



# Exploring technology business incubators and their business incubation models: case studies from China

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## Abstract

This paper explores Technology Business Incubators (TBIs) and their chosen Business Incubation Models. The business models of TBIs have been largely ignored or seen as explained through stratification classifications (e.g. university incubator, virtual incubator etc.). Taking a qualitative approach, five next generation TBIs clustered in the Zhongguancun region of Beijing, the ‘Chinese Silicon Valley’, are analyzed. Framed in the resource-based view this work contributes to the literature through the exploration of: (1) The strategies implemented by next generation TBIs in China (2) The business models of these incubators (3) The fit between each incubator’s business model and their respective strategy. Ultimately this study disentangles how the varying availability of resources and incubatees’ ability to absorb these resources guide incubator strategy.

**Keywords** Business incubator · Incubator strategy · Business model · Venture tenants · China · TBI

**JEL Classification** O31 · O32 · O33 · O34

## 1 Introduction

Innovation and entrepreneurship is key to remaining competitive in today’s global economy. Recognition of such drivers of economic growth has resulted in many countries adopting policies and initiatives that support business venturing. Technology business incubators (TBIs) are one method; TBIs “assist technology-oriented entrepreneurs in the

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start-up and early development stage” through resource provision and business support services (OECD 2010). The incubation concept links technology, capital, and expertise, to leverage entrepreneurial talent, and accelerate the development of new firms, thereby increasing the speed of technological exploitation (Grimaldi and Grandi 2005). TBIs promote regional development (Xiao and North 2017) and enable start-ups to overcome the ‘liability of newness’ by reducing market exposure and providing access to key resources (Ferguson and Olofsson 2004).

A business incubator may also be referred to as an accelerator (Cohen 2013), science park (Martin 1997), knowledge park (Bøllingtoft and Ulhøi 2005) and innovation centre (Campbell 1989). Although the label may be different the objective of acting as a resource providing, support system for incubatees as a means of enabling them to ultimately create a functional stand alone business remains the same. Each incubator needs a business model whereby “the content, structure, and governance of transactions (are) designed so as to create value through the exploitation of business opportunities” (Amit and Zott 2001, p. 511). However, where incubator business models are concerned the nuances of the value creation perspective are largely ignored, treated like a black box (Bergek and Norrman 2008), they are simplified as encompassed in the incubator archetype. The literature classifies incubators into six archetypes: the university incubator, the independent commercial incubator, the regional business incubator, the company-internal incubator, the virtual incubator (Carayannis and Von Zedtwitz 2005), and more recently the corporate accelerator (Shankar and Shepherd 2019). These archetypes highlight the competitive scope and strategic focus of an incubator, which shapes the business model (Carayannis and Von Zedtwitz 2005). Yet, “no two incubators are alike” (Allen and McCluskey 1990, p. 64), and even incubators with the same goals have vastly different ways of achieving them (Bøllingtoft and Ulhøi 2005; Bergek and Norrman 2008). The authors argue that more detail is needed in order to disentangle how the varying availability of resources and incubatees’ ability to absorb them guide incubator strategy beyond mere business model archetypes.

This paper examines the existing literature on the factors influencing TBI strategy, performance, and business models. A framework is then developed to explore five cases of next generation TBIs in the Zhongguancun region of Beijing, the ‘Chinese Silicon Valley’. The TBIs are considered next generation because while first generation TBIs were state owned and managed, this next generation of TBIs are independent, for-profit entities, that focus on providing value-adding, tailored services rather than simply general, physical resources. The five TBIs are—Kr Space, Innovation Works, Microsoft Cloud Accelerator, Garage Coffee, and Beijing Maker Space. Data was gathered from face-to-face interviews with founders/managers/chief operation officer (COO)’s of each TBI, in addition to site visits and data gathered from secondary sources from online searches. TBIs aid post-industrialized countries to maintain their competitiveness on the world stage. For the world’s most populous nation, China, trying to balance the impact of slowed economic growth with its need to maintain competitiveness, TBIs are critical. This paper examines the relationship between incubator strategy and incubation business models, an important yet understudied topic (Bergek and Norrman 2008; Clarysse et al. 2005). The study examines the following research questions: (1) What business strategies are implemented by new generation TBIs in China? (2) What business models are adopted by these new incubators? (3) How do their business models match their business strategies?

The forthcoming section details the contemporary literature on incubator business strategies and incubator business models after which a theoretical framework and research methodology are presented. The paper then analyzes five cases of new generation

China-based incubators followed by a discussion section and culminating with conclusions and policy recommendations.

## 2 Literature review

Research on technology incubators began in the 1980s, focusing on defining the concept, exploring influencing factors, and comparing university incubators and non-university incubators (Tang et al. 2014). In the United States the first business incubator was established in 1959 in Batavia, New York and throughout the 1960s and 1970s more incubation programmes began to emerge as a means of stimulating economic revitalization (Hackett and Dilts 2004). The 1980s and 1990s saw a notable increase in incubator diffusion particularly across the United States. In China, the first TBI was established in 1987 and by 1997 there were 80 TBIs primarily in the Eastern Chinese provinces (Xiao and North 2017). China's incubators originated from the Torch Program, a State Council approved initiative implemented by the Ministry of Science and Technology (MOST). The remit of the Torch Program was to commercialize, industrialize, internationalize and develop China's technology sector (Dahai 2011). First generation TBIs were state-owned and managed, following on from their success in recent years next generation TBIs have emerged, funded by private investors (Xiao and North 2017). In the USA first wave incubator programmes were aimed at job creation and economic prosperity whilst the second wave included a more complete range of value adding services such as skills-enhancement, counseling, and networking (Mian et al. 2016). The third wave includes a move towards multi-purpose, mixed-use science parks whereby technology incubators exist within commercial and residential facilities.

The primary purpose of a TBI is to support start-ups in their early stages. In order to effectively fulfill this purpose the business strategies of TBIs also adapted over the decades—as industries, technologies and expectations evolved. To financially benefit from the success of their incubatees, incubators' business models have also evolved in line with the requirements and needs of companies (Grimaldi and Grandi 2005). Public incubators obtain their revenue from fees and public funding while profit oriented incubators gain profit from taking an equity stake, rent and/or fees from their incubatees (Grimaldi and Grandi 2005). In return start-ups are offered a range of services from office space and wifi to specialized mentoring and industry specific supports. TBIs can choose to wholly focus on one sector and specialize on this niche or they may support a variety of firms from various industries. This literature examines studies on incubation business models and incubator strategies with a goal of shedding light on the interplay between them in the context of next generation TBIs.

