenue	Business Focus
J-A	2021	¥100M	~150	¥1.5B	AI-powered BX platform, chatbots, e-commerce solutions
J-B	2012	¥100M	9 (+11 contractors)	¥200M	Baby tech, AI cry analysis, parenting apps
J-C	2017	¥17.85B (Funding Amount)	650	N/A	Legal tech, AI contract review, legal process automation
J-D	2020	¥182M	~60	N/A	Sustainability solutions with AI, consulting
J-E	2005	¥378M	200	¥2.3B	AI/DX solutions, TSE listed, enterprise services

TABLE 2 *
Overview of 5 Selected UK AI Startup Companies

Company	Establishment	Capital	Employees	Revenue	Business Focus
UK-A	2023	£50K	5	£30K	AI education, course development
UK-B	2021	£750K	10	£200K	AI for carbon emission tracking in construction
UK-C	2004	£20M	400	£80M	AI-driven network automation
UK-D	2013	£600K	10	£1.5M	AI software testing platforms
UK-E	2005	£15M	100	£10M	AI IT infrastructure monitoring

TABLE 3 *

Interview Questions

Dimension	Interview Questions
1. Access to Funding	- How would you compare the ease of obtaining funding from banks, venture capitalists, angel investors, or other financial institutions for your AI startup? - Were there any unique funding opportunities or challenges you faced as an AI startup in [Japan/UK]? - How does the funding landscape for AI startups in [Japan/UK] compared to what you know about other countries?
2. Entrepreneurial Spirit	- How would you describe the general perception of entrepreneurship in [Japan/UK], particularly in the AI sector? - How tolerant is the business environment in [Japan/UK] towards risk-taking and potential failure? - How supportive were your family, friends, and professional network when you decided to start an AI company?
3. Talent Acquisition	- What has been your experience in attracting and retaining talented management team members and engineers? - How easy or challenging is it to find individuals with the specific AI skills and expertise your company needs? - Have you faced any unique challenges or advantages in talent acquisition as an AI startup in [Japan/UK]?
4. Government Support	- What types of government support, if any, have you received for your AI startup in [Japan/UK]? - How would you evaluate the effectiveness and accessibility of government programs for supporting AI startups? - Are there any specific regulations or policies in [Japan/UK] that have significantly impacted your AI startup, either positively or negatively?
5. Infrastructure Resource	- How would you assess the availability and quality of necessary infrastructure resources (e.g., high-performance computing, data centers) for AI startups in [Japan/UK]? - Have you utilized any AI-specific coworking spaces, incubators, or accelerators in [Japan/UK]? If so, how impactful were they? - How has the digital infrastructure (e.g., 5G networks, cloud services) in [Japan/UK] supported or hindered your AI startup's development?
6. Collaboration with Large Companies	- Were large companies likely to engage in transactions (purchasing) with startups? - Were large companies likely to form alliances with startups? - Did large companies invest in startups? (How much CVC investment was there?)

