

Case Report

Critical Success Factors of a Design Startup Business

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Abstract: Recent trends of new venture startups have paved the way for the expansion of the design industry and opened new windows of opportunity for the traditionally small and non-specialized design business. In this environment, design startups are rapidly growing in modern society, and thus meeting the needs of consumers through the development of innovative products, processes, and services. This study aims to determine the critical success factors affecting design startups. To this end, the concept and success variables of startup businesses were studied based on previous research, and then key success factors of design startups were identified. A total of 24 experts, from 12 design-based small venture startups and 12 technology-based small and medium startups, were surveyed regarding their priorities related to these factors, using the analytic hierarchy process (AHP). The results suggest that idea commercialization is the most important success factor as an innovation criterion among the four success criteria of design startups. Hence, entrepreneurial conditions, such as goal-orientation and entrepreneurs' competence, are important success factors for design startups.

Keywords: design startup; success factor; design industry; design business; entrepreneurship

1. Introduction

The trend toward the increasing importance of venture startups in the global economy shows not only a strengthened business environment for them but also enhanced entrepreneurial enthusiasm among them. For this trend to continue and not be a temporary phenomenon, venture startups must continue to grow and be competitive to survive [1,2]. Moreover, the growth of online and mobile businesses, as well as the development not only of the cultural and creative but also the content and knowledge industries, has expanded and diversified existing business models and created new ones, triggering new business model interpretations and discussions [3]. These changes constitute the most important aspect of the Fourth Industrial Revolution, which is essentially equivalent to the evolution of the Internet of Things (IoT) [4,5]. Lee et al. stated that as the Fourth Industrial Revolution is under way, the width and speed of open innovation and the emergence of new combination business models are expected to exponentially increase [5].

The rapid social change from an information and knowledge society to a creative one has brought about various forms of ventures. Society in the Fourth Revolution Industry is represented by a hyper-network, which is characterized by the expansion of outsourcing companies due to the slimming of corporate organizations, the development of the online community and SN, and online-to-offline (O2O) combinations, such as O2O and dialogue [3]. This society has made knowledge-based venture companies, which are based on creative ideas, diverse experiences, expertise, and technology, into a new business model while the commercialization of expert knowledge is enabled [6]. A number of

governments worldwide have promoted small business startups as a measure to boost economic growth and employment levels. Venture companies in Silicon Valley, which are the central axis of the United States economy, continue to pursue innovation based on entrepreneurship, creating economic wealth and employment throughout the country while transforming existing economic structures founded by large companies into dynamic ones [7]. Under these circumstances, the most important factor is the “emergence” of disruptive new combinations between technologies and the market itself. The word “emergence” implies that the new combinations are voluntary, unexpected, and uncontrollable [5].

The change in business trends has paved the way for the expansion of the design industry and opened new windows of opportunity for the traditionally small and non-specialized design business. In response to the design sector’s diversification and industrialization over the years, many experts are required to have more active business and management skills to encourage new experiments and improve the environment for the creation, distribution, and enjoyment of design. In particular, design startups are competitive in that they experiment with the added value of design based on creativity and expertise, which are core competencies of venture companies, and seek a new transition of the existing industrial structure [8]. The recent trend shows an increase in the number of ventures founded or co-founded by startup designers; many of which have been successful. In Korea, the globalization of the startup ecosystem has been advancing; such an ecosystem includes the expansion of overseas markets explored by design startups and the influx of overseas venture investments from the US and China [6]. Consequently, the importance of the roles and functions of design is expanding. When new value creation becomes a growth engine, it is evident that design can become a success factor for startups.

However, there is a limit to examining these factors, which affect the entry into the growth stage with survival competitiveness for the success of design-based startups, as only entrepreneur capacity and differentiation strategy are examined in existing studies. Creating a new business is a process fraught with difficulties and failure [9–12]. Moreover, the cognitive orientation of potential entrepreneurs has a significant influence on their willingness to persist in their entrepreneurial activity in the face of these difficulties. Entrepreneurial behavior, as a more fundamental factor, is important in terms of finding new opportunities and utilizing them. However, research on these areas is limited. Therefore, this study investigates and identifies the success factors of design business startups.

