

Article

Understanding Incubated Startups' Continuance Intention towards Entrepreneurial Incubation Platforms: Empirical Evidence from China

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Abstract: In recent years, despite the rapid growth in the number of entrepreneurial incubation platforms in China, many of them are experiencing the sustainability dilemma caused by the loss of incubated startups. However, there is a dearth of research that explores how to promote incubated startups' continuance intention towards entrepreneurial incubation platforms. Addressing this gap, the present study develops a dedication–constraint model based on the dual model framework, investigating the distinct impacts of entrepreneurial support and relationship-specific investment on incubated startups' continuance intention towards entrepreneurial incubation platforms. A sample of 534 incubated startups in China was employed to test the research model, and the structural equation modelling was adopted for data analysis. Empirical results indicate that the dedication-based mechanism and constraint-based mechanism simultaneously, yet differently, affect incubated startups' continuance intention towards entrepreneurial incubation platforms. Specifically, in the dedication-based mechanism, social support and technical support are revealed as the antecedents to relationship satisfaction that significantly leads to benefit-based dependence. As for the constraint-based mechanism, setup activity is the only salient indicator to termination costs, which consequently has a positive effect on cost-based dependence. Incubated startups' continuance intention towards entrepreneurial incubation platforms is influenced by both benefit-based dependence and cost-based dependence, ultimately.

Keywords: entrepreneurial incubation platforms; incubated startups; continuance intention; the dual model framework



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1. Introduction

Business incubators have been an increasingly essential way for supporting startups for their entrepreneurial endeavors, building on resource endowment, and gaining legitimacy [1,2]. These organizations, in fact, are two-sided platforms connecting with entrepreneurial support demanders (incubated startups) and suppliers, such as regional governments, universities, and investors simultaneously. As such, business incubators (hereafter “entrepreneurial incubator platforms”) play a critical role of network mediation between these two parties [3]. In this two-sided platform, the increase in the number of incubated startups will create a large resources demand for suppliers, thereby attracting more suppliers to join the entrepreneurial incubation platform. Furthermore, from the point view of incubated startups, the platform's network benefits increase along with the number of resources suppliers' increase, because this indicates that more low-cost and high-quality resources can be available. Thus, the number of incubated startups is the key to this virtuous circle of network effect, which determines the sustainable development of entrepreneurial incubation platforms [4].

Driven by the national strategy of mass entrepreneurship and innovation, China has seen a rapid increase in the number of entrepreneurial incubation platforms, which has attracted worldwide attention [5]. According to the China Business Incubation Development

Report issued by the Ministry of Science and Technology of China in 2022, the number of entrepreneurial incubation platforms has reached 6227 in 2021, with an annual growth rate of 20.83% since 2015. However, in recent years, entrepreneurial incubation platforms in China are experiencing the sustainability dilemma of maintaining incubated startups despite their rapid proliferation [6–8]. Diminished participation of incubated startups leads to waste of platform resources and greatly reduces the platform's income [9], resulting in their inability to attract new bilateral users to detonate the platform network effect [4]. Ultimately, the entrepreneurial incubation platform will gradually shrink and even collapse. A typical case is the failure of the Peacock Institution. As one of the earliest entrepreneurial incubation platforms in Shenzhen city, the Peacock Institution's initial occupancy rate in 2014 was as high as 95%. Thereafter, problems such as a deficient entrepreneurial support system and low operational efficiency caused by the rapid expansion of the Peacock Institution were exposed [10]. Besides, as competition in the incubation market increases, the Peacock organization was committed to attracting potential users by reducing the cost of entry and use for incubatees. However, this strategy reduced the cost of incubated startups to abandon the platform. The occupancy rate of the Peacock Institution dropped sharply to 40% by the end 2015, which directly led to a break in the capital chain. Finally, the Peacock Institution was demolished due to arrears in the rent of Zhongzheng company. Overall, it is of great importance to investigate how to promote incubated startups' continuance intention towards entrepreneurial incubation platforms.

The incubation relationship between entrepreneurial incubation platforms and incubated startups is the channel for resource exchanges between these two parties, which has attracted extensive attention from scholars [9]. Prior studies mainly focus on the selection criteria of incubated startups at the relationship establishment stage [11,12] and incubation performance at the relationship performance acquisition stage [13,14]. Far too little attention has been paid to the incubation relationship maintenance stage, resulting in a dearth of research that explores the factors and mechanisms that lead to incubated startups' continuance intention towards entrepreneurial incubation platforms, in particular empirical research for the Chinese incubation context. In recent years, China has been actively guiding the market-oriented development of entrepreneurial incubation platforms, encouraging them to make profits from incubation activities so as to build an effective profit model [9,10]. Thus, incubated startups, on the one hand, receive entrepreneurial support from a certain platform [1]. On the other hand, this platform can exert an influence on the behavior of incubated startups by virtue of resource control advantages [15]. Thus, incubated startups must obey the reciprocity norms and invest time, efforts, and especially money according to the rule of the platform in establishing and developing the incubation relationship with this platform. In review of this, the incubation relationship should be a social exchange relationship [16,17], which determines that there are two strikingly different forces that predict incubated startups' continuance intention. One is that incubated startups genuinely desire to continue to participate in the current platform because of the irreplaceable entrepreneurial support offered by this platform. The other one is that incubated startups need to maintain the exchange relationship with the current platform because constraint factors of relationship-specific investment make the relationship termination become costly [18]. Accordingly, this study employs the dual model framework that can provide a valid theoretical lens to examine social exchange relationship maintenance through the dedication-based and constraint-based mechanism in studying entrepreneurial incubation platforms, ensuring the systematic understanding of incubated startups' continuance intention towards entrepreneurial incubation platforms [19].

In summary, to address the entrepreneurial incubation platforms' sustainability, this study aims to generate a dedication–constraint model based on the dual model framework, investigating distinct influence mechanisms of entrepreneurial support and relationship-specific investment on incubated startups' continuance intention towards entrepreneurial incubation platforms. The rest of the paper is organized as follows. Section 2 reviews the literature related to entrepreneurial incubation platforms and the dual model framework.

Section 3 presents the research model and hypotheses. In Section 4, we describe the research methodology, including sample and measurement. Section 5 presents empirical results through testing the measurement model and structural model. Section 6 includes discussion and interpretation of the results, and finally we summarize the theoretical implications, practical implications, and limitations in Section 7.