FIGURE 1 *

Six- dimensional AI Ecosystem Analytical Framework

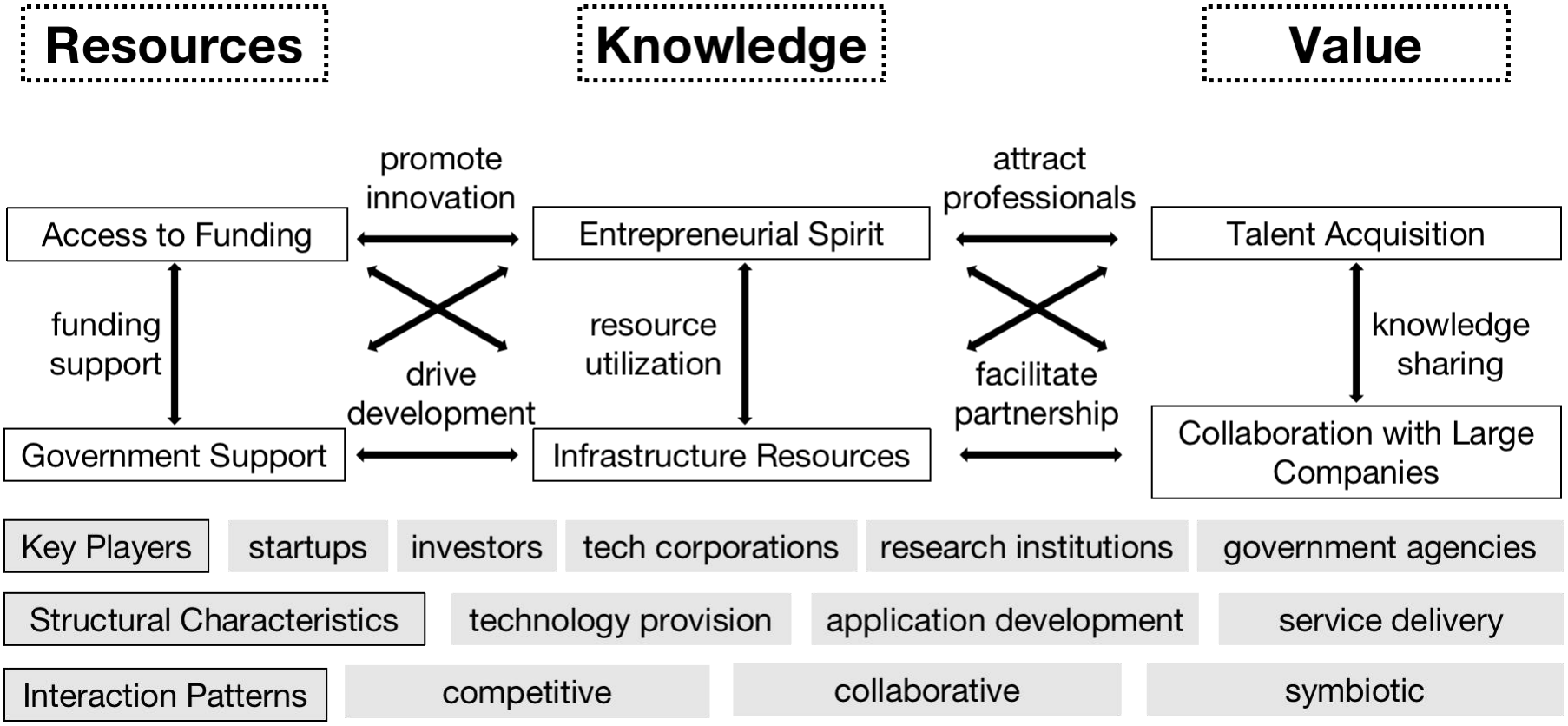

FIGURE 2 *

Overview of coding process: Open, Axial and Selective Coding