2. Literature Review

2.1. The Startup Business in the New Economy and Markets

A startup is generally defined as a new business that entrepreneurs initiate by combining business ideas and resources [13–15]. Blank [16] defined a startup as “a temporary organization designed to search for a repeatable and scalable business model”. Ries [17] explained that a startup is an organization that has been launched to create new products or services in extreme uncertainty. He argued that if they are creating new products or services in extreme uncertainty, then all of them, such as the new business units of governments, large companies, non-profit organizations, and business ventures, may fall under the startup category.

Unlike small businesses that are classified according to the size of their work, the above definition implies that new companies with a new idea based on the knowledge industry can be called a venture, startup, or entrepreneurship. A startup requires the opportunity for a face-to-face contact with multiple sectors, which is a smaller area than a complex production facility; it also emphasizes the possibility of combining various functions [18]. If a venture company tends to focus on an innovative technology development process and relies on external investments, such as venture capital, a startup is different in that they set up self-sustainable business models and explore sales channels [19].

Smith and Miner [20] classified startups as craftsmen and technical entrepreneurs who want to materialize their own functions and technologies and as opportunistic entrepreneurs whose initiatives are based on market opportunities according to their motivation. The motivations for a startup can

be classified as survival and success motivation according to the level of desire for achievement. The former indicates a level at which an entrepreneur wants to maintain a minimum livelihood while doing what he or she wishes to do. By contrast, the latter means the level at which an entrepreneur wants to achieve a high level of financial achievement and social reputation [12]. Moreover, based on startup indicators by country, the motivations for startups are classified as economic and non-economic motivations. Economic motivation means pursuing external compensation, such as monetary compensation, social recognition, high status, and a good reputation through entrepreneurial activities. By contrast, non-economic motivation means pursuing individual interests and satisfaction through the entrepreneurial process [21].

Startups in Korea are based on the Korean government's plan to realize a creative economy, with the task of creating jobs through the activation of startup ventures in 2013 [22–25]. In 2018, the Korean government tried to encourage the establishment of more startups by providing “financial support” and implementing “deregulation”. The basic direction was to mitigate the economic burden for startups, establish a startup-friendly environment, and build self-supporting exchanges and collaborative ecosystems among startups through the creation of startup villages. As a result, with the support of the government, the number of startups in Korea (including ventures) was about 33,387 as of January 2017. Since the reorganization and implementation of the business venture confirmation system in 2006, startups' 10-year average annual growth rate was about 10%. As of December 2015, the sales revenue of startups amounted to KRW215.9 trillion, which represented 13.9% of Korea's gross domestic product (GDP). In 2015, the number of startup employees was 728,000, or 4.6% of the total number of workers in industry.

Recently, young entrepreneurship has been enhanced because of the increasing support of funds from the Korean government and private sector. In 2016, there were 226,082 youth startups (from 15 to 34), which accounted for 1.7% of Korea's total youth population. According to the Korean Development Institute report in 2014, youth in their 20s and 30s in Korea were more likely to engage in lifestyle startups than in technology-based ones, such as wholesale and retail stores, accommodation, and restaurants. Only about 8% of youth entrepreneurs in their 20s and 30s initiated startups in the manufacturing industries, which need relatively high technological capabilities [6,26].

2.2. Startup Businesses in the Design Industry

Design is a powerful tool that enables companies to achieve their own unique distinction from competitors [27]. When people discussed innovation in the 1990s, they meant technology. When people discuss innovation in this decade, they refer to design [28]. The change in meaning emphasizes changing times and a different phase in the design era [29]. If design was biased toward marketing and branding in the past, it plays a more subjective and essential role in all phases of business modeling, development, quality control, and profit generation in modern startup industries.

As design is a convergent business that can respond with flexibility to changing market trends and consumers' needs, it is the area in which an individual entrepreneur, whose strengths are ideas and planning competences, can actively engage. The design industry, which creates product value through intensive skills and the expertise of designers, can develop products and operate a business if it has some elite designers, even if it does not have a consistent system for development, production, and management [8]. In addition, the design industry is relatively free of collaboration and role-sharing with other fields and can perform independent business activities in terms of market development, product expansion, and the security of intellectual property rights [30–32]. Currently, 27 designer startups are operating actively in Silicon Valley, implying that design will play an important role in future startup investments. The venture capital firm Kleiner Perkins Caufield & Byers (KPCB) said that this decision reflects the fact that design plays a core role in a company's investment in digital internet and product development, and supports the companies that will receive investment [33,34].

