

Review of Effects of Internal and External Factors on Selection of Financing Strategies by New Technology Ventures

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Abstract

New technology ventures currently play a key role in the economic performance of countries. Financing methods are among strategic issues facing entrepreneurs for launching a business, which must be reviewed by researchers and policymakers of finance and investment; thereby new technology ventures are of importance in the economic growth trend and sustainable development.

This study is aimed at reviewing the effects of internal and external factors on the selection of financing strategies by new technology ventures. Statistical society of the present research includes start-up companies. Data collection method includes library research and field research. Descriptive-practical research method and data analysis tools, Delphi techniques and experts' panel, and regression analysis. Firstly, upon designing the preliminary questionnaire and distribution thereof among academic experts and new technology ventures, totaling 29, main and secondary elements were extracted based on the information received from the experts. Then, at the next stage, for the explanation of the designed model, the final questionnaire of research, incl. general and specialized questions are prepared and drawn up, and upon distribution of the final questionnaire among the statistical sample, comprising start-up companies, the stated questionnaire was distributed among 384 companies. Research results indicate a positive and significant effect of internal variables of companies concerning the role of intermediary variables on traditional and new financing methods. Notably, external variables of

companies have a significant effect on traditional and new financing methods through intermediary variables. These results indicate the importance of internal and external factors of companies on the determination of financing strategy of start-up companies in Iran.

Keywords: Internal and External Factors, Financing Strategies, Start-up Companies, New Technologies, Venture Capital.

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Introduction

Creative ideas are the force driving technological advances, which are formed in the mind of innovators and inventors, and upon follow-up of entrepreneurs, these ideas will result in the creation of a new business. However, founders of start-ups lack two key factors of success in the competitive market, i.e. managerial knowledge and experience and sufficient financial resources, which will be settled through the entrance and proactive participation of investors, who have high business intelligence and are fully aware of principles of success in the business market. Therefore, as per the present research, the stated investors play an important and strategic role in the economy and acceleration of technological development in various countries (Nandaa and Rhodes-Kropf, 2013).

Financial resources appear to constitute the foundation of a strategic plan and the financial value as the unifying factor to the bond market, products and the operating decisions related to strategic alternatives. As the main function of financing, identifying and laying plans for an appropriate mix of financing is performed to support strategic activities and assure the use of funds for achieving expected returns (Kumar, 2017).

Also, on the other hand, it can be said that the business environment has experienced huge developments in the past up to the present time, changing business objectives and vision and type of businesses. One of the major developments in the 21st century is the development of new technology ventures. These companies, considering their unique characteristics, during the recent two decades, played a pivotal role in the creation of value, employment and attainment of economic growth. Notably, the role of the internet in directing economic activities, inter alia, is significant. According to the assessment of internet economy by Boston Consulting Group in G-20, in 2016,

half of the world population were users of the internet and economic value of the internet in the stated countries is almost \$4.2 trillion, in such a way that internet account for almost eight per cent of GDP of several countries, incl. economic growth and employment creation (Dean et al, 2012).

Millward Brown index, the five best global brands in 2012 comprised of Apple, International Business Machines Corporation (IBM), Google and Microsoft, and in 2017, this list includes Google, Apple, Microsoft, Amazon and Facebook (Millward Brown official website (Nandaa and Rhodes-Kropf, 2013). Of note, the value of technology and telecommunications accounted for approximately 44 per cent of the stated index. In contrast, their value was almost one third in 2006; thereby the ascending trend of value of internet companies such as Google and Amazon.com, Facebook, Baidu and .e-bay is significant. Therefore, understanding the importance of new businesses and startups is more prominent than any other matter. However, according to conducted research, one of the largest challenges facing these companies is a paucity of financial resources for meeting their capital needs and operation and development of their businesses, the matter which is reiterated by Mazhar Islam et al (2017), Epstein et a (2017), Andenes and et al (2016), Organization for Economic Co-operation and Development (OCD) (2015), Krastev et al (2014), Ipppaakala, Jaana , M t, H nri et a (2014), Kláčrrr Čal t al (2014), five years, indicating 78.1 per cent failure of such companies. According to Geordino, et. al (2014), 60 per cent of new technology ventures lost out in the first five years of activity (Leskisenoja et al, 2015).

On the other hand, without proper financing, startups will not succeed. Indeed, financing limitations in national financial markets failed to support new technology ventures. Regarding the high rate of default and failure of small businesses and lack of financial laws and regulations infrastructure, domestic financial institutes tend not to lend funds or conduct investment. Notably, the dominance of the banking system in financing economic firms and lack of instruments required for financing such firms resulted in most medium and small enterprises facing financial problems, in particular for financing their circulating capital. According to conducted research, financial problems have been the main cause of the closure of most small economic firms covered by Iran Small Industries and Industrial Parks Organization. Therefore, considering the abovementioned provisions, the present research is aimed at the identification of factors affecting the selection of financing strategies by new technology ventures.

Commercialization of advanced technologies, which accompany the

development of innovation, requires a booming market and more venture capital, indicating the importance of investment cycles and the relationship between the successes of a startup based on advanced technologies with the proportionate financial environment.

Investment in technology ventures accompanies huge risks. Participation in the development of technological ideas result in the return of less capital than the primary investment; however, on the other hand, in case of success of ideas development and commercialization process, there will be a high return on investment (Nandaa and Rhodes-Kropf, 2013).

Literature Review and Background

1. Ups of Companies Based on New Technology

Financing innovation faces different challenges in all countries, and some challenges are almost common in all countries and participants of the technology and innovation field and refer to the nature of innovation and existing risks. Notably, the intrinsic risk is hidden in entrepreneurship success and innovative activities and long-term nature of the return of capital, resulting in the inappropriateness of conventional financing methods such as credit and banking mechanisms. Various research indicates that innovative activities hardly succeed in financing in a competitive free market. The most important issue in financing innovation reflects on the preliminary output of allocated resources, which is considered as a non-competitive knowledge. Therefore, developing knowledge of the manner of manufacturing products, or services based on new technologies, permits use thereof by other competitive firms; thereby resulting in the unwillingness of investors to participate in this field (Nandaa and Rhodes-Kropf, 2013).