### 2.1 Strategy and business models

The incubator landscape has evolved over time and accelerators may pursue a broad range of different business models (Hausberg and Korreck 2018). However it is “only recently research focusing primarily on the phenomenon of business incubators (has) gained traction” (Hausberg and Korreck 2018, p. 2). Studies on incubator business models remain embryonic, yet the nature of strategy and the utilization of business models amongst incubators is in-line with the core tenets of both concepts more generally. Strategy focuses on

forming and maintaining a company's competitive advantage. Competitor threat is a central issue for strategy (Chesbrough and Rosenbloom 2002) yet when it comes to a company's external environment, business models seldom consider questions about objective setting, focusing instead on creating value for customers and successful practical operation (Richardson 2008). A strategy can be complemented by several different business models (Casadesus-Masanell and Ricart 2010), strategy adapts with market changes and illustrates the uniqueness of customer value by strategic objective setting. Strategy determines the choice of business model (Elliot 2002) by considering both internal capabilities and external conditions (Casadesus-Masanell and Ricart 2010). From this perspective, strategy drives business model innovation (Cortimiglia et al. 2016). In turn, business models focus on the realization of customer value, which lays the foundation for a company's competitive advantage. Amit and Zott (2001) point out that business opportunities need to be realized through practical business models. Increasingly scholars concur that business models are a practical plan to realize strategic objectives (e.g. Johnson et al. 2008; Richardson 2008; Casadesus-Masanell and Ricart 2010; Hacklin and Wallnöfer 2012). Whilst strategy creates the macro, overarching vision for a firm, it is the business model that turns this vision into a practical operational reality for capturing value (Teece 2010; Cortimiglia et al. 2016). As such, a firm's strategy and business model are complementary, yet separate components. Therefore this study examines both and in particular explores the fit between incubator strategy and their chosen business models.

## 2.2 Technology Business Incubator: TBIs

TBIs became prominent in the past 50 years as a way to promote and support entrepreneurship in local and regional environments (Lamine et al. 2018). Incubators are embedded in the regional ecosystems and "composed of key stakeholders such as industrial clusters, academic institutions, research labs, banks, and investors" (Lamine et al. 2018, p. 1121). The position and role of TBIs in the entrepreneurial ecosystem has led to it being heralded as an important mechanism to promote technology diffusion to the local economy (Etzkowitz and Klofsten 2005). While initially it was the government and public funding which supported the activities of TBIs in more recent years private investors are moving into the space. Setting up, running and managing TBIs has become a business in itself. TBIs are no longer simply a consolidated vehicle for government to support and foster regional economic development, they may also be profit-seeking vehicles harnessing the potential of innovative firms. This professionalization of TBIs has also led to a change in business strategies and business models they adopt. Furthermore their increasing prevalence and noted success rates has made it attractive for start-ups to locate within a TBI as it offers them credibility and legitimizes their activities at the early, stage-up phase (Totterman and Sten 2005). TBIs play a crucial role in their incubatees, the early-stage environment provided by the TBI shapes the start-ups attitude to risk, exposes them to knowledge and helps them develop necessary resources (Gately and Cunningham 2014).

## 2.3 Incubator business models

Capturing a value chain, consisting of value position, value creation, value delivery, and value capture (Guang 2013), a business model "is more generic than a business strategy" (Teece 2010, p. 180). Morris et al. (2005) summarize three perspectives on business model research: the economic perspective, which focuses on how corporations make profit and

maintain cash flow; the operational perspective, emphasizing that competitive advantage should be formed through the firm's internal systemic design (Liu and Wei 2013); and the strategic perspective which treats business models as an integration of a series of processes such as choosing a target customer, differentiation of offering, decisions on production, resource allocation, marketing, customer value creation and the final profit decisions (Morris et al. 2005). Components of a business model framework tend to mainly focus on the business's value chain, resources, profit model, and core capabilities (Liang and Si 2010; Chesbrough and Rosenbloom 2002; Schweizer 2005; Osterwalder 2004). Incubator business models support start-up growth and enable incubators to create and capture value from their start-ups (Amit and Zott 2001; George and Bock 2011). Incubator models have adapted to suit the evolving needs of incubatees (Bruneel et al. 2012), moving from supplying physical and financial resource support to early stage firms, to offering a broad range of intangible high value-added services to knowledge intensive nascent businesses (Pauwels et al. 2016).

Research on incubator business models centres on incubator features and operations. Grimaldi and Grandi (2005) established an incubator appraisal framework, which includes strategy, industry, location, startup period, incubation period, incubation service, and management group. Bergek and Norrman (2008) categorized incubators based on selective standards, business support, and networking activity. Chinese scholars Si and Liang (2010) conducted a comparative study on two Shanghai-based incubators, examining their respective target customers, value propositions, value chains, dynamic competencies and finance. Furthermore, Chen and Li (2013) studied four incubators in Tianjin China and analyzed different elements of their business models, and the compatibility between elements and resources. Another study by Liu et al. (2014) is based on technology and market analysis using four typical incubators as case studies, the findings highlight the key elements for building a business incubator in addition to presenting four different types of innovative paths. Meanwhile Ma and Chen (2014) focused on how the first Tianjin technology incubator business model came into being and evolved over time. Thus studies focused on incubator business models concentrate on the key factors necessary for delivery of incubator services and operation performance.

The aforementioned studies provide a solid foundation for this paper. Yet, there remains sparse focus on the relationship between incubator business model and incubator strategy. A business model is a structural template for achieving strategic goals (Amit and Zott 2001), thus to better understand incubator business models it is essential to gain insight into incubator strategies.

## 2.4 Incubator business strategy

According to Teece (2010, p. 180) "selecting a business strategy is a more granular exercise than designing a business model." Extant literature on incubator strategy mainly focuses on specific strategies, such as specialist/generalist strategies, whereby some scholars (e.g. Aernoudt 2004; Grimaldi and Grandi 2005; Haapasalo and Ekholm 2004) believe that the competitive advantage of incubators is determined by the business diversity of venture tenants. Specialist incubators may focus on start-ups in specific technological domains while generalists are more encompassing. Such a perspective drove a flurry of comparative studies on specialist versus generalist incubator strategies. Haapasalo and Ekholm (2004) argued that specialist incubators are more effective and efficient than generalist ones as incubators can provide more specific high-quality services and the commonalities amongst

start-ups promote good relationships. However, Schwartz and Hornych (2008) found that incubation startups in specialist incubator seldom cooperated with each other since they must compete with each other in the same industry. Instead high quality facilities and management consulting services were seen as the primary advantage of specialist incubators (Schwartz and Hornych 2008). Conversely a study by Vanderstraeten and Matthyssens (2012) argued that generalist incubators can attract startups from a variety of industries, thus the diversity leads to an accumulation of experience that enables generalist incubators to provide more comprehensive management and operation services. Thus, there is no consensus in the literature on whether specialist incubators outperform generalist incubators.

Beyond industry specific focus, TBIs strategies are also shaped by the four broad incubation models—“(1) business innovation centres, with a focus on regional economic development, (2) university incubators to facilitate technology commercialisation, (3) research incubators embedded in research institutes to valorise research output, and (4) stand-alone incubators, focused on selecting and supporting high-potential ventures” (Pauwels et al. 2016, p. 14). The strategies of a university incubator will be markedly different to a stand-alone incubator as it will be constrained by the goals of the University within which it operates and it will be focused on the commercialisation and technology transfer of knowledge emerging from academic research (Guerrero et al. 2014). Whether the TBI is specialist or generalist, emerges from within a university or outside, is funded by public grants of private investments, all shape the business strategies, business models and paths the TBIs pursue (Evers et al. 2016).