Meanwhile, a design startup means that a representative designer or a small number of people must be responsible for all the various tasks that a company faces [15]. Strategic business planning,

budgeting, marketing, and accounting are the areas where designer entrepreneurs find the biggest challenges [35]. In general, designer founders have a strong tendency to be artistic and lack management skills. Competing with a large number of brands in small-scale markets is recognized as a management limitation faced by most design startups globally [36]. There are designer funds [37] that act as a typical support method for alleviating the problems of design startups. Their major activities are summarized in Table 1.

Table 1. Major activities of “designer funds”.

Designer Funds	Description
Designer fund	Fund for designer founders. The designer must join a startup team. Its goal is to improve the influence of design and designer startups through a virtuous cycle in which successful startups invest in another startup.
Invest	Investment is limited to the companies where designers participate in a startup. It usually invests USD 100,000 to USD 1 million dollars.
Bridge	Recruit startups and designers suitable for a bridge program. It supports designers to find jobs in startups (helps them in the negotiation of salaries, benefits, and equity acquisition); and creates opportunities for exchange, lecture, and networking among designers participating in the bridge program after recruitment. There is no cost for participating designers.
Community	Society designers related to a startup.

In Korea, various startups have emerged; designer startups, such as Baedaleui Minjok Lend It, Getcha, and Mimi Box were launched successfully. As Korean startups have to persuade consumers through not only their products but also the experience of customers and product services, which can be called “servitization”, many designer chief executive officers (CEOs), who have excellent storytelling capacity and are accustomed to user-oriented thinking, create startups [33]. According to Pyo and Lee [28], in the past, many companies relied on outsourcing because of the low recognition of the utilization of professional design. Recently, however, companies have created design organizations actively to establish relational outsourcing. In this context, through relational outsourcing, companies can identify their problems from a new perspective and escape the influence of an up-and-down relationship, because it is not an organization belonging to the company. Thus, relational outsourcing enables these companies to communicate more freely and form creative approaches.

2.3. Startup Business Model in Open Innovation

To succeed in a new innovation environment, a startup must embrace an open business model. This is because in the Fourth Industrial Revolution environment characterized by a creative combination of technology and market in all IT-based industries [5,38], successful business growth is based on the creative and open combination of technology and market through open innovation or an open business model. Open innovation occurs as an open and creative connection between technology and the market. In particular, if a person who develops a technology differs from the one who uses the technology to produce a product or service and supply it to the market, the phenomenon is called open innovation [38]. Furthermore, market innovation, in which new combinations between technology and the market are constantly formed, requires the continuous occurrence of creative new combinations between technology and society [39].

Companies must develop more open business models if they want to take full advantage of the opportunities offered by open innovation [40]. Chesbrough defines a business model as encompassing the following functions: (1) the articulation of a value proposition and target market segment; (2) definition of a value chain structure and value network position that allows the value proposition to be delivered and differentiated; and (3) an economic model that allows the company to extract sufficient value to succeed [41,42]. Open business models do not constrain any of these functions

to company-owned resources or capabilities [42]. Startups and entrepreneurs should pay attention to social open innovation brought about by the creative new combinations between technology and society, which will actively lead to open innovation in the market, and that such innovation will cause the market to actively transform to a new growth engine [40]. Thus, the core of a startup business or company innovation is a new combination business model. How to creatively combine technology and the market, and how well such a combination meets the requirements and expectations of users or consumers, are the keys to a startup business [5]. Furthermore, an open business model for a startup requires improved capital fluidity. Schumpeter focused on the promotion of new combinations by entrepreneurs and the fluidity of capital that could stimulate such combinations for the success of the Second Industrial Revolution [5,43]. Finally, the open business model is needed to strengthen the width and depth of crowd funding [5,44]. With the increase in crowd funding, entrepreneurs from the working class will be able to conduct their desired business model based on stable funding.