There are different interpretations regarding start-up companies, classified into qualitative and quantitative parts. According to Timmons and Spinelli (2008), startup companies are companies with little experience and an innovative idea, developed as a company with a high growth rate. The success of these companies depends upon a strong and main entrepreneur and the creation of a team with comprehensive talents. Giardino, et. al ., (2014), expressed that startups which are established recently, are companies with little experience regarding high fluctuations of technology and market (James,1988).

The environment of startup companies was dynamic and unpredictable resulting in management efforts to accelerate affairs to prevent failure and vacuum in the market. Usually, conducting one business is reiterated, however,

such companies are engaged in one or several sections with high technology (Bürgel, et al., 1998), Quantitative approach for the definition of startups is proposed by the European Commission. Startup companies may be tiny, small and medium companies. Seemingly, the European Commission considers startups as tiny companies. In this study, a startup is considered as a tiny company (Leskisenoja et al., 2015).

Thus, considering the matters proposed, startup companies are part of companies that are recently established and/or entrepreneurs who are in the phase of research and development of the market. These companies are usually, not necessarily, in tandem with technology projects, since their products are mostly software's which may be produced and reproduced easily. Furthermore, technology-based projects, essentially, has the highest potential for growth (www.Mashable.Com). Startup companies' requirements and needs are beyond the local level; thereby such companies are located in urban centers (Baptista and Mendonça, 2009).

2. Financing Strategies

Financing is of great importance in developing countries. Developing countries, for progress in various economic fields, required huge financial resources. These countries may implement several projects through domestic financing, however, major and infrastructural projects required by the country, such as oil, gas and petrochemical projects as well as projects of many other industries for the development of infrastructures which may not be financed by the government, shall be financed through foreign financial resources (Chen, 2008). The time value of money constitutes a major subject in financial management (Tripathi, 2020).

Equity financing is defined as per the theoretical foundations of financial management as the sale of ownership interest for raising funds for business objectives. The ownership interest allows the investor to share dividend (Cathann and Kress, 2013).

Approaches to financing companies are different. The traditional method of financing refers to taking a short-term or long-term loan, partnership in investment, investment with the guaranteed purchase of the product, sale of company's shares or issuance of bonds (of note, the latest two methods are suitable for large companies). Project financing, either governmental or private sector will be carried out through domestic resources or attraction of foreign resources. Each method has different choices which the project employer will finance his/her project through one of these two methods (Naude, 2007)

Studies and research conducted in the field of venture capital and effects thereof on startups indicate investors' experience, which reflects in the investment cycle, is a key channel affecting financial markets, playing a pivotal role in dissemination and commercialization of technology. Notably, financial investment cycles may create innovation cycles.

Most research in recent years focused on research and development by startups and effects of an investment in research and development, and financial limitations on research and development and role of attraction of investment in progress of technological development process. Of note, the manner of change in investment and standing at various stages of the investment cycle are significant factors, which are proposed in this article.

3. Classification of Financial Resources

Deciding on the leverage combination is one of the main duties of corporate executives (Farzinfar, 2019). There are various theories about corporate capital structure (Salehi,2016). Cardullo (1999), classified financial resources of entrepreneurship into two groups. This classification of financial resources comprises of private or unofficial resources, incl. entrepreneur personal resources, relatives' and friends' resources and angels of business resources as well as traditional resources (official), incl. governmental resources, banks and joint venture companies (Cardullo, 1999). In this respect, classified financial resources of entrepreneur companies into two groups (Deakins and Freel (2003).

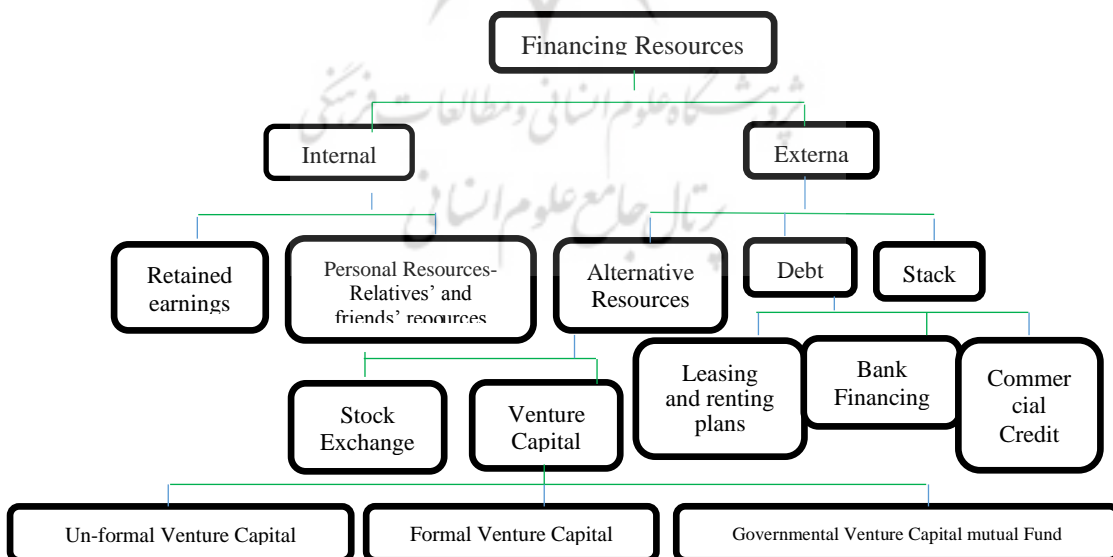


Fig. 1. Financing of Entrepreneurship Companies

Source. (Deakins D, Freel M.,2003)

Entrepreneurs' financing differs regarding the stage of production and supply of the product. According to Marmer, M., et. al (2011), there are six stages of development for startup companies. The first stage is the discovery stage aimed at the review of whether resolving the problem identified in the market is rational, whether partners are willing to make use of solutions and development plan of startup companies. This stage lasts for five to seven months. The second stage is the validation stage, aimed at proving the case that whether users are interested in the products of startup companies. Of note, this stage lasts for three to five months. The third stage is the efficiency stage, aimed at increasing business models and the number of users. This phase lasts for five to six months. The fourth stage is the scale stage, which lasts for seven to nine months. Furthermore, the fifth stage is aimed at profit maximization and the sixth stage is aimed at renewal or decline. A startup, upon passing various stages of development and reaching profitability, the stocks thereof will be listed on the stock exchange and upon initial public offering the company is no more a startup (Skuek, 2011).