Considering the link between strategy and incubator performance, Vanderstraeten et al. (2013) studied 180 Brazilian incubators and found that customer-oriented strategy influences incubation performance directly and mediates the relationship between focus strategy and incubation performance. Lu (2012) suggested incubator strategy should be formulated according to the incubator’s unique objective, whether that is supporting industry development, promoting entrepreneurial education or fostering employment. Yet regardless of the strategy the incubator pursues, the needs of the venture tenants must be central (Vanderstraeten and Matthyssens 2012). Beyond the needs of venture tenants, the strategy an incubator elects to adopt is greatly dependent on the resources at its disposal (Li et al. 2010; Rice 2002).

Overall the literature on incubator strategy is fragmented and lacking cohesion. Taking into consideration the resources incubators have and their target incubatees absorptive abilities this paper aims to build on existing research and contribute new insights into incubator strategies.

## 2.5 Research questions

When considering business strategy, the resource-based-view proposes that resources and capabilities are the foundation of company’s competitive advantage (Eisenhardt and Martin 2000). Company resources include all assets, organizational processes, company attributes, information and knowledge that can be used to design and implement company strategy (Barney 1991, p. 101). New entrepreneurial companies tend to lack resources, thus business incubators provide essential resources and services to assist companies in overcoming resource barriers and accelerate growth (NBIA 2005). Research on entrepreneurial resources provision by incubators focus on the type of resources and resource absorption. When it comes to incubation programs, there are generalized three generations: first generation provides incubation space; second generation provides relevant incubation service

and interaction with incubation companies; third generation provides external network service in addition to the services of the previous two. The entrepreneurial resources offered have increased in sophistication over time and different incubators provide varying entrepreneurial resources (both tangible and intangible) depending on demand (Li et al. 2010).

This research classifies entrepreneurial resources into tangible and intangible types. Tangible entrepreneurial resources refer to physical office space, internet and experimental equipment/tools, whilst intangible entrepreneurial resources refer to incubator brand, information, social network, technical and business training. However beyond simply attaining resources, it is the way in which the ventures configure and extract value that has the potential to set them apart (Penrose 1959). Thus firms need the capability to absorb resources and incubators need to oversee and manage this process also. Rice (2002) found that incubation performance is the result of co-production and interactions between the incubator and their venture tenants. Under the premise that the types and quality of entrepreneurial resources are equally available, the incubator can improve its incubation performance by increasing interactions between incubator and tenants. Lin et al. (2012) argued that an incubator's service integration and network capabilities play a mediating role between entrepreneurial resources and incubation performance. The stronger the incubator's service integration and network capabilities, the more efficiently the entrepreneurial resources provided improve the ventures performance. This highlights the role of the incubator and the value the interactions between incubator and tenants can have on tenant performance.

On considering business models, the work of Saebi and Foss (2015) on the component elements of business models serves as a foundation. Business models will be assessed based on three elements: transaction content—a set of activities conducted by an incubator; transaction structure—the position and interactions of all parties involved in the transaction; and transaction governance—the mechanism of motivating and managing all parties in the transaction.

Overall this study examines three facets of TBIs—their business strategies, their business models and the match between both. The focus of the research will centre on answering the following research questions: (1) What business strategies are implemented by new generation TBIs in China? (2) What business models are adopted by these new incubators? (3) How do their business models match their business strategies? The changing TBI landscape in China and the arrival of private investors into the TBI space make this a unique and vibrant context to study TBIs business strategies and business models. Given the activity in the space, the importance of TBIs as a tool for economic revitalization and the growing prosperity of the Chinese market there are many new and diverse business strategies and models being played out across sectors. The third question deals with the match between business strategy and business models. According to Teece “selecting a business strategy is a more granular exercise than designing a business model”, a business model “is more generic than a business strategy” (2010, p. 180). To gain more insights into the relationship between business strategy and business models we examined the way in which they align to fulfill the goals of the TBI.

### 3 Research methodology

This crop of TBIs are a newly emerging incubation phenomenon, as such there is little traceable literature about the topic. Furthermore, much of the incubation literature is fragmented (Hausberg and Korreck 2018) and the relationship between the TBI mechanism

and incubation support services lacks a generalisable theory (Mian et al. 2016). Definitions of the different elements of the TBI process also lack consistency. Therefore, in an effort to robustly answer the study's research questions, a qualitative approach is deemed most appropriate. Qualitative data are useful for answering questions related to process (Eisenhardt 1989; Yin 2017) while allowing the benefits of contextual embeddedness. Essentially a small, representative sample of a specific population can be examined as a means of exploring a phenomenon that exists in the population as a whole (Miles and Huberman 1994). Case studies are one such way of empirical inquiry that allows researchers to investigate "a contemporary phenomenon within its real-life context" (Yin 2017, p. 13). They are useful for theory building (Eisenhardt and Graebner 2007) and allow researchers to examine complex topics with rich detail (Miles and Huberman, 1994; Yin 2017; Cunningham et al. 2017).

According to Bergek and Norrman (2008) incubators are usually examined as if they have the same outcome objectives (Bearsse 1998; Sherman 1999), despite the fact that, that incubators "articulate objectives differently depending upon their sponsor's interests" (Mian 1996, p. 194) or at least make "different priorities" within the same basic goals (Bøllingtoft and Ulhøi 2005), and when those "goals vary from one organisation to another" (Cornelius and Bhabra-Remedios 2003, p. 11). Furthermore incubators varying resource endowments further limit their activities (M'Chirgui et al. 2018). This study appreciates the varying objectives of each incubator and the multi-case design allows for cross case analysis and comparison. Engaging multiple cases is more rigorous and complete than a single case due to increasingly robust evidence (Yin 2009). According to Stake (2000) "case study research is not a methodological choice but a choice of what is to be studied" (p. 435) and part of that choice often involves theoretical sampling whereby researchers to select cases that specifically highlight the phenomenon of interest (Eisenhardt 1989; Eisenhardt and Graebner 2007). Purposive sampling (Patton 1990), in this study, enabled the selection of information-rich examples, which were accessible to the researchers, thus offering in-depth examples into a range of different incubation processes. Within the Technology Transfer field case-study research has been lauded for the fresh insights it can provide and new knowledge it can bring (Cunningham et al. 2017).

### 3.1 Case selection

Five cases were selected, they were chosen based on four main parameters. *Firstly*, each case is a representation of the new generation TBIs in China in that they focus on providing value-adding, tailored services rather than simply general, physical resources. *Secondly*, all are located in Zhongguancun, China (Chinese Silicon Valley) a politically interesting area given that innovative firms tend to cluster there. *Thirdly*, each selected case has chosen to pursue a different incubator model, thus allowing the researchers to explore a range of TBI strategies and their resultant outcomes. *Finally*, from a pragmatic standpoint, access and the availability of data was crucial, the 5 TBIs allowed the researchers to interview top management, conduct site visits to the TBIs, speak with service users, and secondary data was also available through online searches (see appendix for further detail on secondary sources).