2. Literature Review

2.1. Existing Research in Entrepreneurial Incubation Platforms

The two-sided platform development trend of business incubators endows incubated startups with the critical role of platform network creators, rather than mere beneficiaries of entrepreneurial support. Therefore, the entrepreneurial incubator platform-incubated startup relationship management has been a significant stream of entrepreneurial incubation platform research [9,20]. Based on the assumption that the incubation relationship, once established, can exist until incubated startups graduate, previous research mainly focuses on the selection criteria of incubatees at the relationship establishment stage and incubation performance at the relationship performance acquisition stage. First, the selection of incubatees is a multi-criteria decision-making problem [12], which needs to balance management team ability, financial strength, market prospects, social benefit, and compatibility with policies and the platform [11,12,21]. Second, incubation performance research can be summarized into two subcategories of incubated startups' performance and the platform performance. The former mainly investigates how entrepreneurial incubation platforms lead to the performance of incubated startups from resource-based [22,23], knowledge-based [13,24], and network-based theoretical perspectives [25–27]. The latter primarily focuses on the impact of the platform on regional development. It has been observed that entrepreneurial incubation platforms are essential for promoting regional innovation performance [2], economic growth [28,29], and business ecosystem development [14,30].

Recent evidence suggests that the incubation relationship maintenance is the prerequisite to achieving relationship incubation performance and the platform's sustainable development [9,20]. However, there are relatively few studies on exploring what leads to incubated startups' continued use of the entrepreneurial incubation platform. In existing literature, Ascigil [31] found that in Turkey, incubatees' trust in entrepreneurial incubation platform management exerted a positive effect on their preference to remain in their current platform, while the trust in other incubatees was insignificantly related to their preference to remain in their current platform. Han [7] surveyed incubatees in South Korea and concluded that the environmental support provided by entrepreneurial incubation platforms was positively related to basic psychological needs of incubatees, thereby significantly improving incubatees' internal motivation and the platform continuance intention. In addition, Han [7] also emphasizes that entrepreneurial incubation platforms in China are experiencing the challenge of the loss of incubated startups and called on scholars to carry out research based on the Chinese incubation context.

Collectively, despite considerable entrepreneurial incubation platform studies, they still suffer from paucities. Notwithstanding the important role of incubated startups' continuous use in entrepreneurial incubation platform sustainable development, previous research has paid more attention to the selection criteria of incubatees and incubation performance. There is a dearth of systematic understanding of the factors and mechanisms that lead to incubated startups' continuance intention towards the platform, especially empirical research conducted in the Chinese incubation context where the number of entrepreneurial incubation platforms is growing rapidly.

2.2. The Dual Model Framework

The dual model, derived from social exchange theory, has been proved to be a useful theoretical framework to analyze the long-term exchange relationship, such as personal relationships [32,33], consumer-retailer relationships [34], and user-provider relationships [18,19]. The dual model posits that exchange relationship maintenance is determined

by two distinct mechanisms. One is the dedication-based mechanism. This is an active mechanism of continuance intention in which one party genuinely desires to engage in the relationship because of unreplaceable benefits gained from it. The other one is the constraint-based mechanism that represents a passive form of continuance intention resulting from locked-in investments [35].

There are two different types of relationship commitments, namely, dedication commitment and constraint commitment, that characterize relationship maintenance, respectively [19]. A party's dedication commitment to a certain partner can be investigated through relationship satisfaction, which refers to the deeply affective commitment to the exchange relationship with this partner [17]. This type of dedication commitment is derived by perceived benefits gained from the exchange relationship because current benefits are reliable signals that infer future value generated from this relationship [35]. Ultimately, relationship satisfaction can be against short changes in partners' performance and bring about the relationship maintenance. The constraint commitment is often examined by switching cost [36] or termination costs [17], and it occurs when a party is locked into the "economic, social, or psychological" investments that they have made towards a specific relationship [35] because these relationship-specific investments cannot be reused in developing relationships with other alternative partners [37]. To avoid the potential losses, the investing party has to maintain the current exchange relationship [28].

Related research suggests integrating the concept of dependence into the dual model framework, thus further refining the development process of the dedication-based and constraint-based mechanism [35]. Dependence, as a unidimensional construct, reflects the vulnerable party's motivation to maintain the exchange relationship [38]. The global dependence measure concentrates on the extent of dependence, but it is incapable of explaining why one party depends on its partner and reveals nothing about the configuration or nature of that dependence [39,40]. To address this research gap, recent studies suggest that dependence should be divided into benefit-based dependence and cost-based dependence, representing positive and negative motivations to maintain the current relationship, respectively [40]. Thus, the roles of benefit-based dependence in the dedication-based mechanism, and cost-based dependence in the constraint-based mechanism, will be investigated in this study, with the purpose of providing a more systematic picture of incubated startups' continuance intention towards entrepreneurial incubation platforms.

While considerable research has been carried out with the application of the dual model framework in variable contexts, this model has received scant attention in the entrepreneurial incubation platform literature. Actually, regarding the market-oriented development of Chinese entrepreneurial incubation platforms, the platforms have formed the social exchange relationship with their incubated startups. Accordingly, the dual model framework is exactly able to depict the exchange relationship between incubated startups and entrepreneurial incubation platforms, and a better understanding of incubated startups' continuance intention can be yielded by the dedication–constraint perspective.

3. Research Model and Hypotheses Development

A dedication–constraint model is developed based on the dual model framework to explain the continuance intention of incubated startups towards entrepreneurial incubation platforms. As shown in Figure 1, incubated startups' continuance intention is determined by two mechanisms simultaneously, namely, the dedication-based mechanism and constraint-based mechanism. Specifically, in the dedication-based mechanism, relationship satisfaction is the central conception, which represents the dedication commitment of incubated startups to the exchange relationship with the current platform. Previous research argues that perceived benefits are the vital antecedents to relationship satisfaction [35]. In this study, benefits that incubated startups receive from entrepreneurial incubation platforms are mainly entrepreneurial support, including economic support, technical support, and social support [7]. Then, relationship satisfaction will lead to benefit-based dependence, which ultimately influences incubated startups' continuance intention.

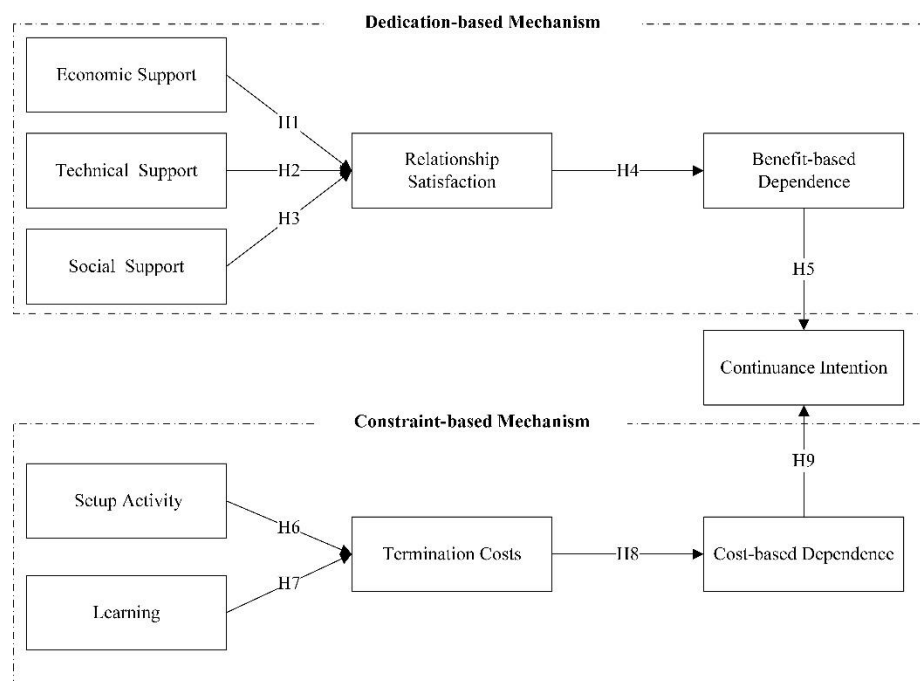


Figure 1. Research model.