4. New Methods of Financing Startups

Nowadays, financing methods and investment in startups are developing and evolving, a number of which were indicated. The emphasis is on seed accelerators, accelerating capital upon injecting financial resources and coaching, paving the way for startups and teams that are willing to learn and succeed in the startups' world (Lupak, 2007).

As far as new investment programs are concerned, there is no considerable research on this field, and several studies found accelerators being higher than startup companies as a positive change in the economic structure of high-tech industries. Christensen (2009), identified the main reasons for the initiation of seed accelerators as feasibility, the need for creating new ecosystems and increases in startup companies through investment programs reflected in the number of startup companies and their long-term number of employed staff (Klakmer Kalupe, et. al. 2014).

He explained the success of seed accelerators on the basis of three factors, (1) cooperation of individuals with high merit, proactive in two fields of startup companies and experienced investment angels, (2) outstanding technology or focus of the industry, (3) a distinguished and convincing exist for the establishment of a startup (Klakmer Kalupe, et. al. 2014).

The aforesaid also indicated that the United States of America is a center for startup companies, however, Europe, within the recent decade, upon

supporting startup companies in the field of internet, technology and cell phone stepped further in this way. London, Berlin and Vienna are the best accelerators of startups in Europe. Now, several successful accelerators in the world and online operating systems for the accumulation of financial aids are mentioned (Lupak, 2007).

Y Combinator and Tech Stars are an appropriate approach for young entrepreneurs. Y Combinator is among the most successful accelerators of primary capital in the world, established in 2005, and now is a program model for the development of many new accelerators. Upon the establishment, Y Combinator has covered 140 startups (Christensen, 2009).

Tech Stars is established by Business Angels of Colorado. CRV Quick Start is a venture capital company in the United States of America that grant loans to entrepreneurs. The difference of loans granted by the aforesaid with loans granted by the banking system is the fact that should the startup manage to obtain the second round of investment, the first loan will be replaced with majority stock unless the startup shall return received loans (Lupak, 2007).

As a program of investment in the first development stage of companies, Seedcamp helps experts lay foundations for assisting startups in the field of primary investment rather than primary capital in expanding their business and also helps specialists in fields such as the development of the product, marketing, public relations and human resources as well as attorneys and journalists startup companies¹. In contract to Y Combinator and Tech Stars, Seedcamp was established by business angels and venture capital funds. Notably, it shall be emphasized that when a venture capital fund decides not to finance several projects or startups, this is an important sign for potential investors (Christensen, 2009).

Startupbootcamp is a network of industry-focused startup accelerators and conducts exhibition during a year in various locations such as Copenhagen, Madrid, Dublin, Amsterdam and London. This program is an extensive network of instructors and partners gathered to help selected startup companies, pave the way for operationalization of their ideas. Startupbootcamp is a selected program, i.e. almost 300 projects in Europe and the world registered in this program and usually, about 10 projects will be selected in each program. Startupbootcamp provides network and instructors and is also an affiliated member of the Tech Stars program in the United States of America

¹.www.seedinvestment.co.za

(Marsich, 2012). Fundable (crowdfunding) is an online program for collecting investments in small² companies, for instance, a type of collection of financial aids for development which will be utilized for different purposes in various quantities. Generally, Fundable is a fund for collecting financial aids for charities and attractive projects. Each entrepreneur may prior to the development of his/her project increase financing through future customers. In case of failure, the funds will be returned to investors who helped to finance. Furthermore, the fund will guarantee all transactions which are conducted correctly (Lupak, 2007).

5. Background of Research

Mazhar Islam, et. al, (2018), in their research, paid attention to the matter of signaling in the first stage of startups by financial aids of the government of the United States of America and resources of venture capital. Results of their research indicated outstanding advantages of startups, in emerging industries, upon signaling strategies by a governmental organization. Notably, this matter was related to the time that they made attempts to pass through stages of organizational cycles.

Epstein et a (2017), in their research, took heed of the incongruity of firm and employment, allocation of capital and counter-cyclic policies of the labor market. They reached such results as the difference in the productivity of labor force and sectoral contribution to employment and products of various firms is a key factor in the explanation of feedback to policies.

Adopting an optimization strategy for concurrent supply chain finance schemes, Gelsominoa et. al., (2018), found working capital requirements and the finance cost to play a key role in evaluating the benefits of concurrently adopting multiple supply chain finance schemes. They found the funding limits of these schemes to significantly influence the relevance of the strategies, as strict limits increased the relevance of having alternative schemes available to onboard suppliers. They also solved a numerical example on the basis of an actual application to emphasize the management relevance of the model.

Financing and initial public offering were addressed by Honjo and Nagaoka [29] for biotechnology

start-ups using the data obtained in Japan. Using a unique dataset, they found biotechnology start-ups initially backed by venture capital firms or

2 <http://www.fundable.com>

university-originated ones to more quickly go public. Neither staged financing nor syndication by venture capital firms was also found related to a higher value of initial public offering relative to investment. In contrast to the timing of initial public offerings, the value of initial public offering in the biotechnology industry was found dependent on equity market conditions. The discrepancy in results between this study and previous research on venture capital investment was also explained.

Investigating strategic finance perspectives, Kumar (2017), found finance function to be the central fulcrum that holds businesses together and manages their control and information in a decentralized step up. All types of plans were found to lead to financial planning in the long term and finance to be the main connection of strategic plans with their implementation.

Addressing the challenges of bank financing policies in China, Wonglimpiyarat (2013), investigated investment policies required for supporting technology-based start-ups and small and medium-sized enterprises. He highlighted the then great deal of attention paid to investment policies for supporting small and medium-sized enterprises and technology-based start-ups. The Chinese government was reported to have introduced numerous policy initiatives, i.e. government intervention policies, to support entrepreneurial activities after joining the WTO. This experimental research found China still in need of improving regulatory policies to support innovative businesses and help with its transition to an innovation-driven economy despite introducing the twelfth 5-Year National Economic and Social Development Plan to support the development of small and medium-sized enterprises. This study provided policy guidelines and lessons for improving competitiveness among small and medium-sized enterprises in China. It was recommended that the findings be applied to other developing and emerging economies that seek to comprehend the contribution of financing mechanisms to developing an innovative economy.