2.4. Success Factors of Startup Businesses

Although a certain cognitive orientation toward entrepreneurship may influence one's readiness to persist in an entrepreneurial action, previous research has shown that some entrepreneurial activities are more likely than others to result in a successful startup [45,46]. Being willing and able to persist in entrepreneurial activities may not lead to a successful creation of a business if persistence merely results in potential entrepreneurs engaging in the wrong activities [47,48]. If a potential entrepreneur devotes a substantial amount of time to planning but no time to finding potential customers, a new business may not be created. Entrepreneurial activities are, therefore, an important mediating variable between an entrepreneur's cognitive orientation and subsequent startup success.

Although empirical work on success factors in nascent entrepreneurship is scarce, there is abundant conceptual work that models the pre-startup process [49,50]. Some models are based on a single approach, such as a motivational [51], cognitive [52], or a network [53] model. Most models are built on various approaches. Usually, there is also a temporal aspect to the models.

Some authors explain that the process of setting up a business entails the execution of a number of actions, with a high variation in the amount and sequence of activities [53]. Although some authors acknowledge this variation, they still discern the sub-phases in the pre-startup process [54,55]. Tiessen [56] argued that individualistic tendencies are conducive to intentions toward self-employment but interfere with the process of resource acquisition where active cooperation with other people is vital. Some variables may also be more important in one phase and less important in another. For example, the psychology of the entrepreneur has been found to be more important in predicting the chances of starting a business than its success [49].

Design startups also require entrepreneurship, a qualification found in good businessmen and entrepreneurs. There are many different definitions of the spirit of entrepreneurship in the academia. However, it is commonly defined as "innovation", "willingness to take risks and uncertainties", and "capturing and utilizing opportunities in the market". It is also defined as "pursuing an opportunity beyond resources controlled" [57], "performance of a new combination" [58], and "humane and creative actions that make value from nothing" [59]. Drucker [60] defined entrepreneurship as a "practice" rather than a science or art. Gentry et al. [61] explained that entrepreneurship is not merely to be rich but to dream of building your own kingdom, to demonstrate that you are superior to others, and to follow the joy that comes in the course of creating a startup. In startups, entrepreneurship is the starting point of a business and the driving force to pass the difficult period in the early years (from three to five years) of the startup, which is called the "death valley" [62]. Many startup founders are also immersed in the items and concepts that they want to offer rather than the benefits that they can provide to customers, thus failing to fulfill the needs of the market where the customers exist. In other words, one of the success factors of a startup is the precise identification of "customers" and "markets" [63,64].

3. Research Method

3.1. Analytic Hierarchy Process (AHP)

The analytic hierarchy process (AHP) is a valid social science research method [65]. The AHP method is commonly used not only in the business management decision-making processes but also various information systems research [66]. The AHP, introduced by Saaty [67], is a mathematically based, multi-objective, decision-making tool [68]. The AHP mainly addresses how to solve decision-making problems under uncertain situations and with multi-criteria characteristics [69]. It is an extensively used multi-criteria, decision-making method, which has been applied to a wide variety of decisions and applications [70]. Moreover, the AHP is a suitable approach for undertaking quantitative and qualitative analyses [71]. Ngai [65] stated that the AHP was aimed at integrating different measures into a single overall score for ranking decision alternatives. Its main characteristic was that it is based on pairwise comparison judgments. The AHP has been proven beneficial for decision-making when the factors are difficult to measure.

The design startup success evaluation has many criteria and weights for each business success factor. The development of weights and priorities for the business success factors would be an important step in implementing and evaluating businesses for the design startup industry in a practical manner. For these reasons, the AHP was selected for this study. The AHP was used to determine key success factors and the factor weights in the evaluation system.

This study utilized the Delphi analysis technique along with the AHP. For two weeks in early March 2018, we conducted interviews with five experts in Korea. First, we analyzed key design startup business success factors derived from previous studies in order to identify objective determinants using the Delphi technique and the criteria set by the five design business professionals. In the process of deriving the key determinants and strategic alternatives for a design startup business, we used the AHP analysis to arrive at a success criteria evaluation system.

3.2. Research Framework and Variables

The critical success factors of design startup businesses have been developed based on a venture startup's success factor framework [72]. The research framework is designed as a two-tier architecture comprising success factors and attributes, to facilitate an intuitive and business success creation for startup leaders. At the first tier, we identified four success factors, namely, "entrepreneurship", "innovation", "technology", and "economics". Each factor contained five attributes. The framework comprised 20 success attributes (Figure 1, Table 2). Factors identified in prior research on the success of business ventures were added as success attributes. After discussing with the experts, we disregard the factors' complexity.