In the constraint-based mechanism, termination costs are recognized as the central conception [17]. The reason why termination costs, rather than switching cost, are chosen as the constraint commitment is that incubated startups may not switch to a new entrepreneurial incubation platform after terminating their relationship with the current platform. Relationship-specific investment, which includes learning and setup activity, serves as the basis for the formation of termination costs of incubated startups, as this kind of investment is not easily transferred to other alternative platforms [37]. Subsequently, termination costs will lead to cost-based dependence that eventually induces incubated startups' continuance intention.

3.1. Dedication-Based Mechanism

Casual relationships of factors within the dedication-based mechanism are discussed below, and relative hypotheses are proposed.

3.1.1. The Effect of Entrepreneurial Support on Relationship Satisfaction

Economic support is the provision of an entrepreneurial incubation platform that allows incubated startups access to entrepreneurial resources at a low cost [7]. For example, incubated startups can use the office provided by the entrepreneurial incubation platform for free or at a lower rent. It has been regarded as the fundamental role of an entrepreneurial incubation platform. Relationship satisfaction, as the dedication commitment, refers to the incubated startups' favorable affective response that results from the evaluation of the exchange relationship with the platform [41]. It has been proven that relationship satisfaction of one party will increase in the case when the resources provided by its partner are useful or complementary to it [42]. Currently, the shortage of funds has been recognized as the most serious threat to the survival of startups [43]. Therefore, if incubated startups perceive that they can get expected economic support from the current entrepreneurial incubation platform, they will value this exchange relationship more and lead to favorable affective responses, that is, relationship satisfaction [17]. Hence, we propose that:

H1: *Economic support will have a positive effect on incubated startups' relationship satisfaction.*

Technical support is the availability of space, tools, materials, and entrepreneurial trainings provided by entrepreneurial incubation platforms for incubated startups to pursue

their entrepreneurial projects [7]. Nascent entrepreneurs often suffer from the lack of facilities and professional knowledge. Entrepreneurial incubation platforms can provide incubated startups with access to technical facilities, such as experimental space, equipment, and materials for their technology research and development activities, allowing incubated startups to have a realistic foundation of achieving innovation performance [44]. At the same time, entrepreneurial incubation platforms can provide professional knowledge and information for incubated startups from technology research and development to marketization, assisting them to avoid decision-making mistakes caused by entrepreneurs' cognitive bias and lack of management experience [45]. Thus, incubated startups will be satisfied with the exchange relationship with the platform if technical support offered by the platform is useful to their development. Hence, we propose that:

H2: *Technical support will have a positive effect on incubated startups' relationship satisfaction.*

Social support refers to opportunities provided by entrepreneurial incubation platforms for incubated startups to communicate with resource providers and peer entrepreneurs within the platform [25]. Extant studies have demonstrated that social support plays a significant role in incubated startups' survival and growth [46]. First, with the development of incubated startups, they place higher demands on the quality and diversity of resource supply. Entrepreneurial incubation platforms, possessing diversified relationships with entrepreneurial resource providers, can expand the scale and diversity of incubated startups' network through social support activities, providing more convenient conditions for incubated startups to obtain and utilize external knowledge and resources. Second, most startups located in one entrepreneurial incubation platform are engaged in different industries. Thus, they can learn heterogeneous skills and get useful assistance, such as information and advice, from the showcase or entrepreneurs workshop held by the platform [47], which may help entrepreneurs find effective solutions to the problems occurring in their entrepreneurial programs. What is more, entrepreneurs may receive feelings of relatedness, belongingness, and emotional support through social support [43]. Consequently, benefits gained from social support will lead incubated startups to make positive assessments of the relationship with the current entrepreneurial incubation platform. In review of this, we propose that:

H3: *Social support will have a positive effect on incubated startups' relationship satisfaction.*

3.1.2. The Effect of Relationship Satisfaction on Benefit-Based Dependence

Benefit-based dependence is defined as the positive motivation of one party to maintain the exchange relationship with its partner [40], arising when benefits generated by the current exchange relationship cannot be replaced by other alternatives [39]. Previous research has found that relationship satisfaction is a salient antecedent of a party's positive motivation to depend on the relationship with its partner, such as customer dependence [48], loyalty [49], and word-of-mouth recommendations [50]. In the exchange relationship of incubated startups and entrepreneurial incubation platforms, relationship satisfaction of incubated startups reflects a good post-usage experience, and, consequently, makes the current entrepreneurial incubation platform an irreplaceable partner. Besides, relationship satisfaction can reduce incubated startups' perceived risk within the relationship with a current platform [51]. Therefore, incubated startups believe that they can depend on this platform to gain benefits consistently in the future. Hence, we propose that:

H4: *Relationship satisfaction will have a positive effect on benefit-based dependence.*

3.1.3. The Effect of Benefit-Based Dependence on Incubated Startups' Continuous Intention towards Entrepreneurial Incubation Platforms

Previous research argues that benefit-dependence will lead to a long-lasting exchange relationship [39]. In an incubated startup–entrepreneurial incubation platform exchange, incubated startups who are dependent on the incumbent platform for supe-

rior entrepreneurial benefits are inclined to perceive competitive values [52] and experience the enjoyment of entrepreneurial goal fulfillment [53]. This can make the current entrepreneurial incubation platform be considered as an instrumental partner that can cooperate in the long run, thereby improving incubated startups' continuance intention to use the current entrepreneurial incubation platform. In this regard, we propose that:

H5: *Benefit-based dependence will have a positive effect on incubated startups' continuance intention towards entrepreneurial incubation platforms.*

3.2. Constraint-Based Mechanism

Causal relationships of factors characterizing the constraint-based mechanism are discussed below, and relative hypotheses are proposed.