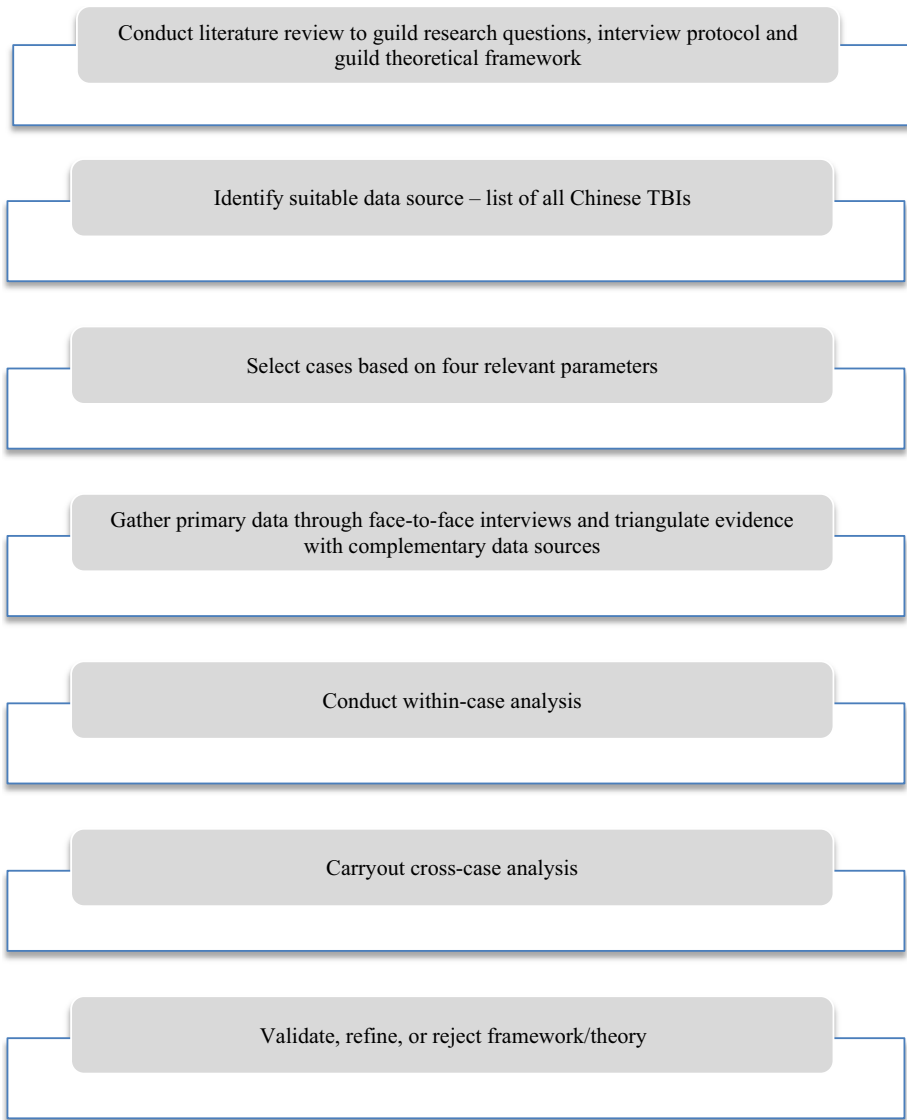


Fig. 1 Research procedure

### 3.2 Research procedure

The data gathered provided the foundation for assessing and testing the framework initially based on the literature review. The study's research procedure is depicted in Fig. 1.

The multiple-case context enhanced analytical generalizability by cross-case pattern matching through multiple lenses; such an approach, in turn, increased confidence in the robustness of the theory developed (Eisenhardt 1989; Yin 2009; Cerceau et al. 2014). The five cases ultimately selected for this study are –

*Kr Space* leverages its media credentials to get exposure for its tenants. It provides tenants with limited, yet critical resources—mainly cutting-edge information on IT trends and capital resources. It assists tenants to benefit from resources through course training and networking. *Innovation Works* focuses on the ICT sector in particular mobile, online and cloud computing ventures. It combines angel capital a large range of resources—training, mentorship, networking, marketing, strategy, and user experience testing. *Microsoft Ventures Accelerator* targets high potential innovative start-ups and has a less than 4% selection rate. It offers resources including office space, software, coaching and over 3000 technical engineers on hand to guide tenants. It focuses on expertise and thought leadership. *The Garage Coffee* is a non-profit and the most informal of the five incubators and acts as a networking, mentoring, and relaxing 24-h space to share knowledge, work on ideas and connect with likeminded individuals. The aim is to make entrepreneurship accessible and focus on social benefit rather than economic return. *Beijing Maker Space* uses a maker space to combine creativity with an incubator service. Its non-membership service, is non-profit, enabling Makers to experiment with prototypes. The membership service (over 300 members) has strict selection criteria. Members can avail of resources in return for company shares and/or cash.

### 3.3 Data collection

Data on the five TBIs were predominately gathered through interviews ranging from an hour-long face-to-face interview to a 15-min telephone interview complete with follow-up questions over email. The interviews were conducted in 2013/14 with elite individuals (founders, COO, managers) at each TBI (see above for overview of case). Elite interviewing is a type of interviewing that focuses on particular prominent or influential people in an organisation or community. Such individuals can impart valuable information due to the positions they hold, such a position also enables them to provide an overall view of the organisation in question (Marshall and Rossman 2014). The research questions and framework provide focus and grounding for the study (Eisenhardt 1989), it also guided the interview protocol, which was used during the semi-structured interviews. The protocol covered five main areas: TBI background, strategic objectives, target customers, business model, and performance outcome (see Table 1 for a summary). Following completion of the semi-structured interviews the researchers took a site visit to the five incubators in order to experience the space, atmosphere and informally talk to some of the venture tenants. Finally secondary data was gathered from online sources and public documents such as the incubator's official website, newspapers, and industry reports.

## 4 Findings

A robust structured summary of each case is laid out in Table 1. The interviews provided insights into TBIs business strategy through disclosure of their resources, strategic objectives, and target customers (incubatees). Their business models were assessed using the criteria of transaction activity, structure and governance. Finally performance was queried through questions focused on number of firms incubated, valuation of firms incubated, and ability of incubatees to obtain VC funding. The business strategies of the TBIs were examined through exploration of their resources, strategic objectives and target customers.