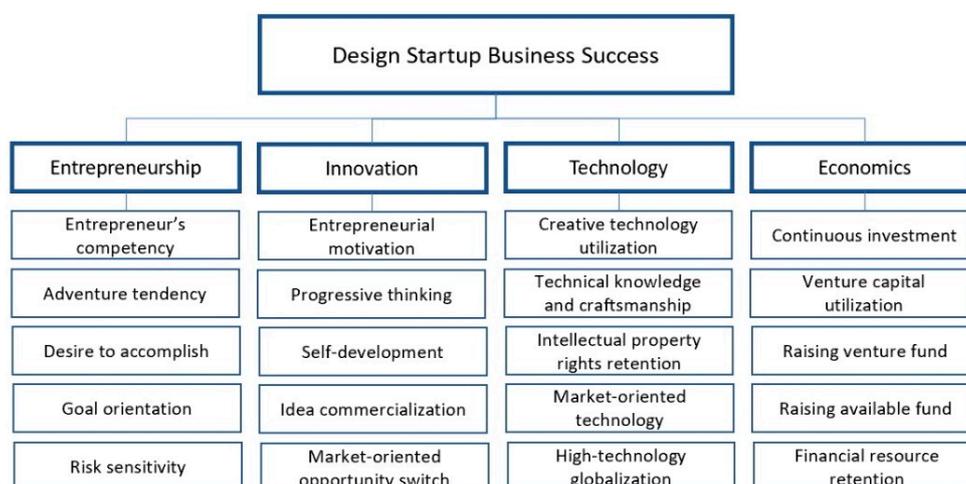


Figure 1. Research framework.

Table 2. Design startup success evaluation factors and definitions.

Evaluation Area	Evaluation Factor	Factor Definition	Related References
Entrepreneurship	Entrepreneur's competency	The entrepreneur's ability to lead the design startup business to success	
	Adventure tendency	The entrepreneur's offensive attribute to take on a business risk to achieve success	[73]
	Desire to accomplish	The entrepreneur's passion and will to lead the business to success	[74]
	Goal-orientation	The entrepreneur's goal, achievement will, and clear vision for business success	[75]
	Risk sensitivity	The entrepreneur's attitude about taking a risk and negative benefit for business success	
Innovation	Entrepreneurial motivation	Philosophy and goal-setting of the business setup	
	Progressive thinking	The business members' flexible organizational culture and open mindedness	[60]
	Self-development	The members' learning and development activities for business success	[76]
	Idea commercialization	New business development with various ideas for commercialization for business success	
	Market-oriented opportunity switch	A flexible, changing business model and product and service development based on market and customer trends	
Technology	Creative technology utilization	Active acceptance and important recognition of a new technology	
	Technical knowledge and craftsmanship	Will and philosophical attitude toward original and sustainable technology development	[77]
	Intellectual property rights retention	Efforts to adopt the original technology and design's intellectual property	[78]
	Market-oriented technology	Recognition and will to accept new technology development based on customers' lifestyle trends	
	High-technology globalization	Efforts and will about intellectual property and patent of technology to create a global business	
Economics	Continuous investment	Attracting investment to keep the continuous investment contract	
	Venture capital utilization	Utilization of venture capital to create financial stability for the business	
	Raising venture funding	Raising venture funding for financial stability and business network expansion	[79]
	Raising available funds	Availability of corporate funds for financial risk management	[80]
	Financial resource retention	Maintaining high-profit business operations with various financial resources	

3.3. Research Process

This study aimed to determine the success factors of design startups in the Korean market and the most important factor to designers or design experts in the design startup field. For the empirical analysis, we designed a questionnaire (see Appendix A) according to the quantitative analysis using the AHP technique to analyze startup success factors (Table 2). We selected five venture experts from the academic and business fields to review the success factors of a design startup business in the Korean market. To determine the degree of priority among these factors, we surveyed 24 entrepreneurs from 12 design-based small venture startups and 12 technology-based small and medium startups. The companies were selected using the design venture list of the Korea Industry Design Promotion and the technology startup list of the Korea Institute of Startup and Entrepreneurship Development.