3.2.1. The Effect of Relationship-Specific Investment on Termination Costs

When a party wants to initiate the exchange relationship with a potential partner, it has to invest time, efforts, and money to complete some setup activity. It is a common phenomenon that distributors make preparatory efforts to set up the exchange relationship with a certain manufacturer [17]. For example, distributors might have to establish a special logistics platform for storing and transporting partners' goods. Obviously, these preparatory efforts invested by distributors are relationally specific. Similarly, in an incubated startup–entrepreneurial incubation platform exchange, preparatory efforts are necessary for incubated startups in the process of setting up relationship with a specific entrepreneurial incubation platform, such as paying for rent, membership, and office decoration, as well as spending time and efforts to prepare qualification review materials. These tangible or intangible investments in setup activity will be useless if incubated startups terminate the relationship with the current platform. Thus, we propose that:

H6: *Setup activity will have a positive effect on termination costs.*

In an exchange relationship, one party is usually required to learn specific knowledge to meet its partner's cooperation criteria so as to promote resource exchange efficiency. For example, in order to improve the efficiency of channel relationship, manufactures often require their distributors to learn merchandising management techniques and participate in special employees' training programs [54]. Analogously, in the exchange relationship of incubated startups and entrepreneurial incubation platforms, the former has to spend time and effort to learn management rules and entrepreneurial support policies issued by a specific platform, with the purpose of cooperating with this platform successfully. However, the knowledge acquired by incubated startups is useless to develop relationships with other platforms because the management rules and relative policies among platforms are different from each other. Thus, incubated startups must invest more time and effort to learn about a certain platform, and more potential costs will be created when incubated startups terminate the relationship with this platform.

H7: *Learning will have a positive effect on termination costs.*

3.2.2. The Effect of Termination Costs on Cost-Cased Dependence

Cost-based dependence is defined as the negative motivation of relationship maintenance [40], representing the need of one party to continue the relationship with its partner due to the costs generated by terminating the current relationship [55]. Startups which have moved into an entrepreneurial incubation platform are easily locked into the termination costs generated by ending relationship with the current platform because incubated startups are likely unable or reluctant to afford the potential losses due to lack of funds. Thus, the termination costs play an important role in creating barriers to constraint that involve incubated startups leaving the platform. As a result, incubated startups have no choice but to depend on the current platform for achieving their entrepreneurial goals. In regard of this, we propose that:

H8: *Termination costs will have a positive effect on cost-based dependence.*

3.2.3. The Effect of Cost-Based Dependence on Incubated Startups' Continuance Intention towards Entrepreneurial Incubation Platforms

Prior studies indicate that if the buyers' cost-based dependence on a certain supplier is aroused, they are inclined to be insensitive to alternative suppliers [39], ultimately resulting in buyers' intention to maintain the current exchange relationship [56]. In this sense, in an incubated startup–entrepreneurial incubation platform exchange, where cost-based dependence is absent, incubated startups will be more concerned with scanning the outside environment to seek competitive entrepreneurial incubation platform offerings. However, in contrast, once the cost-based dependence of incubated startups toward the current platform is developed, they are more willing to maintain the exchange relationship with the incumbent platform so that they can avoid the disutility resulting from ending their relationship with the platform [57]. Therefore, we propose that:

H9: *Cost-based dependence will have a positive effect on incubated startups' continuance intention towards entrepreneurial incubation platforms.*

4. Methodology

4.1. Sample

To test the research model, a survey was employed to collect data from startups located in national entrepreneurial incubation platforms in the Shandong province of China [58]. Incubated startups from Shandong Province are chosen as respondents for two reasons. First, according to the latest data issued by 2021 "China Torch Statistical Yearbook", Shandong possess the most entrepreneurial incubation platforms in northern China, which is representative in terms of entrepreneurial incubation platforms' construction. Second, the economic growth of Shandong still primarily relies on the expansion of traditional industries. In view of the important role of entrepreneurial incubation platforms in nurturing high-tech industries, it is important for Shandong province to ensure the sustainable development of entrepreneurial incubation platforms.

First, the initial questionnaire was distributed to 10 managers of incubated startups and three domain experts. They were asked to assess the suitability, readability, and ambiguity of the questionnaire, and several modifications were made accordingly. Moreover, a pilot test of 30 managers of incubated startups was conducted before the formal survey to ensure the reliability and validity of the scale, and these questionnaires were excluded eventually. Afterwards, we obtained a detailed catalog of national entrepreneurial incubation platforms in Shandong from the official website of China Torch Center. After contacting managers of entrepreneurial incubation platforms, 25 entrepreneurial incubation platforms agreed to participate in our survey. In the formal survey, each incubated startup only received one questionnaire, which was filled offline by its managers who were responsible for connecting with the entrepreneurial incubation platform and have the authority to make decisions about the startup. The data collection lasted three months from 5 March 2022 to 5 May 2022, and, finally, 583 total samples were obtained at the end of the survey period. After dropping 49 useless data, 534 valid sample were analyzed.

Sample demographics are shown in Table 1. Most of the respondents are male (60.23%), and this skewed gender ratio reported in this study is in line with prior entrepreneurial studies [6]. The majority of respondents were in their twenties (66.48%). All respondents were incubated startups' managers, who are business decision makers and boundary persons responsible for getting in touch with the administrators of entrepreneurial incubation platforms. Thus, they could make an accurate assessment of their relationship with the current entrepreneurial incubation platform. Most respondents had an Associates or Bachelor's degree (81.94%). 90.91% of the surveyed incubated startups had less than 50 employees (85.31%), and the incubation time of most startups was less than three years (83.33%).

Table 1. Respondents characteristics.

Characteristics		Respondents (N = 534)	
		Number	Percentage
Gender	Male	321	60.23%
	Female	213	39.77%
Age	20–30	354	66.48%
	31–40	161	30.21%
	41+	19	3.48%
Position	General manager	391	73.26%
	Vice General manager	143	26.74%
Educational attainment	High school or below	57	10.76%
	Associated or bachelor's degree	438	81.94%
	Master's degree or high	39	7.29%
Enterprise scale	less than 50 employees	456	85.31%
	50–100 employees	48	9.04%
	100–200 employees	15	2.82%
	over 200 employees	15	2.82%
Incubation time	less than 1 year	171	31.94%
	1–2 year	167	31.25%
	2–3 year	108	20.14%
	3–4 year	35	6.60%
	over 4 years	54	10.07%

4.2. Measurements

Multi-item scale for each construct was adapted from previous research. As the original items were expressed in English, all items were translated into Chinese and modified to suit the context of entrepreneurial incubation platforms. The scale of items was measured on a 5-Likert scale, ranging from strongly disagree (1) to strongly agree (5). The survey items are presented in the Appendix A.

Entrepreneurial support. The scale used for entrepreneurial support was referred to in the work of Han [7] and Wu [25], which contained three subscales of economic support, technical support, and social support. Respondents were required to evaluate resources and services provided by entrepreneurial incubation platforms. A sample item of economic support is “I am able to save costs on space by using the entrepreneurial incubation platform”, a sample item of technical support is “The entrepreneurial incubation platform offers sufficient spaces for my entrepreneurial activity”, and a sample item of social support is “The entrepreneurial incubation platform supports the collaboration among peers”.

Relationship satisfaction. Items for relationship satisfaction were adapted from Benton [59]. Relationship satisfaction is measured in terms of the degree of respondents' favorable affective state towards the exchange relationship with the current entrepreneurial incubation platform. A sample item is “It is a pleasure working with the platform owner”.