**Table 1** Details of TBIs

Company	Availability and Absorption of Resources	Incubator's Strategic Objectives	Target Customers	Business Model	Performance Outcome
36Kr (Kr Space)	<p>Kr Space adopts a strategy of low availability but high absorption of entrepreneurial resources. Revenue is generated by its media platform and VC investments. It has hosted over 1000 entrepreneurs and generated in excess of USD620 million</p>	<p>Become a Chinese based leader in science and technology media. Provide understanding of current and future internet industry trends through online reporting and by supporting bright, upcoming IT-based start-ups</p> <p>Improve the entrepreneurial environment in China through online focus and support of IT start-ups</p> <p>Attract top Chinese entrepreneurs to incubate in our space</p>	<p>Target customers are high potential start-ups. Compared with other incubators, 36Kr has strengths in providing tenant ventures information about IT development trends and entrepreneurship investment, top venture capital resources, access to global capital and excellent working place</p> <p>Selection is strict 1.44% out of 5000)</p>	<p><i>Transaction Activity</i> resource optimization through training courses, mentorship and networking in addition to tangible resources like finance</p> <p><i>Structure</i> Horizontal—enabling communication/access between all people</p> <p><i>Governance</i> Cooperative, tenants can decide when to leave</p> <p>Revenue generates from 36Kr's media platform and venture capital investments</p>	<p>36 Kr hosted over 1000 top entrepreneurs, many of whom obtained venture capital investments</p> <p>The graduated projects are estimated with the value approximately US\$620 million*</p>

Table 1 (continued)

Company	Availability and Absorption of Resources	Incubator's Strategic Objectives	Target Customers	Business Model	Performance Outcome
Innovation Works	Innovation Works assists venture tenants in absorbing resources suggesting a strategy of high availability and high absorption of entrepreneurial resources. It takes on average 17.6% shares from incubation tenants. Within four years of operating it had incubated over 200 projects, raised over US\$755 million, with 25 start-ups valued at over US\$100 million	Popularize key entrepreneurial activities in China Provide all aspects of high-level entrepreneurial services to early stage high potential start-ups in order to help them grow as quickly as possible	Target customers are in the ICT sector, in particular those working on mobile internet, online media, e-commerce and cloud computing Innovation Works specializes in early-stage IT start-up investment and provides value-added services, such as—angel capital, venture capital, top talent, technological support, strategic guidance	<i>Transaction Activity</i> ensures high quality of resources through network of top investors, organisations and highly experienced staff. Strict selection ensures quality start-ups likely to absorb resources optimally. Training, networking, mentorship, access to suppliers etc <i>Structure</i> Horizontal structure <i>Governance</i> No interference with daily running of tenant operations. But cooperation, competitive, and culture governance mechanisms in place Innovation Works acquires on average 17.6% of shares from incubation tenants	Innovation Works has incubated over 200 projects so far By the end of 2012, over US\$755 million was raised through American and Chinese foundations There are more than 25 start-ups valued over US\$100 million

**Table 1** (continued)

Company	Availability and Absorption of Resources	Incubator's Strategic Objectives	Target Customers	Business Model	Performance Outcome
Microsoft Ventures Accelerator	<p>Microsoft Ventures Accelerator implements a high availability and high absorption of entrepreneurial resources strategy. All tenants present their performance outcomes on Startup Display Day 6 months after incubation. The horizontal structure enables tenants, resource providers and mentors to easily communicate. In just over 2 years of operating 106 tenants had graduated and a funding capital in excess of US\$1.3 billion was attained</p>	<p>To integrate into the entrepreneurship ecosystem in China                      Provide world class, professional incubation services to early-stage innovative and entrepreneurial teams                      Support them to grow their business and finally realize their entrepreneurial dreams</p>	<p>Target customers are innovative entrepreneurial high potential, early stage teams                      With lower than 4% selection rate incubatees selected based on three criteria: Business model: idea must have high potential                      Entrepreneurial Team: preference for college entrepreneurial teams due to less profit conflict                      Novelty of technology</p>	<p>Transaction Activity:                      Focus on expertise, strict selection criteria, large array of resources - 3000 Microsoft technical engineers are available to tenants in addition to mentorship resources from prior tenants keep in touch with graduated tenants                      Structure: Horizontal structure                      Governance: Tenants viewed as partners                      Cooperation, competitive, and innovative culture governance mechanisms                      Microsoft does not seek shares in return but pursues a cooperative relationship</p>	<p>By August 2015 106 tenants graduated                      99% of tenants got funding—a total capital over US\$1.3 billion</p>

Table 1 (continued)

Company	Availability and Absorption of Resources	Incubator's Strategic Objectives	Target Customers	Business Model	Performance Outcome
The Garage Coffee	<p>The Garage Coffee implements a low availability and low absorption of entrepreneurial resources strategy. Operational costs are covered through concession sales and advertisement sales.</p> <p>Within 2 years it was awarded "Chinese Innovative Incubator" and "One of the Top Ten New Chinese Incubation Brands" from the Regional Committee and some emerging ventures had secured angel capital</p>	<p>Garage Coffee core objective is to create a favourable entrepreneurial environment in China for very early-stage start-ups</p> <p>It provides a low cost and convenient entrepreneurial environment, where information can be freely exchanged and entrepreneurs can connect with investors</p>	<p>Customers fall into two groups: open access customers—unlike other incubators, Garage Coffee has neither entrance requirements nor selection standards, every individual and team with entrepreneurial passion or fresh ideas are welcomed</p> <p>Semi-open access: project-based teams. The teams are members of "Garage Coffee Member Club".</p> <p>To hold membership the team must have a comparatively mature project/idea</p>	<p><i>Transaction Activity</i></p> <p>Entrepreneurs can enjoy one-day free office environment costing one cup of coffee, advertising space, internet access</p> <p><i>Structure</i></p> <p>Loose structure, no hierarchy, less than 30 staff many students or volunteers</p> <p><i>Governance</i></p> <p>Tenants are supported in a social manner rather than an economic one, there is no formal governance over start-ups operating in this space</p> <p>Operating costs are covered through concession sales and advertisements.</p> <p>Focus is on social benefit creation instead of economic return</p>	<p>Some teams obtained angel capital</p> <p>In 2012, Zhong Guancun Management Committee granted Garage Coffee the titles "Chinese Innovative Incubator" and "One of the Top Ten New Chinese Incubation Brands"</p>

**Table 1** (continued)

Company	Availability and Absorption of Resources	Incubator's Strategic Objectives	Target Customers	Business Model	Performance Outcome
Beijing Maker Space	Beijing Maker Space non-membership service illustrates a strategy of low availability and low absorption of entrepreneurial resources. The membership service corresponds to a strategy that heralds high availability and high absorption of entrepreneurial resources. This is Asia's largest maker space; over 20 projects have successfully emerged with four valued at almost USD64 million combined	Aim is to self-equip people through "Doing it by yourself" programs. Assisting them in turning new ideas into reality and promote Maker culture in China Provide venture tenants necessary incubation services to foster business growth	<i>Two sets of target customers:</i> Makers and start-ups with businesses related to intelligence hardware and internet-based products Incubatee selection follows three standards: Product prototype: There must be a product/functional prototype developed. This is lowest entrance standard to Maker Space Market potential: The prototype must have sufficient market potential Entrepreneurial team: People are key and members profiles will be considered	Transaction Activity Non-members: physical maker space and open laboratory to experiment <i>Transaction Activity</i> <i>Members Training,</i> networking, mentorship, marketing, funding <i>Structure</i> Horizontal <i>Governance</i> Strict selection criteria and performance assess at regular intervals to determine success. Involvement in product sales to boost income For members Beijing Maker Space may take a percentage share of ventures, take a cash payment, or both	Maker Space is Asia's largest maker space with over 1000m2 activity space and 300m2 prototype making space with complete manufacturing facilities With over 300 membership makers joined Beijing Maker Space it has incubated over 20 projects with 4 valued at almost USD64 million*

\*United States Dollar value calculated on the exchange rate between RMB and USD on 17 April 2018. 1USD=7.2752RMB