Andans, et. al., (2016), in their research paid attention to the matter of financing for startup companies aimed at understanding hidden mechanisms of obtaining required financial resources for startups companies in Norway and the United States of America. Results indicated that two markets of Norway and the United States of America have access to different financial resources. Organization for Economic Co-operation and Development (OECD) (2015), in its research, paid attention to new approaches of small and medium enterprises and financing entrepreneurship (expansion of instruments). Krastive and Christian (2014), in their study, paid attention to the matter of primary budget

of startup companies. Final results indicated that six major blocks in the budget of startup companies are identified. Isopakhala and Mato (2014), in their research, considered the matter of analysis and theories of startup companies for internationalization of HVO Finland Oy. Marina Klucher, et. al., (2014), in their research paid attention to the matter of analysis of financial resources of startups in Croatia. Results of their research may assist better understanding of the strategy of financing entrepreneurship investments and startup companies at local and global levels. Beck and Cull (2014), in their research, reviewed considered the matter of small and medium-sized enterprises in Africa. In this respect, they indicated that the level of access of companies to financial resources correlates to systematic and banking characteristics and political challenges and discussed and reviewed matters in this respect. Proença, et. al., (2014), presented research on methods of financing dubbed "determining the structure of circulating capital after the economic crisis in the stock exchange of Portugal in 2008", and reached such results as the amount of liquidity, the structure of assets and profitability are important factors affecting capital structure of firms. Nada and Rodiz-Krafab (2013), in their study, paid attention to investment and innovation cycles of startups. They found out that in the normal situation of the market, venture capital companies prefer to invest in startups companies instead of investing in companies with worse financial conditions. Furthermore, their results indicated that increase in capital in the booming market has a causal effect on directing investment flow towards startups through reduction of costs for the first stage of investment and creation of higher risks for investment flows. Menkveld et. al, (2012), in their research, paid attention to factors affecting cycles of internet startups. They found pivotal factors/compatibility (change), learning (practice) and commitment effective in the discovery step, reported no significant factors in the validation step, identified customers factors, learning and commitment as the more prominent factors than the other ones in the productivity step and found the importance of incubator/consultant and pivotal factors/compatibility to be less than that of the other ten factors. Findings of their research indicate that commitment, interaction, practice and change factors are of importance for entrepreneurs of internet startups, and commitment factor, inter alia, is of utmost importance for entrepreneurs. Colombo, M.G. and Grilli, L., (2005), conducted a study on 306 new technology ventures in the country of Italy. Their research was mainly aimed at the review of the effect of credit limitations on the activities of these companies. Findings of their research supported this viewpoint that the credit market has flaws and there are other effective financiers. Indeed, a minority of companies seek external financing, in particular from banks. Another research dubbed report of startup companies

of Gnom conducted by Marmar, et. al., (2013), indicated that more than 90 per cent of startups did not succeed, and among 3,200 respondents, solely one company out of 12 companies succeeded in the introduction of its product to the market, grow and manage to derive profit by their primary vision. Many entrepreneurs of startups fail to succeed in business and deriving profit; thereby new theories, methods and ideas are proposed daily, indicating a handbook for entrepreneurs regarding the manner of reaction and success in unfavorable conditions (Zlatarek, M., Zbog čega, 2012)

Of note, an academic research project conducted by Kählig (2013), mainly contributed to the understanding of startup companies by individuals who are engaged in the field of business[36]. Mickiewicz and Korostlivi (2010), in their research, proved that financial liberalization affects total financial investment in startup companies and financing of internal and external resources. Moreover, high-technology projects essentially have the highest growth potential (Mashable.Com, 2013). Global Entrepreneurship Monitor (2001-2006), in during of 2001-2006, researched startup companies. Notably, information obtained from 54 countries indicated that total investment in startup companies depends upon national economic development. Of note, a rise in GDP per capita raises financial opportunities for investment in entrepreneurship activities. Bagheri (2015), in his/her research, reviewed selection of appropriate instrument for financing innovation with the emphasis on the mechanism of venture capital, and findings of this research indicated that economic motivation and profitability motivation are the most important criteria, and the best instrument for financing innovation with the mechanism of venture capital, is private venture capital, whose infrastructure shall be prepared in the country.

Moreover, the higher the risk of participation in technological ideas, the higher the probability of failure of project and investment.

Mechanism of investment companies is among factors raising investment in technology ventures in boom financial markets and during economic prosperity. On the one hand, the aforesaid pursue favorable investment opportunities, on the other hand, investment opportunities relating to new technologies will accompany higher risk and need for more investment. Of note, investors of venture capital, for participation, must choose higher investment in tandem with higher risks. In an economic boom, there are more accessible funds. Venture capital paves the way for examination and experience of investment opportunities and repetitive changes in kind of

investment, resulting in more activities in innovative and risky projects (Nandaa and Rhodes-Kropf, 2013).

Determination of projects and startups, which work on a new field of technology and root innovation is on their agenda, is among major notes regarding studies on investment in innovative businesses. Registration activities and dissemination of patent are among indices, which represent the innovation level of a startup.

6. Conceptual Model of Research

In this part of the present research, the researcher attempted to find several most important external and internal factors affecting the selection of financing strategies of new technology ventures through the study of theoretical basics and research-related backgrounds. Therefore, the primary conceptual pattern of research is introduced in Figure No. 2.