Relationship-specific investment. Relationship-specific investment consists of setup activity and learning. The former was measured using the scale from Burnham [60] and Heide [38], and the latter was measured referring to Kim [35]. Setup activity examines respondents' perception about the investment they have made to initiate the exchange relationship with the current entrepreneurial incubation platform. A sample item is “It took much time for me (us) to go through all the required steps before settling in this platform”. Learning examines respondents' perception of the effort and time they have spent to learn various rules and policies issued by entrepreneurial incubation platforms. A sample item is “Learning for the management rules issued by this platform took much time and effort”.

Termination costs. The measurement items of termination costs were adapted from Kim [17]. This variable is measured in terms of the degree of a respondent's perception about the potential cost if he/she ends the exchange relationship with the current en-

entrepreneurial incubation platform. A sample item of termination costs is “If I (we) no longer stay in this platform, the time and effort invested thus far will be wasted”.

Dependence. The measurement items examining benefit-based dependence and cost-based dependence were adapted from Scheer [39], which capture the degree of respondents’ positive/negative motivations to maintain the exchange relationship with the current entrepreneurial incubation platform. A sample item of benefit-based dependence is “It would be very difficult to replace the benefit generated by this entrepreneurial incubation platform”. A sample item of cost-based dependence is “For our company, to end the relationship with this platform would be very costly”.

Continuance intention. The measurement items utilized to examine incubated startups’ continuance intention towards entrepreneurial incubation platforms were adapted from Bhattacharjee [61], illustrating the degree of respondents’ intention to keep using the current entrepreneurial incubation platform. A sample item of continuance intention is “I intend to stay in this platform until my company reaches the graduation conditions”.

Control variables. Referring to the previous studies [1,25], the respondents’ age, gender and startups’ incubation time, industry, and scale were included in the PLS model as control variables in this study.

4.3. Common Method Variance (CMV)

The data were collected through a self-reported questionnaire, and one questionnaire was completed by the same respondent. Thus, the common method variation (CMV) may be a threat to the accuracy of empirical results. Thus, we took some procedural precautions to reduce the risk of CMV based on the recommendation of Podsakoff et al. [62]. First, in the final questionnaire, all items of the dependent variable and independent variables were arranged randomly. Second, we informed respondents of our research objective and ensured that all questionnaires were anonymous, and the data collected by this survey were used only in this study. Besides, Harman’s one-factor test was applied to check for CMV. More than one factor was extracted, and the first factor explained 41.75% of the total variance, which was lower than the threshold value of 50% (Lindell & Whitney, 2001 [63]). This indicated that the CMV was not a problem in our study.

5. Results

5.1. Measurement Model

The proposed model was tested using the partial least squares (PLS) method with SmartPLS 3.0. The aim of this study is to investigate the distinct impacts of entrepreneurial support and relationship-specific investment on incubated startups’ continuance intention towards entrepreneurial incubation platforms. This determines that a complex research model, including ten latent variables and nine inner model relationships, should be developed. In addition, the data are not normally distributed in this study. According to Hair [64], PLS is more suitable for coping with highly complex models with non-normally distributed data than covariance-based structural equation model (CB-SEM). Hence, the data analysis method of this study should give priority to PLS-SEM.

A confirmatory factor analysis was employed to test the measurement model by checking the reliability, validity, and discriminant validity [65]. The purpose of convergent validity is to ensure unidimensionality of the multiple-item constructs and to eliminate unreliable items. Items should load at least 0.7 on their respective hypothesized component, and all loadings need to be significant ($t > 2.0$) [66]. Based on the above criteria, one item for termination costs was eliminated. The value of standardized factor loading for each item to its respective construct was significant ($t > 2.0$), and all loadings ranged from 0.702 to 0.923, indicating that the scale had good convergent validity.

To test the reliability of the measurement model, composite reliability (CR) and the average variance extracted (AVE) were calculated. For a construct to possess good reliability, the CR is recommended to be no less than 0.7, and the AVE should be at least 0.5 [67]. As

shown in Table 2, the CR and AVE of all constructs in the final model were acceptable. This suggests that the measurement model has good reliability.

Table 2. Results of the confirmatory factor analysis.

Variables	Items	Factor Loading	t-Values	CR	AVE
Economic support	ES1	0.790	17.132	0.915	0.730
	ES2	0.841	30.484		
	ES3	0.901	43.459		
	ES4	0.880	35.460		
Technical support	TS1	0.757	16.452	0.883	0.655
	TS2	0.741	14.072		
	TS3	0.871	43.575		
	TS4	0.861	39.008		
Social support	SS1	0.802	30.434	0.901	0.696
	SS2	0.849	28.617		
	SS3	0.881	41.818		
	SS4	0.802	22.519		
Relationship satisfaction	RS1	0.902	43.774	0.950	0.826
	RS2	0.919	55.169		
	RS3	0.907	49.308		
	RS4	0.906	47.698		
Benefit-based dependence	BD1	0.908	63.479	0.934	0.825
	BD2	0.894	38.112		
	BD3	0.923	75.021		
Setup activity	SA1	0.864	29.179	0.882	0.713
	SA2	0.868	32.131		
	SA3	0.800	23.689		
Learning	LC1	0.878	39.547	0.904	0.759
	LC2	0.891	46.058		
	LC3	0.844	27.048		
Termination costs	TC1	0.852	34.346	0.884	0.717
	TC2	0.857	36.151		
	TC3	0.832	28.244		
Cost-based dependence	CD1	0.773	19.950	0.817	0.600
	CD2	0.843	32.153		
	CD3	0.702	13.118		
Continuance intention	CI1	0.843	19.495	0.898	0.747
	CI2	0.910	53.608		
	CI3	0.838	24.016		

Finally, the discrimination validity was examined by comparing the shared variances between factors with the AVE of the individual factors [68]. This showed that the shared variance between factors was lower than the AVE of the individual factors, confirming discriminant validity. Table 3 represents the inter-construct correlations (below the diagonal) and the square roots of the AVE (on the diagonal) of the constructs. It showed that the shared variance among variables was less than the variances extracted by the constructs, indicating that the discriminant validity of the measurement model was satisfactory. Additionally, we verified the VIF values for each independent variable, and all these values were not greater than five. Thus, there was no multicollinearity problem among the variables.

Table 3. Discriminant validity and the square root of the AVE.