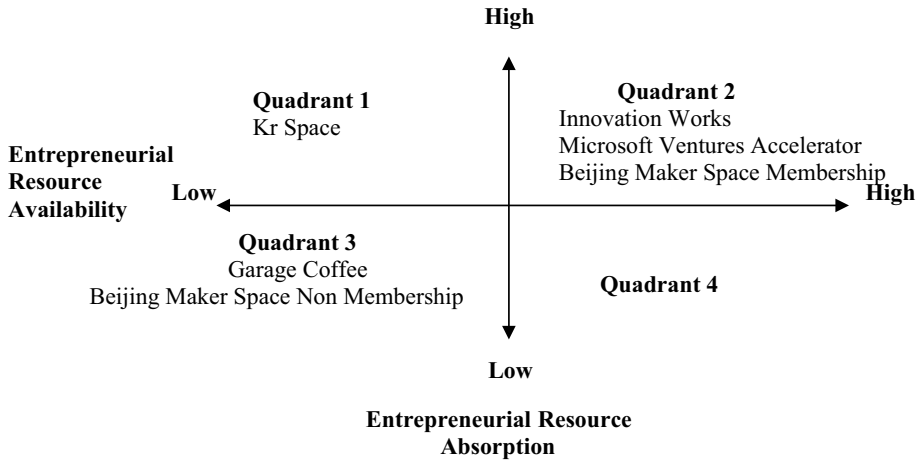


Fig. 2 Strategy categorization of five sampled new Chinese incubators

When considered together these three variables give an insight into the strategic approach of the TBIs. The incubator strategies fell into four sub-types (see Fig. 2). Entrepreneurial Resource Availability is on the X-axis; this represents the availability of resources that the incubator can provide to tenants, such as financial or support services. Entrepreneurial Resource Absorption is on the Y-axis; this illustrates the ability of the firms to absorb the resources available to them. These are then explained in greater detail below.

#### 4.1 Quadrant 1: low availability but high absorption of entrepreneurial resources

This type of incubator strategy aims to provide venture tenants very limited types of entrepreneurial resources but focus on assisting them in absorbing entrepreneurial resources fully. Comparatively mature, high potential entrepreneurial teams are target customers of this strategy. These teams possess clear and bright business prospects but need specific types of entrepreneurial resources for growth. Incubators implementing this strategy build their competitive advantages in two ways: improving venture-tenant's absorption capability of entrepreneurial resources and accelerating incubation speed. Kr space occupies Quadrant 1. According to Zhiyong Tian, the founder of Kr space, "The uniqueness of Kr space lies in the offer of a frontier Science and Technology media platform coupled with the provision of high-end venture capital". The TBI pitches itself as a cutting edge leader in the science and technology space and has the financial backing to select the best incubatees, as Tian acknowledges, "we attract top entrepreneurs with business potential in China, meet their specific incubation needs and foster their growth".

#### 4.2 Quadrant 2: high availability and high absorption of entrepreneurial resources

TBIs adopting this incubator strategy aim to provide venture tenants a wide range of entrepreneurial resources and also assist them in absorbing entrepreneurial resources in-depth. The target customers of this strategy are early-stage, high potential entrepreneurial teams, which need various entrepreneurial resources. Incubators implementing this strategy build



up their competitive advantage in two ways: improving the availability of various entrepreneurial resources and assisting venture tenants in absorbing entrepreneurial resources fully. Innovation Works, Microsoft Venture Accelerator and Beijing Maker Space Membership occupy Quadrant 2. The breadth of resources and assistance in resource absorption is illuminated by Ms. Ning Tao, Chief Operation Officer of Innovation Works who explains that “being a third party, we have only one customer—the entrepreneur. We do what entrepreneurs need. We provide money, technology, strategy, talent, law service, marketing, team building and management, financial management, networking, patenting...our objective is to foster IT ventures at the early stage and accompany them to growth”. Similarly, Ms. Wei Yang, operation manager at Microsoft Ventures Accelerator, provided an overview of her TBIs extensive program—“Compared to other incubators, our ventures accelerator provides more full-scale services and continuously updated mentorship service to start-ups at the early stage. This includes office space, world-class mentors, cloud services, product exhibition day, access to overseas investment platforms, visits to graduated ventures, meeting with VCs, access to networks of potential customers, monthly entrepreneurship gatherings, experienced staff from Silicon Valley, training and consulting services...our long-term strategy aims to shape ventures so they our partners or a part of Microsoft in the future instead of Microsoft competitors...when we select incubatees, we focus on the business potential of the entrepreneur’s idea, the entrepreneurship team and potential for technological advancement”. The final TBI in Quadrant 2, Beijing Maker Space Membership, was similar in their approach. Founder and CEO, Shenglin Wang, said the TBI “provides membership incubatees with consulting services, supply chain support, hardware, marketing, pre-sale services, financing and other necessary resources. We can cooperate with other incubators to help incubatees grow fast. Our target customers are those linked to intelligence hardware and IT. The selected incubatees should provide us with prototypes that have strong business potential and are supported by an experienced entrepreneurial team”.

### 4.3 Quadrant 3: Low availability and low absorption of entrepreneurial resources

This type of incubator strategy aims to provide as many venture tenants as possible essential types of entrepreneurial resources. All entrepreneurial individuals and startups other than high potential entrepreneurial teams are target customers. In order to provide as many target customers as possible access to entrepreneurial resources, incubation cost reduction is the core issue. Hence, incubators try hard to provide essential entrepreneurial resources and decrease non-essential entrepreneurial resources. The provision of essential entrepreneurial resource to target customers, and the drive for incubation cost reduction, differentiates these incubators from others. Garage Coffee and Beijing Maker Space Non Membership populate Quadrant 3. The following excerpt from Garage Coffee’s Business and Media Manager, Yu Sun captures the strategy of this non-profit organization, “Our purpose is to create a platform where we can provide entrepreneurs with a cheap and convenient networking and co-working space, open 24/7, with refreshments, Internet access and a notice/bulletin board. The platform helps early stage entrepreneurs communicate with each other and exchange information and resources. We do not invest in ventures nor do we act as an investment mediator. Compared with other incubators, Garage Coffee has no entrance thresholds and it is open to everyone who has entrepreneurial passion and ideas”. This approach aligns with the activities of the non-profit wing of Beijing Maker Space, the Beijing Maker Space Non Membership. The founder and CEO, Shenglin Wang said, “Maker

space invites people to get involved in Science and Technology activities and promotes the ‘maker culture’...It is an open lab. Artists, designers, software programmers, DIY-ers, and others are welcome to the maker place, to experience the learning process, no matter how small that may be, and to cooperate with other makers...It is like a gym centre equipped with fitness machines, coaches and some trainings...It is not for-profit and we hope more and more people can participate in technological innovation”.

#### 4.4 Quadrant 4: High availability and low absorption of entrepreneurial resources

This type of incubator strategy aims to provide venture tenants multiple types of entrepreneurial resources but cares little about their entrepreneurial resources absorption. As this type of incubator strategy cannot achieve the objectives of cost advantage and cannot achieve a never-ending supply of entrepreneurial resources, it is hard to attract high potential entrepreneurial teams. It appears that incubators with this type of strategy cannot survive in practice and they are not viable.