6.1 Social Capital

Nowadays, due to the development of three major trends of intense international competition, discrete markets and changing technology, we observe proposing the matter of innovation. Such trends attracted the interest of scholars of the field of business in consideration and search of the concept of social capital as a vital factor for the promotion of performance of organization and introduction of creation of competitive advantage based on innovation. Review of economic literature indicated economic and investment security as the most important index of development. Economic security correlates with all characteristics and institutional specifications of economy, incl. organizations, laws, customs and ideology. Investment security is an institutionalized framework of social, political and legal conditions, attracting depositors' and investors' trust through strengthening social capital, and employment and income security relates to rejection of any pressure out of control of individuals of society in the path to employment and earning income to achieve average economic welfare. The secure economic environment has a close relationship with a stable macroeconomic environment. The secure economic environment is based on important pillars, i.e. law and effective order, reasonably stable macroeconomy, and most important of all, government credit with the investor (Ghaedi and Alizadeh Sani, 2016). Therefore, the concept of social capital may play a significant role in an insecure economic environment in general and regarding financing and investment level in a country. Concept of social capital, which has been proposed in the field of social sciences and economy recently, paved the way for analysis of social and

economic problems. In this respect, theorists such as Jane Jacobs (1961), James Coleman (1966), Glenn Loury (1970), Ben Porath (1980), Joan Tocqueville (1831), Williamson (1981), Becker (1983), Francis Fukoyama (1990) and David Émile Durkheim (1933), proposed various definitions of social capital.

A cross-sectional study conducted by Soumynananda D. (2007), reviewed the formation of social capital by humans and the significant impact of social capital on the economic growth of a country. Bartolini, S., et. al. (2007), explained endogenous growth of US economy with the emphasis on social capital and

results of this model indicates that mere existence of social capital in a society paves the way for economic growth, however, this growth will be slight and gradual. Though, a high level of social capital in society results in progressive economic growth. Therefore, in this research, the selection of financing strategies by new technology ventures in the Iranian capital market has been regarded as a dependent variable and described and interpreted by social capital as an independent variable.

6.2 Business Intelligence

Concept of business intelligence (BI) was introduced by Mr Harvard Drisner, one of the experts of Gartner Research Group. Capabilities of business intelligence are classified into two technology groups appropriate for supporting decision-making, raising capabilities of decision-makers in an organization. By making use of collected information, business intelligence may be expanded and users may make decisions based on the best data (Thomas, 2001). From architecture and process standpoint, business intelligence is a framework raising the efficiency of organization and integrity of processes, centralized on the basis of decision-making processes in different organizational levels (Wright & et al, 2002). Indeed, business intelligence comprises of noticeable capabilities which may result in the best business decisions through a collection of past, present and predicted events and support future trends of activities of organizations. Business intelligence is not a product, technology and/or method, but a combination of all choices for utilization of assets of information in key processes of a business to attain the best business performance (Williams and Williams, 2010). Notably, findings of research conducted by Zareie and Zareie (2018), indicated that business intelligence with annual frequency has a significant positive impact on the return of assets and ratio of loan to the asset, and a one-year interval, prepares the ground for raising capital return. Thus, with regard to the importance of business intelligence, this variable is effective on financing through the

decision-making process, and in this research, selection of financing strategies of new technology ventures in the Iranian capital market is regarded as a dependent variable, described and interpreted by business intelligence as an independent variable.

6.3 Creativity and Innovation

Innovation is the introduction and conscious application of ideas for design and presentation of products, or new processes resulting in meeting needs of individuals, groups, organizations, or society (West and Farr, 1990). Countries make use of innovation and creativity concept and policies for the advancement of trade and economic objectives, for instance, China. Innovation policies of China comprise of five groups of science and technology policies, industrial policies, financing policies, tax policies and financial policies. Therefore, in this research selection of financing strategies of new technology ventures in the Iranian capital market is regarded as a dependent variable, described and interpreted by creativity and innovation as an independent variable.

6.4 Role of the government

Government as the sole legitimate body which may use force has various models, and may be divided into the following forms, division of government into an absolute ruler, republic, state class and heterogeneous influences; division of government into authoritarian government, populist government; division of government into organic and mechanical government; division of government into sovereignty government, representative government and employer government, various types of government from political and sociological standpoints (Vincent, 1992; Ranani, 2002; Dadgar, 2001). Upon review of the conceptual and historical role of the government and by virtue of experimental evidence arising from performance and adoption of policies by governments, organizations and governmental bodies and effect thereof on the economic and cultural development of governments throughout the world, lasting socioeconomic development requires an effective and efficient government. Nowadays, it is mostly accepted that effective and efficient government is essentially important for the attainment of the objective of socioeconomic development (The World Bank Group, 1999). Therefore, in this research, selection of financing strategies of new technology ventures in the Iranian capital market is regarded as a dependent variable, described and interpreted by the role of the government as an independent variable in tandem with elements thereof. Thus, in this research, based on theoretical basics, the most important aspects of creativity and innovation, social capital, business

intelligence, and role of the government as effective factors on selection of financing strategies of new technology ventures were represented in Figure No. 2. Conceptual of Model.