We undertook a review of the entrepreneurship literature [34,81] to identify specific entrepreneurial activities that might lead to a successful startup business. We then developed an evaluation framework of startup success factors using the AHP applications. First, we reviewed the related literature and the extracted key elements or factors that had an effect on startup success. Second, we conducted interviews with five startup experts who are related to startups in the design industry, academia, and government, to confirm and verify the extracted key factors based on the literature review. We then defined all critical startup success factors in the design industry. Third, we constructed an evaluation framework of startup success factors, which were classified into design and general business startups. To determine the weights and rank the importance of the evaluation system elements, we used the AHP method. Finally, we conducted a series of personal interviews with five design startup CEOs and professors to confirm the validity of our evaluation system. Then we developed a questionnaire based on the evaluation system. We deemed that a professional group is suitable for evaluating the validity of the evaluation system, because our study has exploratory characteristics and studies of startup businesses in the design industry are insufficient.

3.4. Data Collection

The AHP survey was conducted between “1 and 23 April 2018”, with 40- to 60-min, one-on-one interviews with 24 people. The data sampling considered professional experience. Therefore, the interviewees were design or technology startup business professionals who had worked in related fields for at least five years. The demographic data included 87.5% professionals who had worked in the related field for over 10 years; more than 66.7% were over 40 years old (see Table 3). The weights were computed using the MS Excel software. The questionnaires comprised 46 questions. The responders’ CR for all questionnaires was less than 0.1, with individual values between 0.0129 and 0.032. These values, which were less than 0.1, indicated that the answers were both logically consistent and meaningful.

Table 3. Demographic information.

Characteristics		Frequency	Ratio (%)
Gender	Male	15	62.5
	Female	9	37.5
Age	30s	8	33.3
	40s	14	58.4
	50s	2	8.3
Work experience in the related field	5–10 years	3	12.5
	10–20 years	16	66.7
	Over 20 years	5	20.8
Professional area	Design	12	50
	Technology	12	50

4. Analysis of the Results

4.1. Comparing Variables of Design Startup Business Success

The factor priority and weights of the proposed research models are shown in Table 4. The local values indicated the weights at each level and the global values were obtained by multiplying the local values. Global values were used to rank the evaluation area and factors. According to the result of success priority of the design startup business for the first-level criteria, the most essential factors in order of importance were Innovation (0.3999), Entrepreneurship (0.2442), Economics (0.1789), and Technology (0.1770).

Table 4. Weights and priority of evaluation variables.

Evaluation Areas	Weights of Areas		Weights of Evaluation Factors			
	Local		Local	Priority	Global	Priority
Entrepreneurship	0.2442	Entrepreneur's competency	0.3076	2	0.0751	5
		Adventure tendency	0.1180	4	0.0288	13
		Desire to accomplish	0.1462	3	0.0357	11
		Goal-orientation	0.3291	1	0.0804	4
		Risk sensitivity	0.0990	5	0.0242	14
Innovation	0.3999	Entrepreneurial motivation	0.1315	4	0.0526	8
		Progressive thinking	0.1655	3	0.0662	6
		Self-development	0.0924	5	0.0370	10
		Idea commercialization	0.3520	1	0.1408	1
		Market-oriented opportunity switch	0.2586	2	0.1034	3
Technology	0.1770	Creative technology utilization	0.3361	1	0.0595	7
		Technical knowledge and craftsmanship	0.1303	4	0.0231	16
		Intellectual property rights retention	0.1365	3	0.0242	14
		Market-oriented technology	0.2856	2	0.0506	9
		High-technology globalization	0.1115	5	0.0197	19
Economics	0.1789	Continuous investment	0.6346	1	0.1135	2
		Venture capital utilization	0.0005	5	0.0001	20
		Raising venture funding	0.0607	4	0.0109	19
		Raising available funds	0.1203	3	0.0215	17
		Financial resource retention	0.1840	2	0.0329	12
Total	1.0000		4.0000		1.0000	

At the second-level criteria for Innovation, Idea commercialization (0.3520) was more important than Market-oriented opportunity switch (0.2583), Progressive thinking (0.1655), Entrepreneurial motivation (0.1315), and Self-development (0.0924). This finding clearly revealed that for the success of a design startup business, Idea commercialization and opportunity switch play a more critical role than progressive thinking or motivation. At the second-level criteria for Entrepreneurship, Goal-orientation (0.3291) was more important than Entrepreneur's competency (0.3076), Desire to accomplish (0.1462), Adventure tendency (0.1180), and Risk sensitivity (0.0990). This finding explained that the leader's goal and competency are important success factors in the design startup business.