The incubators considered the fit between their pursued strategy and adopted business model, the complementarity of which enhances organization performance (Zott and Amit 2008). For example, in Kr Space, its strategy is *low availability and high absorption of entrepreneurial resources* its business model focuses on improving incubation speed through providing tenants limited but specialized resources (cutting edge technology information and venture capital) and assisting tenants in absorbing the entrepreneurial resources. It is reported that the incubation cycle in Kr Space is about 3 months whereas it is 6 months for Innovation Works and Microsoft Ventures Accelerator. Kr Space practices the business model by organizing resource optimization activities, selection activities and niche entrepreneurial resources. Using a flat, non-hierarchical transaction structure and by three transaction governance mechanisms (cooperation governance mechanism based on common interest, free of charge pricing governance mechanism and culture governance mechanism). The business model matches its strategic objective: provide cutting edge technology information and financial resources to high potential start-ups.

Contrastingly, Innovation Works, Microsoft Ventures Accelerator, and Beijing Maker Space Membership pursue a strategy of *high availability and high absorption of entrepreneurial resources*. High potential, young startups are target customers of these incubators. The core purpose of the business model is to improve startups’ success by providing varying entrepreneurial resources and assisting startups in absorbing the resources fully. For transaction content, there are multiple and complex activities designed for this kind incubator business model. Optimization activity, selection activity, multiple types of resources provision services and assessment activity are all included. Meanwhile, various types of resources provision are diversified and customized. All three incubators provide course training, internal and external social network activity, user experiences testing, marketing activities, human resource recruitment services and so on. Each also provides different customized services, for example, Innovation Works provides a one-to-one tutor assistance service, Microsoft Ventures Accelerator provides Window Azure service on the basis of Microsoft cloud technology, Beijing Maker Space Membership provides high quality experimentation equipment and facilities. For transaction structure, all three incubators adopt a flat, non-hierarchical structure thus all involved in the incubator are equal

and communicate with each other freely. For transaction governance, cooperation, competition, and culture governance mechanisms are the commonly used.

Garage Coffee and Beijing Maker Space Non-Membership implement a strategy of *low availability and low absorption entrepreneurial of resources*. The objective is to make limited entrepreneurial resources available for as many entrepreneurs as possible, more than anything they offer a nurturing environment for networking and learning. Individuals and teams with nothing more than entrepreneurial dreams are welcome in these two incubators. In order to fulfill such a strategic objective, transaction content is designed as simply as possible: resource optimization activities (e.g. newcomer presentations and noticeboards in Garage Coffee) and limited resources provision (physical space, wifi, and select hardware facilities). This business model also adopts a flat, non-hierarchical transaction structure. Culture governance mechanism and low price or even free of charge governance mechanisms are designed as major transaction governance mechanisms in this type of incubator business model.

The incubators in this study are relatively new, market-oriented incubators, they do have some common features in business model design. With regards transaction content, resource optimization activities and social network activities are carried out by all the incubators to some degree, such optimization ensures the best use of resources provided by incubator. Social network activity is an essential activity for every incubator, these new generation incubators identify one of their roles as a communication platform for every actor in the incubation process. Thus they are transforming into a network incubator (Bruneel et al. 2012). In respect to transaction structure, all incubators adopt a non-hierarchical transaction structure, thus ensuring free flow of communication, this type of flat structure is not common in China but it is a usual approach to adopt when striving for innovation amongst start-ups. In the governance mechanism aspect, the incubators management style corresponds to their strategy. Each incubator identifies their target customers and assesses their relevant needs; it then embarks to fulfill these needs through the provision of resources and services. Unique services such as brand, specialization, and culture are the commonly used by incubators to attract entrepreneurial individuals and teams. Common interest-based cooperation mechanisms, competition-based selection mechanisms and pricing mechanisms (low price or even free of charge of office provision) are selected governance methods and aim to improve incubation efficiency. Further, the business model of each incubator pursues efficiency and innovation. Though efficiency focus is not the same for each incubator (Quadrant 1 pursues incubation speed efficiency; Quadrant 2 pursues incubator assisted absorption efficiency; Quadrant 3 pursues spread efficiency utilizing limited entrepreneurial resources), it is the essential focus for incubator business model design. The emerging new incubator business models pursue innovation focus by offering key services to target customers, designing non-hierarchical transaction structures and innovative governance mechanisms.

## 5 Discussion

The study set out to answer three research questions on the business models and strategies of TBIs in China. This section examines each of these research questions in detail and discusses the findings emerging from this study.

## 5.1 TBI business strategies

### 5.1.1 What business strategies are implemented by new generation TBIs in China?

The key factors that impact the strategies adopted by TBIs in this study are the availability of resources as this informs their strategic objectives. The venture tenants ability to absorb resources is an important consideration and it shapes the way in which TBIs target customers. The incubators adopt one of three particular strategies. In Quadrant 1 (low availability and high absorption of entrepreneurial resources strategy) the TBI is a co-operative; it focuses on becoming a leader in science and technology media. The TBI leverages its knowledge of the industry and trends in the market by supporting upcoming IT start-ups. The TBI is complimentary to its primary strategic objective of becoming an important media player. Quadrant 2 (high availability and high absorption of entrepreneurial resources strategy) is populated by the TBIs operating for profit. This is a clear-cut, traditional incubator strategy to maximize profits and assist in translating potential inventions into commercially viable innovations. They attract entrepreneurs with well-honed, considered business ideas and they provide them with an array of supports necessary to get their idea to market and build and grow a profitable successful business. Quadrant 3 (low availability and low absorption of entrepreneurial resources strategy) centres on accessibility. The non-profit TBIs operating in this space are socially driven and focus on building a community that is open to all. It is geared towards attracting those with a seed of an idea enabling them to network and find partners to explore their concepts in its early stages. Such incubators are necessary to bridge the gap between having a vague concept and having a viable start-up. These types of TBIs provide a safe place for low risk experimentation, that although they may not be profitable (hence they are non-profit organisations) they are a necessary feature in innovative, forward-thinking markets. They enable thinkers, tinkers and makers to meet, network, and collaborate in order to hone, polish, test, and evaluate their ideas, inventions and concepts.

## 5.2 TBI business models

### 5.2.1 What business models are adopted by these new incubators?

Examining the TBI business models from an economic, operational and strategic perspective (Morris et al. 2005) the similarities and differences become apparent. Incubators exist for a myriad of competing reasons, as such their business models may differ depending on their objectives and this study highlights the varying strategies incubators may adopt. TBIs set up with an economic motive derived profitability from taking a share in the tenants they hosted whilst those that are socially driven forgo economic return focusing instead on the social benefits derived from supporting business venturing. However despite these differences, incubator business models do have some common features: they provide specialized services to target customers; adopt flat, non-hierarchical transaction structure; conduct market-based governance mechanisms as opposed to hierarchical governance mechanisms. A horizontal management structure preferred by TBIs in this study

affords them the flexibility and agility necessary for operating in such a pioneering space. The strategies the TBIs adopt are very much guided by the resources they possess as discussed in the previous section.