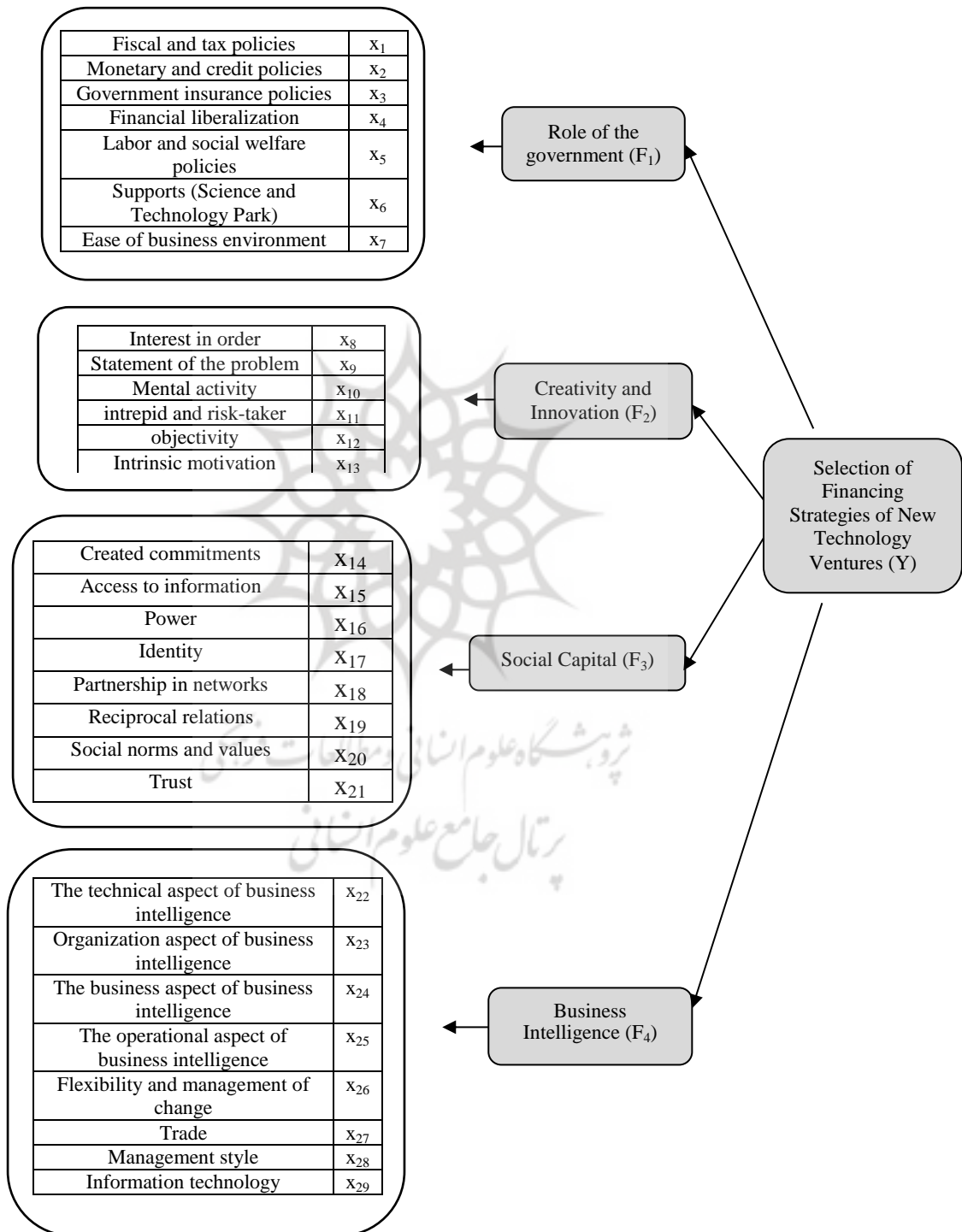


Fig. 2: Primary Conceptual Pattern of Research

Source: (Findings of Researcher, 2017)

Research Methodology

The main objective of the present research is the review of the effects of external factors (role of the government) and internal factors (social capital, business intelligence, creativity and innovation) on the selection of financing strategies of startup companies. Statistical society of research comprises of financial managers and experts of startup companies in Iran. Method of this research is applied-descriptive. Tools for analysis of data are analysis of path and analysis of correlation. In the present research, the effective intra-company and inter-company factors are considered as independent variables. Financing strategies of new technology ventures are considered as a dependent variable. Furthermore, data were analyzed in two parts of tests of descriptive statistics and inferential statistics through Statistical Package for the Social Sciences (SPSS) for analysis of the questionnaire. As the tool for collecting information in this research is a questionnaire, validity thereof was reviewed by experts and by taking into consideration the previous researches and reliability thereof is checked by Caanbaah' al t t, t eesult of wccc aee nt n n Tabl No. 3. Theories of this research are proposed as follows:

1. Research Theories

First theory: Factors of social capital, business intelligence, creativity and innovations are effective on the selection of financing strategies of new technology ventures in Iran.

Second theory: Role of the government affects the selection of financing strategies of new technology ventures in Iran.

2. Experimental Models of Research

Generally, in this research, selection of financing strategies of new technology ventures in the capital market of Iran has been regarded as a dependent variable; thereby, changes thereof by internal and external factors of the company such as the role of the government, creativity and innovation, social capital and business intelligence have been considered as an independent variable, described in tandem with their elements. Thus, in this part of the present research, based on the primary conceptual pattern, experimental models of research will be introduced for statistical inference and analysis of relations among variables of the model, within the framework of the general linear model or multivariate regression model. Notably, for removing autocorrelation and raising the precision of the regression model, each periphery factor of the model has been changed to the main factor, indicated in figure No. 2.

$$y=f(\text{factor}_i) = \alpha + \beta_1.f_1 + \beta_2.f_2 + \beta_3.f_3 + \beta_4.f_4 + e_{i,t}$$

$$Y=f(\text{factor}_1) = \alpha + \beta_1.X_1 + \beta_2.X_2 + \beta_3.X_3 + \beta_4.X_4 + \beta_5.X_5 + \beta_6.X_6 + \beta_7.X_7 + e_{i,t}$$

$$Y=f(\text{factor}_2) = \alpha + \beta_1.X_1 + \beta_2.X_2 + \beta_3.X_3 + \beta_4.X_4 + \beta_5.X_5 + \beta_6.X_6 + e_{i,t} \quad (1)$$

$$Y=f(\text{factor}_3) = \alpha + \beta_1.X_1 + \beta_2.X_2 + \beta_3.X_3 + \beta_4.X_4 + \beta_5.X_5 + \beta_6.X_6 + \beta_7.X_7 + \beta_8.X_8 + e_{i,t}$$

$$Y=f(\text{factor}_4) = \alpha + \beta_1.X_1 + \beta_2.X_2 + \beta_3.X_3 + \beta_4.X_4 + \beta_5.X_5 + \beta_6.X_6 + \beta_7.X_7 + \beta_8.X_8 + e_{i,t}$$

Research Findings (Analysis of Data)

In the present research, at the first step, by making use of required studies and reviews about theoretical basics and related research background, the main primary factors as well as periphery factors were extracted. Then, at the second step, through Delphi Fuzzy method for selection, a logical No. of decision-making criteria was introduced. Finally, at the third step, by making use of regression analysis and analysis of correlation, relations among variables of model were reviewed.