At the second-level criteria for Technology, Creative technology utilization (0.3366) was the most significant determinant compared with Market-oriented technology (0.2856), Intellectual property rights retention (0.1365), Technical knowledge and craftsmanship (0.1857), and High-technology globalization (0.1115). For Economics, Continuous investment (0.6346) and Financial resource retention (0.1840) were the most important and least influential factors, respectively. Other factors in the Economics criterion were Raising available funds (0.1203), Raising venture funding (0.0607), and Venture capital utilization (0.0005).

4.2. Comparing Evaluation Areas between Design and Technology Startups

The comparative analysis of the overall evaluation areas between design and technology startup groups revealed that Innovation was the most important area for their startup business. Moreover, design (0.178) and technology groups (0.2735) commonly selected Economics as the third area. However, according to design group, Entrepreneurship (0.2442) was more important than Technology (0.1770). By contrast, technology group indicated *Technology* (0.2799) as more important than Entrepreneurship (0.1399). This result proved that design startups need innovation ability and management skills within the fields of entrepreneurship and economics more than technological capability to create business success (Table 5).

Table 5. Results of the comparison analysis on evaluation areas.

Evaluation Areas	Weights of Areas			
	Design Startup		Technology Startup	
	Local	Priority	Local	Priority
Entrepreneurship	0.2442	2	0.1399	4
Innovation	0.3999	1	0.3067	1
Technology	0.1770	4	0.2799	2
Economics	0.1789	3	0.2735	3
Total	1.0000		1.0000	

4.3. Comparing Evaluation Areas between Design and Technology Startups

The comparative analysis of overall factors and their priorities (global) revealed that Idea commercialization, Continuous investment, Market-oriented opportunity switch, Goal orientation, and Entrepreneur's competency were the most important success factors for design startups, whereas Continuous investment, Idea commercialization, Market-oriented technology, Market-oriented opportunity switch, and Progressive thinking were the most important success factors for technology startups. The results indicated that idea commercialization, continuous investment, and market-oriented opportunity switch are the most critical success factors for startup businesses. Design startup businesses specifically need to emphasize Goal orientation and Entrepreneur's competency to lead their design business to success (Table 6).

Table 6. Results of the comparison analysis on evaluation factors.

Evaluation Factors	Weights of Evaluation Factors				Priority of Factors (by Global)	
	Local		Global		Design Startup	Technology Startup
	Design Startup	Technology Startup	Design Startup	Technology Startup		
Entrepreneur's competency	0.3076	0.2513	0.0751	0.0351	5	10
Adventure tendency	0.1180	0.1425	0.0288	0.0199	13	18
Desire to accomplish	0.1462	0.1702	0.0357	0.0238	11	16
Goal orientation	0.3291	0.2134	0.0804	0.0299	4	14
Risk sensitivity	0.0990	0.2226	0.0242	0.0311	14	12
Entrepreneurial motivation	0.1315	0.1063	0.0526	0.0326	8	11
Progressive thinking	0.1655	0.2373	0.0662	0.0728	6	5
Self-development	0.0924	0.0995	0.0370	0.0305	10	13
Idea commercialization	0.3520	0.2961	0.1408	0.0908	1	2
Market-oriented opportunity switch	0.2586	0.2608	0.1034	0.0800	3	4
Creative technology utilization	0.3361	0.2560	0.0595	0.0717	7	6
Technical knowledge and craftsmanship	0.1303	0.1371	0.0231	0.0384	16	9
Intellectual property rights retention	0.1365	0.1970	0.0242	0.0551	14	7
Market-oriented technology	0.2856	0.3096	0.0506	0.0867	9	3
High-technology globalization	0.1115	0.1004	0.0197	0.0281	19	15
Continuous investment	0.6346	0.6863	0.1135	0.0174	2	1
Venture capital utilization	0.0005	0.0637	0.0001	0.0222	20	19
Raising venture funding	0.0607	0.0812	0.0109	0.0009	19	17
Raising available funds	0.1203	0.0031	0.0215	0.0453	17	20
Financial resource retention	0.1840	0.1657	0.0329		12	8
	4.0000	4.0000	1.0000	1.0000		