	1	2	3	4	5	7	6	8	9	10
Economic support	0.854									
Technical support	0.778	0.809								
Social support	0.690	0.691	0.834							
Relationship satisfaction	0.668	0.712	0.713	0.909						
Benefit-based dependence	0.750	0.685	0.717	0.742	0.909					
Setup activity	0.332	0.379	0.421	0.385	0.490	0.844				
Learning	0.458	0.476	0.484	0.433	0.548	0.798	0.871			
Termination costs	0.255	0.306	0.325	0.263	0.379	0.580	0.523	0.847		
Cost-based dependence	0.573	0.572	0.576	0.548	0.651	0.566	0.626	0.598	0.775	
Continuance intention	0.548	0.561	0.541	0.549	0.538	0.370	0.460	0.495	0.643	0.864
VIF	3.207	3.238	2.650	2.856	3.139	3.237	3.228	1.864	2.076	—

As the data were self-reported and collected from a single source, common method variation (CMV) may be a threat to the accuracy of empirical results. Thus, we took some procedural precautions to reduce the risk of CMV based on the recommendation of Podsakoff [62]. First, in the final questionnaire, all items of the dependent variable and independent variables were arranged randomly. Second, we informed respondents of our research objective and assured them that all questionnaires were anonymous, and the data collected by this survey were used only in this study. Besides, Harman's one-factor test was applied to check for CMV. More than one factor was extracted, and the first factor explained 41.75% of the total variance, which was lower than the threshold value of 50% [63]. This indicated that the CMV was not a problem in our study.

5.2. Structural Model

Given that the measurement model was found to be satisfactory, the structure model was then evaluated using SmartPLS 3.0, and bootstrapping technique was conducted by resampling 5000 times to investigate the significance of the path coefficients. The results of the PLS algorithm and bootstrapping were shown as Figures 2 and 3, respectively. Overall, both dedication-based mechanisms and constraint-based mechanisms of incubated startups' continuance intention were confirmed by the results of PLS analysis, and none of the control variables had a significant impact on continuance intention.

As for the dedication-based mechanism, economic support was not revealed to have a significant impact on relationship satisfaction ($\beta = 0.140$, $t = 1.167$, $p > 0.05$). Thus, H1 was rejected. Technical support ($\beta = 0.339$, $t = 2.620$, $p < 0.05$) and social support ($\beta = 0.382$, $t = 3.897$, $p < 0.01$) were found to have significant influence on relationship satisfaction positively, supporting H2 and H3. Relationship satisfaction was significant in determining benefit-based dependence ($\beta = 0.742$, $t = 22.416$, $p < 0.001$). Therefore, H4 was supported. Moreover, in support of H5, benefit-based dependence displayed a significant effect on continuance intention ($\beta = 0.203$, $t = 2.600$, $p < 0.05$).

The PLS results also provided significant support for hypotheses of the constraint-based mechanism. Specifically, setup activity ($\beta = 0.448$, $t = 4.210$, $p < 0.001$) was proven to have a positive and significant impact on termination costs, while no significant influence of learning ($\beta = 0.165$, $t = 1.606$, $p > 0.05$) on termination costs was found. Therefore, H6 was supported, and H7 was rejected. Termination costs were positively related to cost-based dependence ($\beta = 0.598$, $t = 10.352$, $p < 0.001$). Thus, H8 was supported. The relationship between termination costs and continuance intention was also significant ($\beta = 0.515$, $t = 7.159$, $p < 0.001$), supporting H9.

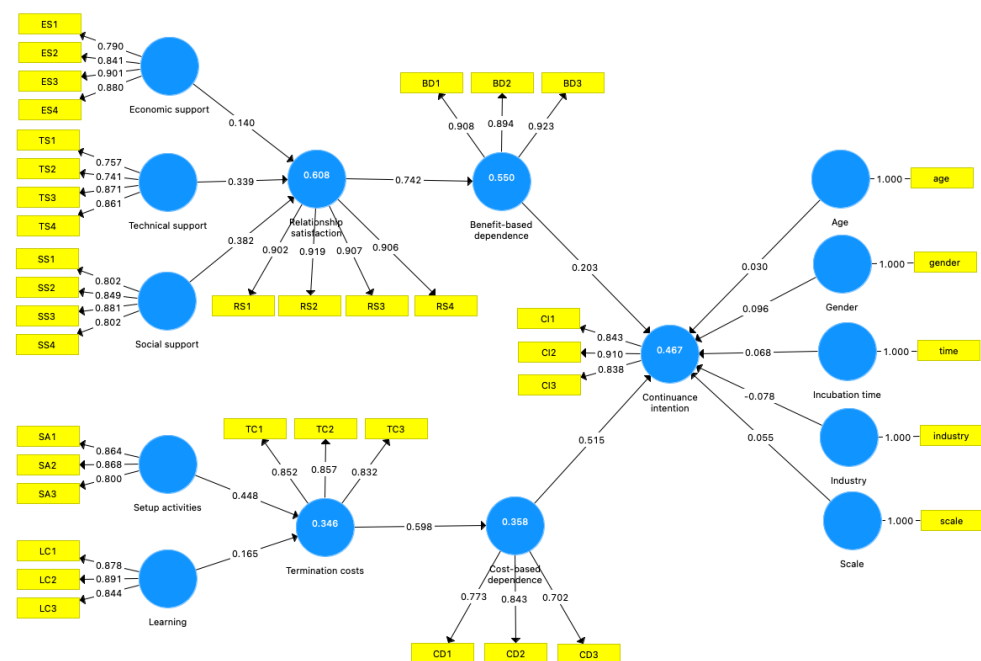


Figure 2. Results of PLS Algorithm.

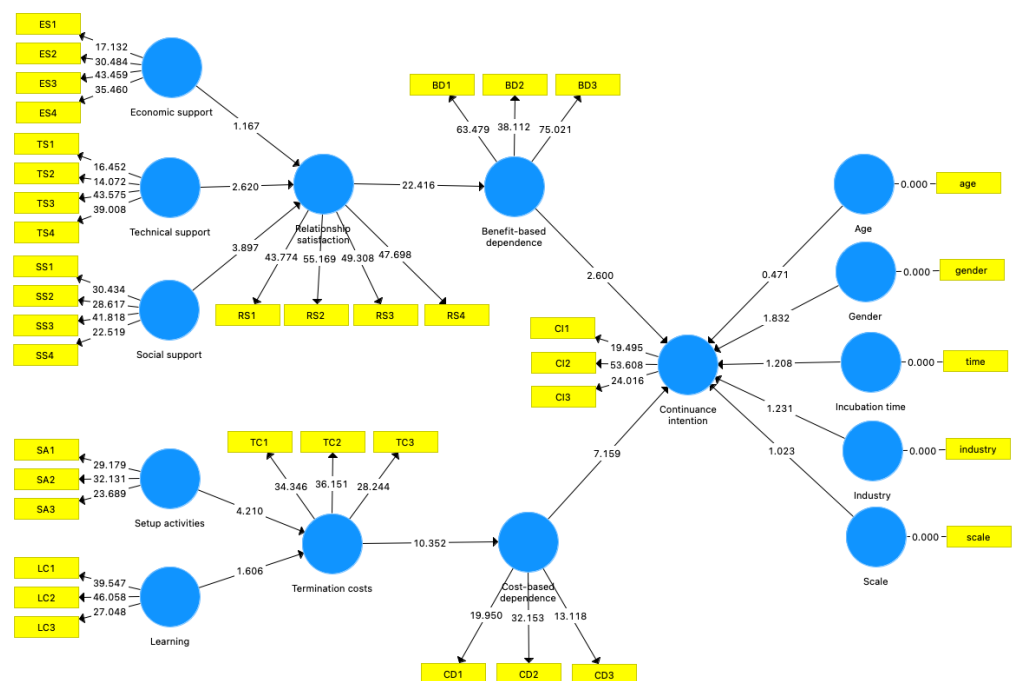


Figure 3. Results of Bootstrapping.