1. Selection of Criteria through Delphi Fuzzy Method

Implementation of Delphi Technique and Relevant Results

The Delphi method or Delphi technique is a structured communication technique or method, originally developed as a systematic, interactive forecasting method which relies on a panel of experts. The Delphi method includes the repetitive collection of experts' opinions through consecutive use of questionnaires for reflecting convergence and divergence of opinions (Salamati, Salamat and Rostaminia, 2013/14). The Delphi method is used in this research. The Delphi method is used in two rounds, and the results thereof are presented in this section.

For conducting the stated research, quasi-numerical method, or judgmental method for determination of factors affecting financing strategies of new technology ventures in Iran is used. Notably, in this study, upon agreement of 29 academic experts and participants of the field of financing strategies and startups, the Delphi method is used in two consecutive meetings.

Delphi Fuzzy method is introduced for the selection of a logical number of decision-making criteria through review of comprehensive resources within the framework of a hierarchy for evaluation of factors affecting selection of strategies of financing new technology ventures. This method makes use of choices and viewpoints of experts for the conceptualization of criteria related to a specific business. This method is aimed at the needs of startup companies

for selection and operationalization of financing strategies while preserving the calculation efficiency of the evaluation process. Stages of implementation of Delphi Fuzzy method is conceptualized as follows (Kuo, Y.F., Chen, P.C., 2008; Lee, et. al., 2010; Wang., 2015).

Stage One:

Use of a questionnaire and organization of an expert board for expression of conservative value (the minimum) and optimistic value (the maximum), the importance of each criterion in the collection of probable criteria S on the scale of one to 10. One point is depicted in the form of $C_{ik} = (L_{ik}, U_{ik}), i \in s$, in which (L_{ik}) (U_{ik}) and, are conservative index and optimistic index of criterion i , ranked k , respectively, by an expert.

Stage Two:

Organization of viewpoints of experts collected from questionnaires and determination of (TFN) for the most conservative index $C_i = (LC_i, MC_i, UC_i)$ and the most optimistic index $O_i = (LO_i, MO_i, UO_i)$ for each criterion of i . Notably, make use of $C_i = (LC_i, MC_i, UC_i)$, since (LC_i) indicates the least conservative value of experts.

$$LC_i = \text{Min} (L_{ik}) \quad (2)$$

In the abovementioned equation, (MC_i) indicates the geometric mean of the most conservative value of experts for each criterion of i . This equation is achieved through equation No. 2.

$$MC_i = (L_{i1} \times L_{i2} \times L_{i3} \times \dots \times L_{ik})^{1/K} \quad (3)$$

In this equation, (UC_i) indicates the maximum conservative value of experts.

$$UC_i = \text{Max} (L_{ik}) \quad (4)$$

In the abovementioned equation, the minimum (LO_i) , geometric mean (MO_i) , and the maximum (UO_i) , the most optimistic group for criterion i .

Stage Three:

Calculation of triangular fuzzy numbers (TFNs) for the most conservative index $C_i = (LC_i, MC_i, UC_i)$ and the most optimistic index $O_i = (LO_i, MO_i, UO_i)$ for remaining strategies $A_i, i \in s$.

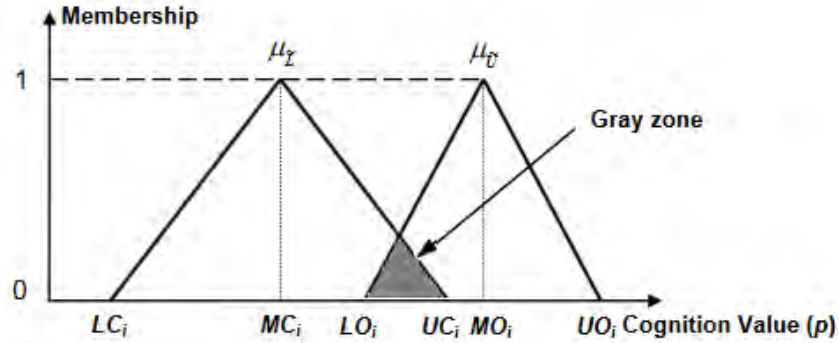


Fig. 3. Grey Area of C_i and O_i

Source: (Wang.,2015)

Stage Four:

Review of similarity of viewpoints of experts and calculation of significant value, (G_i) for each criterion. Grey area overlap area (C_i) and (O_i) in Figure No. 4, is used for review of consensus of experts regarding any criterion and calculation of the significant value of total (G_i). In case a pair of triangular fuzzy numbers do not overlap (for instance UC_i ≤ LO_i), there will be no grey area, the viewpoint of an expert regarding criterion i has reached a consensus and the significant value of consensus is calculated as follows:

$$C_i = (MC_i + MO_i / 2) \tag{5}$$

In case of overlap, the sample of (UC_i > LO_i) and value of the distance of grey area (G_i) equal sample (UC_i = LO_i) and (G_i) be less than the value of the distance of (C_i) and

O_i (d_i = MO_i - MC_i), i.e. (g_i ≤ d_i); thereby the significant value of G according to the tangent point P(μ_L[∧], μ_U[∧]) of the grey area will be determined in Figure 2. The significant value of (G_i) for each criterion will be determined through equation No. 5 and 6.

$$G_i = \max \left\{ \int_P \left[\min(\mu_L(p), \mu_U(p)) dp \right] \right\} \tag{6}$$

$$G_i = \frac{UC_i \times MO_i - LO_i \times MC_i}{(UC_i - MC_i) + (MO_i - LO_i)} \tag{7}$$

In case of existence of grey area and (g_i ≤ d_i), there will be a huge difference in expert opinions. Stages one to four will be repeated up to reaching.

Stage Five:

Extraction of criteria from the selected list. A significant value with the threshold (T) will be compared mentally by experts based on the geometric mean of all significant values of consensus (G_i).

In the case of ($G_i > T$), criterion i will be selected for further analysis. Generally, points obtained are within the range of 1 (the most pessimistic) to 10 (the most optimistic).