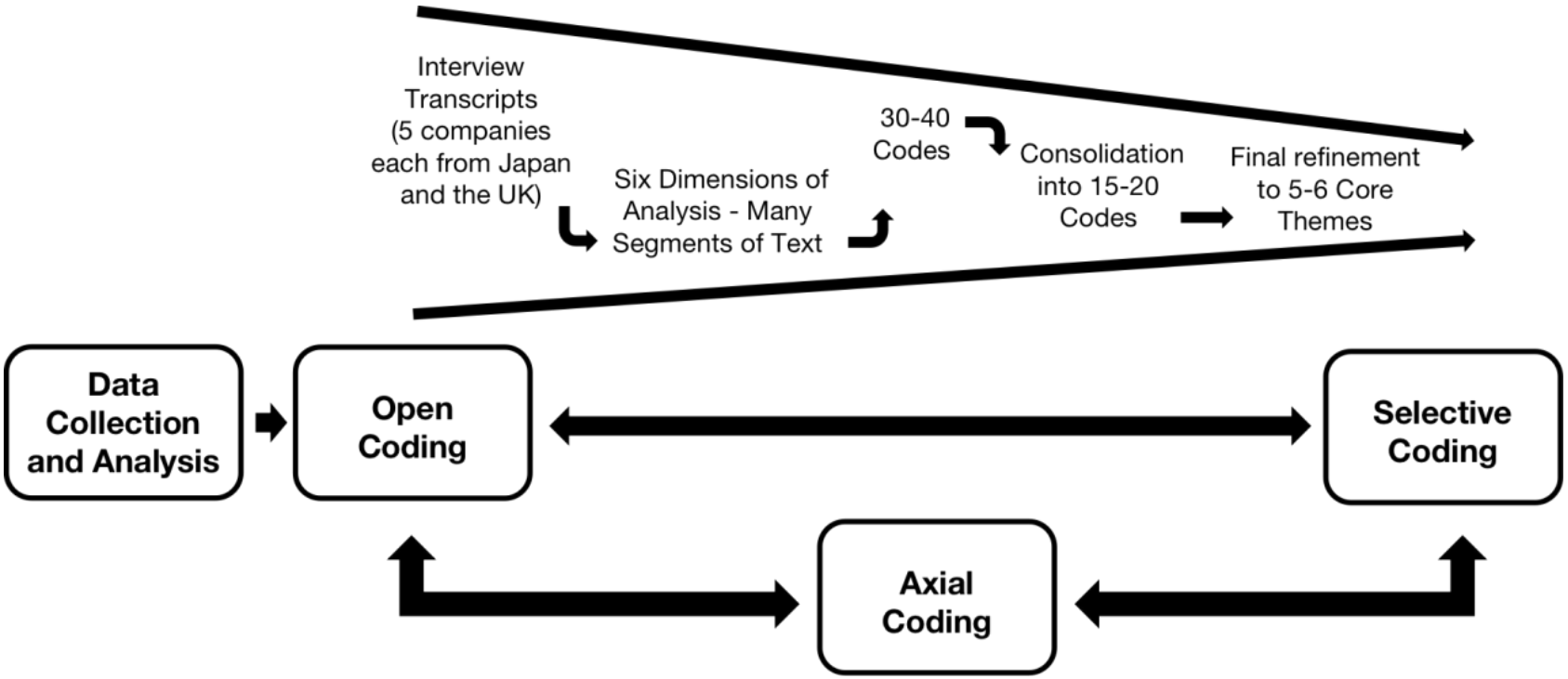

FIGURE 3 *

Interview Data Analysis and Results: Japan and the UK

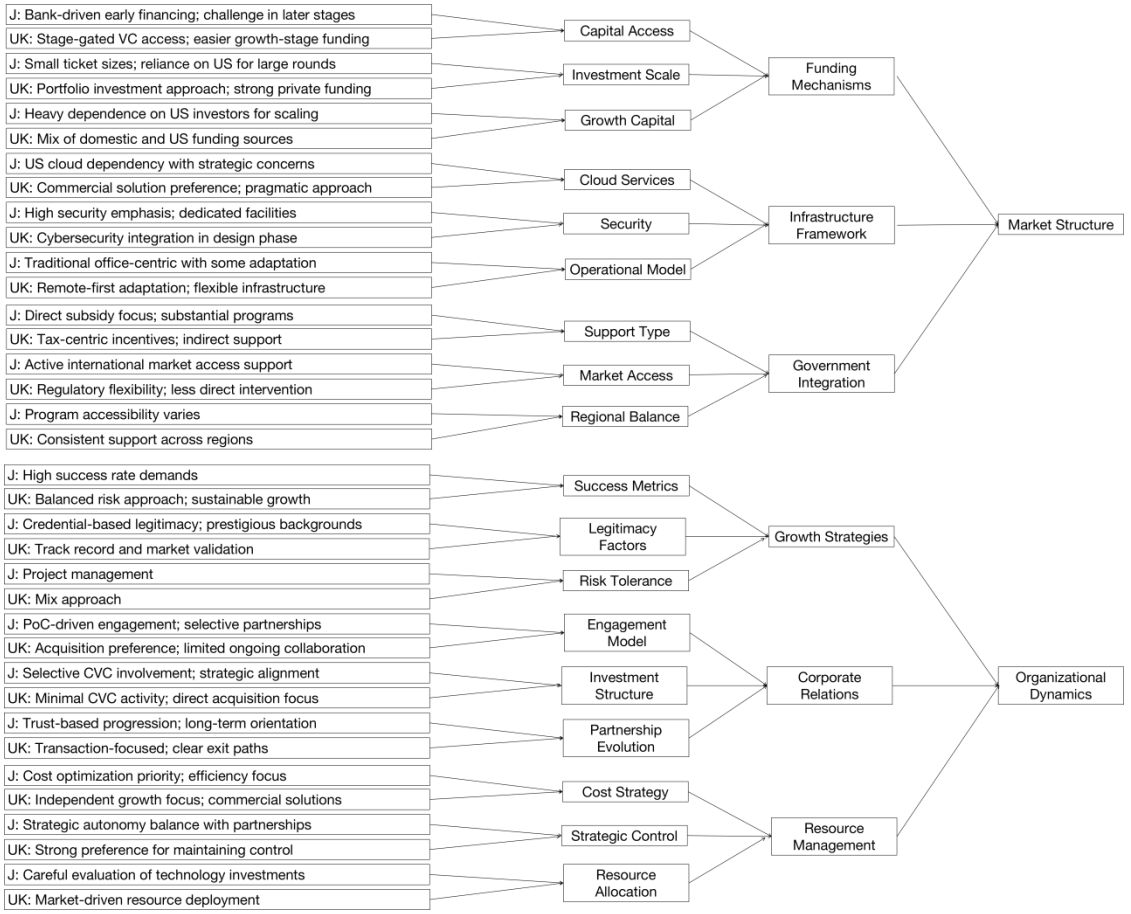