6. Discussion

The purpose of this study is to investigate the factors and mechanisms that lead to incubated startups' continuance intention towards entrepreneurial incubation platforms. In order to do so, a dedication-constraint model that portrays dual formation mechanisms of incubated startups' continuance intention is developed and validated. Several noteworthy findings were illustrated and discussed, as follows.

In the dedication-based mechanism, social support and technical support are significant in generating relationship satisfaction of incubated startups. However, economic support had no significant positive effect on relationship satisfaction. This result is in line with the findings of previous studies that incubation experience would have an important

impact on entrepreneurs' valuation of resources provided by entrepreneurial incubation platforms [69–71]. In particular, van Rijnsoever [71] pointed out that the value of social and technological resources shapes the sustainable competition for incubated startups that could be revealed through their incubated experience and normal learning process. However, economic support was not a source of sustainable competitive advantages, as it was imitable. Thus, incubated startups will value social support and technical support more than economic support. In addition, the insignificant relationship between economic support and relationship satisfaction can also be explained by the view of expectation-confirmation theory (EDT), in which consumers' satisfaction is determined by expectation, perceived performance, and confirmation. Previous studies have argued that, if the platform's performance perceived by users outperforms their expectation (positive confirmation), satisfaction will arise. Otherwise, dissatisfaction is likely to result [72,73]. Among the three types of entrepreneurial support, economic support plays the most basic role [7] and has been entrepreneurial incubation platforms' strong advertising point to attract potential incubatees. However, according to the 2021 "China Torch Statistical Yearbook", the number of incubated startups that have received venture capital only accounts for 11%, indicating that it is difficult for most incubated startups to obtain direct economic support [74,75]. Thus, economic support has fallen short of the high expectation of entrepreneurs, which is the main reason why economic support cannot lead to startups' relationship satisfaction.

With regard to the constraint-based mechanism, in the two types of relationship-specific investment, setup activity is revealed as the only salient antecedent explaining termination costs. However, the impact of learning on termination costs is insignificant. This result does not support previous research on social exchange relationship maintenance research conducted in the context of digital platforms, which has found that constraint commitment can be shaped by learning [17,19,76]. For example, Kim [17] observed that termination costs perceived by app developers was determined by learning. There are several possible explanations for this contradictory result. Firstly, from the perspective of the platforms, this contrary result may lie in the degree of heterogeneity of expert knowledge that competitive platforms demand users to learn. Generally, there is a marked difference in expert knowledge that distinct app development platforms require developers to learn. For instance, the program languages, code bases, and architecture systems are very different between Google's platform and Apple's platform. Thus, learning is significant in generating app developers' termination costs. However, the degree of heterogeneity in incubation rules and policies among entrepreneurial incubation platforms is not insufficient to lead to termination costs of incubated startups. At present, the market-oriented development of Chinese entrepreneurial incubation platforms still needs government assistance [10], resulting in similar incubation rules and policies among entrepreneurial incubation platforms. In addition, the rapid increase in the number of entrepreneurial incubation platforms has resulted in homogenization competition [10]. Thus, it is difficult for Chinese entrepreneurial incubation platforms to position themselves uniquely out of numerous peers through their own management rules and entrepreneurial policies. Secondly, from the perspective of entrepreneurs, as shown in Table 1, nearly 90% of entrepreneurs possess a Bachelor's or Master's degree. This suggests that these people ought to have good understanding and learning ability, and learning platform management rules and relative policies will not cost them too much time and energy. Thus, entrepreneurs may not perceive large termination costs brought by learning.

From an integrative perspective of the dedication–constraint mechanism, benefit-based dependence is affected by relationship satisfaction in the dedication-based mechanism, while perceived termination costs are the key driving force of cost-based dependence in the constraint-based mechanism, which illustrates that these two types of dependence have different antecedents. This finding is in accord with previous studies on social exchange relationship maintenance, where dependence has two distinctive dimensions of benefit-based dependence, which arises from the irreplaceable relationship benefit and cost-based dependence that is grounded in the latent cost realized upon relationship termi-

nation [39,40]. Besides, the present study demonstrates that two types of dependence give significant direct impacts on continuance intention of incubated startups, and cost-based dependence has a stronger positive effect on incubated startups' continuance intention than benefit-based dependence. This implies that, for incubated startups, cost-based dependence is more influential than benefit-based dependence on shaping continuous usage intention towards the current platform. This finding is in agreement with recent studies indicating that the avoidance motive triggered by potential cost or loss plays a critical role in entrepreneurs' decision making [43,77]. The goal of entrepreneurial incubation platforms known to the public is fostering startups to survive and to develop through offering them entrepreneurial resources and services. Therefore, entrepreneurs may take it for granted that they can obtain benefits from the platform. In addition, most incubated startups are limited by resources. This makes incubated startups more sensitive to investments and costs than benefits provided by the platform. As a result, incubated startups will pay more attention to cost-based dependence while making their continuance decision.

7. Implications

This study gives several meaningful theoretical contributions to the existing literature, as well as practical implications to practitioners of entrepreneurial incubation platforms on how to prevent them from "breaking up" with incubated startups.

7.1. Theoretical Implications

This study offers several implications for theory. First, this study advances the entrepreneurial incubation platform literature by providing a systematic understanding of incubated startups' continuance intention towards entrepreneurial incubation platforms in the context of China. As noted, the sustainable success of entrepreneurial incubation platforms depends largely on incubated startups' continuous affiliation [4]. However, so far, most previous studies primarily focus on the selection criteria of incubatees at the stage of incubation relationship establishment [12,21] and incubation performance at the stage of incubation relationship performance acquisition [2,13]. There has been little discussion about how entrepreneurial incubation platforms maintain the relationship with incubated startups. In particular, there is a dearth of empirical research conducted in the context of China, where the number of entrepreneurial incubation platforms is growing rapidly [7]. Thus, based on the perspective of social exchange relationships, the present study empirically investigates the distinct impacts of entrepreneurial support and relationship-specific investment on incubated startups' continuance intention towards entrepreneurial incubation platforms, thereby bridging the research gap. In doing so, this study also responds to recent calls of Han [7] and Han [9] for research that pays attention to the incubation relationship maintenance.