5. Conclusions

We conducted this study to determine the key success factors of a design startup business and to demonstrate empirically the necessary resources for these factors. Design startups indicated that idea commercialization is the most important factor for a startup's success, whereas technology startups said continuous investment is the most important aspect, followed by idea commercialization. These results explain why the Korean youth avoids establishing startup, that is, because of the lack of ideas. Design startups can represent the value that can bring meaningful changes in the market based on creative

ideas. The courage to start a business and the factors that make a business successful are all related to the commercialization of unique and attractive items.

If a design startup appeals to customers but then offers only one product continually, it will fail. A design startup must try to create new designs constantly, produce new products by applying new ideas, and be aware of market requirements and environmental changes. In addition, a design startup must prepare the business model and income-related contents required by investors thoroughly so that stable investment and support can be provided to them at the appropriate time [20]. Such rigorous preparation must be accompanied by an effort to create an environment where Korean design startups can receive domestic and overseas investment, and to design a hopeful and preferred business model from the perspective of investors. Likewise, the style of leadership exhibited by team leaders of small- and medium-sized enterprises in information technology has a significant role in explaining organizational variables [82–84]. Design startups must encourage leadership that is differentiated by gender to generate results. For example, previous studies have demonstrated that women leaders possess qualities focused on friendship and closeness with their subordinates, based on a desire to help individuals; by contrast, their male counterparts are focused on rules and results when it comes to coordinating teams [84,85]. Finally, the research results proved that the biggest difference between design and technology startups is goal orientation. This means design startups need multifaceted points of view, which must be reflected in their project's vision, goal, and step-by-step mission in order to achieve sustainable growth. Neither design startups nor technology startups emphasize the importance of venture capital utilization, raising venture funding, raising available funds, and financial resource retention. Startups are at a high risk of failure in comparison with existing firms because of the limited availability of resources and lack of established channels with suppliers and customers [46]. Thus, it is important for design and technology startups to understand the competitive market such that they can react to actions of competitors in a timely manner and with improved product and services. Design startups must also manage economic factors to lead their business to success. All kinds of startups need professional knowledge to control their capital system and fundraising.

The research results will help design startups recognize the important variables in developing their enterprises and businesses. The implication of this study is that many startups in Korea expect to receive investment and support from overseas investors. This means overseas investment itself has been recognized as a startup that creates services and products that can be used in the global market. The strong preference for attracting foreign investment is due to the fact that the amount of foreign investment is larger than that of domestic investment, thereby enabling startups to cope flexibly with performance and economic pressures. In this study, we confirmed this fact by asking startup experts.

This study has limitations. First, the research variables were collected from the success factors of general business ventures and not of specialized design businesses. Although this study was verified by venture experts, it was not adequate for defining variables that can be used to analyze design startups. Future studies must obtain the success factors of design startups. Second, most of the survey respondents were experts on the Korean market and not entrepreneurs. Therefore, the results cannot explain design startups globally. Future studies must look into developing a mechanism by which startups are provided with direct investment at the national level.

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Appendix A

Questionnaire Sample

Part A. Success Factor Importance Evaluation

A0. Please enumerate the four success factors of a design startup business by relative importance.

Entrepreneurship	Entrepreneur’s ability, philosophy, and leadership to lead the design startup business success
Innovation	Idea and innovative capability to make or lead the new market for the success of the design startup business
Technology	Technology, product, and business modeling capability of the design startup business success
Economics	Funding and financial ability to lead the design startup business success

Raking 1 () Raking 2 () Raking 3 () Raking 4 ()

A1. Please check “0” on the criteria number between variable A and B.

No.	Variable A	Importance																Variable B	
		9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8		9
1	Entrepreneurship																		Innovation
2	Entrepreneurship																		Technology
3	Entrepreneurship																		Economics
4	Innovation																		Technology
5	Innovation																		Economics
6	Technology																		Economics

Note. 1: equal, 3: (be) of low importance, 5: (be) important 7: (be) very important, 9: (be) extremely important 2, 4, 6, 8: intergrade each 1 and 3, 3 and 5, 5 and 7, 7 and 9.

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