FIGURE 3 - continued *

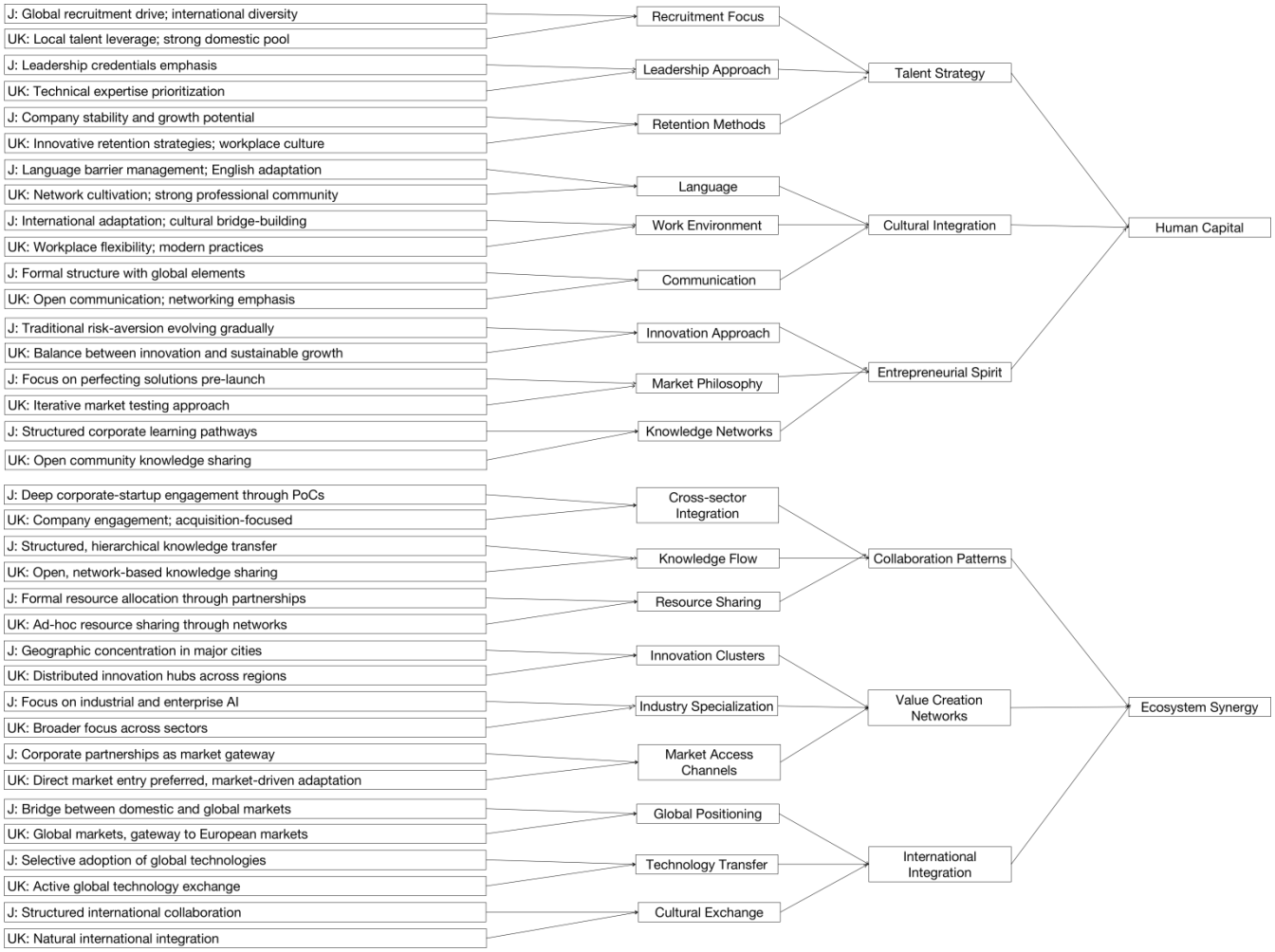

FIGURE 4 *

AI Ecosystem Value and Governance Comparison: Japan and the UK