### 5.3 Matching TBI models and strategies

#### 5.3.1 How do their business models match their business strategies?

“Selecting a business strategy is a more granular exercise than designing a business model” as a business model “is more generic than a business strategy” (Teece 2010, p. 180). From a business model perspective, the TBIs broadly fit into one of three groups: for-profit, cooperative, or non-profit socially driven incubators. The resources the TBIs have are central to their business strategy. The for-profit TBIs leverage their resources to support and fund carefully selected ideas and turn them into profitable start-ups. The cooperative TBI uses their existing knowledge and position in the media space to support new start-ups in their market, while the non-profit TBI has few resources but acts as a community builder and networking space, crucial to facilitate partnerships between potential business partners.

## 6 Conclusions and policy implications

This study set out to examine the strategies implemented, and business models adopted by next generation TBIs in China. TBIs are no longer solely created and funded through government action; their growing popularity and success is attracting private individuals and charitable initiatives alike. The shift away from dependence on government-sponsored TBIs comes to the fore in this study where all TBIs examined are not reliant on government backing. The growing global support of TBIs is leading to new types of mechanisms, however the complex, multifaceted nature of TBIs leaves many gaps in our knowledge of the incubation process (Mian et al. 2016). Hausberg and Korreck (2018) posited that more data is needed on the differences between various types of TBIs; although this study covers a small sample of incubators it includes three types: cooperative, for-profit or non-profits. These moves towards a more market-based economy highlights that the TBI industry is maturing in China and TBIs can thrive without government financial backing (Li 2016). It is important to note these changes as China have previously been regarded as a region where there is “a paucity of risk capital” and the incubation market has relied to a large extent on government funds to support TBIs (Chandra and Fealey 2009, p. 69). In fact TBIs in China have been seen as “a public good entity with a social mission” (Chandra and Fealey 2009, p. 74). Therefore the shift towards privately funded TBIs is a marked change, particularly since prior government involvement negatively impacted incubators’ market orientation and entrepreneurial proclivity (Chandra and Fealey 2009). Furthermore, not only are the next generation TBIs thriving, they are experimenting with various business models beyond the for-profit model. Additionally the presence of large, global corporations in the region,

operating in the TBI space such as Microsoft with Microsoft Ventures Accelerator, illustrates the potential within the Zhongguancun region of Beijing. The role of the Chinese government is still important, it decides the rules of law and tax policies that the TBIs must adhere to, in addition to negotiating the international trade agreements that impact a global industry like technology and shape the success of the country's high-tech start-ups.

This study sheds light on the ways in which TBIs business models match their strategies. Understanding TBIs strategies, business models and the alignment of both provides insight into the drivers, mechanisms and processes that occur within a TBI. According to (Mian et al. 2016) a unified theory of incubation covering TBI mechanisms is needed and while this study does not offer such an extensive theory it does offer initial insights into such mechanisms. For the TBIs in this study the business strategies they pursued were guided by the resources they had at their disposal. This resource-based approach is indicative of the entrepreneurial orientation and market-based perspective of the TBIs. A perspective that is necessary given the move away from government involvement. TBIs understand the resources they have and when considering these resources in tandem with their objectives they then decide their entrance criteria for tenants. The for-profit TBIs are naturally ambitious whilst the non-profit TBIs are more geared towards nurturing an open, risk-taking, network-building community. The ability of their tenants to absorb the resources is central but this can also be impacted by the TBI if they choose to provide mentoring services or training to ensure effective transference of resources and skills. Figure 2 illustrates the relationship between resource availability and resource absorption amongst the TBIs in this study. It offers a first step towards a deeper understanding of the mechanisms of various TBI types as called for by Mian et al. (2016).

A recent review by Hausberg and Korreck (2018) discusses the scarcity of research focusing on corporate incubators (those sponsored by existing large companies) and their differences to private independent incubators; the addition of the Microsoft incubator and the way in which it leverages in-house resources whilst navigating venture tenants need for independence is an added point of interest. This study moved away from the generalist versus specialist arguments that have populated the literature to date (Aernoudt 2004; Grimaldi and Grandi 2005; Haapasalo and Ekholm 2004; Schwartz and Hornych 2008; Vanderstraeten and Matthyssens 2012) and presented a new perspective through which to examine incubators—one that includes both the resources of the incubator in addition to the absorption abilities of the venture tenants. As incubators evolve in their sophistication it is necessary that the studies exploring such entities appreciate the layers of complexity.

From a policy perspective it is important to note the relationship between the availability of resources and the venture tenants ability to absorb resources. Whilst providing new innovative firms with resources is both necessary and useful it is also important to track and examine the various factors that inhibit or promote resource absorption. Chinese incubators may provide advice on government policy (Wang et al. 2008) and government policy can be particularly influential in the Chinese context. An important point illuminated by this research is that rather than increasing resources sometimes it may be more beneficial to run training programs and provide advice to ensure that

existing resources are adequately utilised. Along a similar vein research by Lin et al. (2012, p. 2110) found that “the more government policy resources available the less likely the incubator will be to develop the operating and networking capability that is critical to incubator service performance”. Therefore it is important that the government tracks the use and success of resources in addition to providing them.

Future research examining incubators should include an insight into the goals and objectives of each incubator as opposed to operating on the expectation that all incubators have the same set of objectives. Furthermore this study is centred on one, important, yet relatively limited area in China, further studies could apply the model presented in this paper to a broader geographical area and to a larger set of incubators. This would assist in corroborating or broadening the proposed model. As Hausberg and Korreck (2018) argued more studies are needed that examine corporate incubators and the various issues they must navigate compared to private independent incubators. Furthermore, future studies may further examine the relationship between incubator and venture tenant rather than focus on incubators in isolation. The TBIs in this study were all in their early stages (three TBIs less than 10 years in operation, one TBI less than 11 years in operation at the time of data collection), a study exploring mature TBIs and the way in which they continue to develop, adapt, and strategies may be of interest.

One of the key limitations of this study is generalizability, the study was conducted with a limited number of incubators and in a narrow geographical area. Furthermore the data was primarily gathered through one-time interviews so the study is based on a snapshot of their responses at the time of the interview. In an effort to overcome these limitations the extant literature was explored in detail before gathering primary data and secondary corroborative data was gathered where possible as a means of increasing reliability and validity. Overall this study contributes to the literature by providing deeper insights into a new generation of incubators in emerging economies like China. Most studies on Western countries’ incubators focus on business innovation centers, university business incubators, independent private incubators and corporate private incubators. The examination of the ways in which incubator strategy fits business model is largely neglected, this research aims to contribute to this area and provide insights into the new breed of technology incubators emerging from China. More generally this study provides insights into how business models are designed to match an organisation’s strategy. China has accumulated a lot of experience in guiding government-sponsored incubators but this emerging set of market-oriented incubators is a new topic for researchers, incubation practitioners, and policy makers. This paper suggests that incubation policy makers should facilitate communications between market-oriented incubators and traditional government-sponsored incubators, provide favorable conditions for traditional incubators to learn from market-oriented incubators, and assist them in developing appropriate strategies and complementary business models.

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## Appendix

See Table 2.





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