Second, the dual model framework is extended to the domain of entrepreneurial incubation platforms to help understand incubated startups' continuance intention towards entrepreneurial incubation platforms through the dedication-based and constraint-based mechanism. The dual model framework is a robust theory for explaining the maintenance of social exchange relationship and has been widely used in variety context, such as personal exchange relationship [32,33], consumer-retailer exchange relationship [34], and user-provider exchange relationship [18,19]. However, its application in entrepreneurial incubation platforms is scant. In the present study, the dual model framework is adopted to examine the impact of entrepreneurial support (relationship-specific investment) on incubated startups' continuance intention towards entrepreneurial incubation platforms through relationship satisfaction (termination costs) and benefit-based dependence (cost-based dependence) in the dedication mechanism (constraint-based mechanism). These empirical results are meaningful, as they demonstrate that the dual model framework is a useful theory to reveal the factors and mechanisms that lead to incubated startups' continuance intention, providing a fresh theoretical framework for the domain of entrepreneurial incubation platforms.

7.2. Practical Implications

The findings of this study also have several practical insights for entrepreneurial incubation platforms practitioners.

This study suggests that cost-based dependence is more efficient in enhancing the incubated startups' intention to use the incumbent platform continuously. Thus, cost-based strategies should be prioritized. Entrepreneurial incubation platform owners can consider levying the relationship-specific investment on incubatees appropriately. First of all, a comprehensive and strict qualification review procedures should be designed, and reasonable fees also should be imposed, leading incubated startups to invest more time, efforts, and money to the platforms. When it comes to learning cost, the management rules and incubation policies issued by platforms have to reflect their unique features, making them dissimilar to other platforms. In this way, incubated startups will be more dependent on the current platform due to avoiding the potential termination costs, resulting in higher continuance intention.

Notwithstanding that the cost-based strategy is more effective, laying stress on incubated startups in the long run probably makes the relationship between incubated startups and platforms more vulnerable or even causes conflicts [38]. Thus, benefit-based strategies should be paid more attention in the future so as to induce an active form of continuance intention of incubated startups. First, entrepreneurial incubation platforms should seek to establish links with multiple suppliers of financial resources in order to provide more financial support to incubated startups. Furthermore, incubated startups are engaged in different industries. This will lead to heterogeneous technical needs. Thus, customized technical support may be provided by platforms to incubated startups. Lastly, considering the restrictions of the COVID-19 pandemic on social activities, platform managers can facilitate the collaboration of startups located in the same platform and provide more chances for them to communicate with entrepreneurial mentors by social media [78]. In sum, these strategies can be used by entrepreneurial incubation platforms to initiate incubated startups' active affiliation.

7.3. Limitations and Future Research

There are still several limitations in this study that could be addressed in the future research.

Firstly, the data utilized to test the proposed model was cross-sectional. Thus, the results of this study can only statically interpret the continuance intention of incubated startups towards entrepreneurial incubation platforms at a specific time. Previous studies have concluded that entrepreneurial incubation platforms are constantly evolving and developing [78], leading to effective ways of maintaining relationships with incubated startups, which may vary across generations of platforms. Therefore, future research can explore how entrepreneurial incubation platforms of different generations maintain relationships with incubated startups based on a dynamic research perspective.

Next, the target entrepreneurial incubation platforms chosen in this study are from China, meaning that it may be difficult to ensure that the results of the study and related suggestions are equally applicable to entrepreneurial incubation platforms in other countries. In order to generalize the results, future studies could collect and analyze the data from entrepreneurial incubation platforms of diverse countries.

Lastly, the theoretical model of this study is comprised of internal factors that reflect the relationship between the incubated startups and entrepreneurial incubation platforms. However, external factors, for example, competitive intensity of entrepreneurial incubation platforms, may also play an important role in determining incubated startups' continuance intention. Thus, the theoretical model should be improved through taking the effect of external factors into consideration.

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Appendix A

Variables	Items	Wording	References
Economic support	ES1	I am able to save costs on space by using the entrepreneurial incubation platform	Han [7]; Wu [25]
	ES2	I am able to save costs for office appliances and equipment by using the entrepreneurial incubation platform	
	ES3	I am able to save costs for entrepreneurial services by using the entrepreneurial incubation platform	
	ES4	I am able to save costs on entrepreneurial training programs by using the entrepreneurial incubation platform	
Technical support	TS1	The entrepreneurial incubation platform offers sufficient spaces for my entrepreneurial activity	
	TS2	The entrepreneurial incubation platform provides various office appliances and equipment for my entrepreneurial activity	
	TS3	The entrepreneurial incubation platform provides sufficient and high-quality technical services for my entrepreneurial activity	
	TS4	The entrepreneurial incubation platform offers various entrepreneurial training programs and on-the-spot support.	
Social support	SS1	The entrepreneurial incubation platform supports the collaboration among peers	
	SS2	The entrepreneurial incubation platform provides aids to share knowledge and skills among peers	
	SS3	The entrepreneurial incubation platform supports the communication among peers	
	SS4	The entrepreneurial incubation platform provides chances to meet entrepreneurial experts and mentors	

Variables	Items	Wording	References
Relationship satisfaction	RS1	It is a pleasure working with the platform owner	Benton [59]
	RS2	The platform owner is a good partner to do business with	
	RS3	We are satisfied with the daily relationship with this platform owner	
	RS4	The exchange relationship with this platform owner is satisfactory	
Benefit-based dependence	BD1	It would be very difficult to replace the benefit generated by this entrepreneurial incubation platform	Scheer [39]
	BD2	If we had not settled in this incubation platform, our company's development would not be so good	
	BD3	Our company obtains benefit from the relationship with this platform that cannot be offered by other alternative platforms	
Setup activities	SA1	It took much time for me (us) to go through all the required steps before settling in this platform	Burnham [60]; Heide [38]
	SA2	There were many formalities involved for me (us) to initiate the exchange relationship with the platform owner	
	SA3	I (we) have made significant investments for the purpose of settling in this platform	
Learning	LC1	Learning for the management rules issued by this platform took much time and effort	Kim [35]
	LC2	I (we) spent a lot of time and effort in learning how to operate a startup in accordance with the requirements of this platform	
	LC3	There was a lot involved for me (us) to clearly understand how to successfully cooperate with this platform	
Termination costs	TC1	The potential losses that would result from terminating the exchange relationship with the platform owner are trivial (R)	Kim [17]
	TC2	If I (we) no longer stay in this platform, the time and effort invested thus far will be wasted	
	TC3	If I (we) end the exchange relationship with this platform owner, the time and effort I (we) already spent would be much more meaningless than if I (we) continue the exchange relationship	
	TC4	It would be difficult for me (us) to replace this platform partner	
Cost-based dependence	CD1	Before I reach the graduation conditions of this platform, I will stay in this platform	Scheer [39]
	CD2	For our company, to locate and establish relationships with an alternative platform that replaces the current one would be a great cost	
	CD3	For our company, to end the relationship with this platform would be very costly	

Variables	Items	Wording	References
Continuance intention	CI1	I intend to stay in this platform until my company reaches the graduation conditions	Bhattacharjee [61]
	CI2	I will remain in this platform during the incubation period, and will not lift the incubation relationship with this platform in advance	
	CI3	I will remain in the incubation platform during the incubation period, and will not consider other alternative platforms	

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