Table. 1. Selection of the Most Suitable Criteria Based on Delphi Fuzzy Method

Dimensions of Variable of Research		Pessimistic Value		Optimistic Value		Geometric Mean		Significant Value
Main	Periphery	Minimum	Maximum	Minimum	Maximum	Low limit U_m^i	High limit U_m^i	
Social Capital	Commitments	4	8	7	10	6.20	9.05	8.14
	Access to information	1	7	6	9	5.67	8.23	9.35
	Power	4	6	4	7	26.40	6.42	4.16
	Identity	2	4	4	6	3.52	5.56	.376
	Participation in networks	4	8	8	10	6.04	9.56	9.48
	Mutual relations	3	8	8	10	5.16	8.97	9.68
	Social norms and values	4	6	4	7	4.17	6.42	4.16
	Trust	3	8	7	9	5.79	8.37	10.82
Business Intelligence	Technical aspect	4	5	4	7	4.37	6.42	2.89
	Organizational aspect	3	6	4	7	4.36	6.42	5.03
	Business aspect	3	6	4	7	4.31	6.43	5.01
	Operational aspect	4	5	4	7	4.09	6.41	2.95
	Flexibility and change management	4	8	8	10	5.68	9.85	9.14
	Trade	4	8	7	10	6.19	9.45	8.12
	Management	2	8	8	10	4.98	8.56	10.48
	Information technology	3	8	7	10	5.00	9.05	8.14

Dimensions of Variable of Research		Pessimistic Value		Optimistic Value		Geometric Mean		Significant Value
Main	Periphery	Minimum	Maximum	Minimum	Maximum	Low limit U_m^i	High limit U_m^i	
Creativity and innovation	Interest in order	4	8	8	10	5.44	9.58	8.94
	Proposing question	3	8	8	10	5.09	8.97	9.61
	Mental activity	3	8	8	10	5.75	8.77	10.54
	Intrepid and risk-taker	4	8	8	10	6.04	9.56	9.48
	Objectivity	4	4	4	7	4.09	6.42	2.95
	Intrinsic motivation	3	8	8	10	5.46	8.77	10.13
Role of the Government	Financial and tax policies	3	8	8	10	4.89	9.07	9.36
	Monetary and credit policies	3	8	8	10	5.59	8.77	10.30
	Government insurance policies	3	6	6	9	4.60	7.46	5.28
	Financial liberalization	3	8	8	10	4.89	9.07	9.36
	Labor and social welfare policies	2	5	4	6	3.68	5.56	5.27
	Supports (science and technology parks)	3	8	8	10	5.16	8.97	9.68
	Ease of business	1	7	7	10	4.78	8.74	8.10

Source: Calculations of Researcher, 20017/18, Threshold=7/60

Therefore, considering experts opinion (50 experts), the significance of sub-criteria and indices of the selection of financing strategies mentioned in Table No. 1 are acquired. Findings of present research indicate that among 29 dimensions existing in the primary conceptual model of this research, sub-dimensions of social capital (power, identity, social norms and values), sub-dimensions of business intelligence (technical, organizational, business and operational), sub-dimensions of creativity and innovation (objectivity), sub-dimensions of the role of the government (insurance policies and labor and social welfare policies), considering the fact that threshold level of the aforesaid is lower than mean of the significant value of 7/60; thereby such sub-dimensions are not considered in the selection of financing strategies of new technology ventures. However, other dimensions whose threshold level is

higher than the mean of the significant value of 7/60; thereby such dimensions are considered in the selection of financing strategies of new technology ventures.

2. Statistical Analysis

2.1 Descriptive Statistics

In this part, the statistical characteristics of the research variables are presented. These descriptive characteristics include the average frequency and number of observations, the minimum quantity, the

Maximum quantity, standard deviation, variance, skewness, kurtosis for each variable used in the experimental model of research.

Table 2. Descriptive Test of Research Variables

Descriptive Statistics						
Variable	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Y	384	1.00	9.00	5.5417	2.35678	5.554
F _{X_{1,i}} (role of government)	384	7.00	63.00	36.9375	12.02766	144.664
F _{X_{2,i}} (Creativity and Innovation)	384	6.00	80.00	30.6354	12.34967	152.514
F _{X_{3,i}} (social capital)	384	8.00	72.00	37.7187	15.91964	253.435
F _{X_{4,i}} (Business Intelligence)	384	8.00	72.00	35.1854	14.47238	209.450

Table 3. Descriptive Test of Research Variables (Cont.)

Descriptive Statistics							
	N	Range	Mean	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Y	384	8.00	.12027	.029	.125	-.740	.248
F _{X_{1,i}} (role of government)	384	56.00	.61378	.379	.125	.103	.248
F _{X_{2,i}} (Creativity and Innovation)	384	74.00	.63022	.690	.125	.312	.248
F _{X_{3,i}} (social capital)	384	64.00	.81240	.669	.125	.212	.248
F _{X_{4,i}} (Business Intelligence)	383	64.00	.73950	.786	.125	.723	.249

Source: Research Findings

Results of the descriptive test of research variables presented by Table No. 2 indicates that the highest mean value of research variables belong to social capital, i.e. 37.72, and the lowest mean value to financing strategies of new technology ventures in Iran, i.e. 5.54. Furthermore, the highest coefficient of skewness was related to business intelligence variable, i.e. 0.786, and the lowest coefficient of skewness to financing strategies of new technology ventures in Iran, i.e. 0.029. As mentioned in Table No. 2, the highest standard

deviation belonged to social capital, i.e. 15.92, and the lowest standard deviation to financing strategies of new technology ventures in Iran, i.e. 2.36. Moreover, the highest coefficient of kurtosis was related to business intelligence, i.e. 0.723, and the lowest coefficient of kurtosis to financing strategies of new technology ventures in Iran, i.e. -0.740.

Kolmogorov–Smirnov test (To review the normal distribution of data of questionnaire)

This test is conducted for review of the normal distribution of data related to the questionnaire with the following statistical hypothesis.

Table. 4. Kolmogorov–Smirnov test to Review Normal Distribution of Data of Research Variables

One-Sample Kolmogorov-Smirnov Test						
	Y	F _{X_{1,i}}	F _{X_{2,i}}	F _{X_{3,i}}	F _{X_{4,i}}	
N	384	384	384	384	384	384
Normal Parameters ^{a,b}	Mean	5.5417	36.9375	30.6354	37.7188	35.1854
	Std. Deviation	2.35678	12.02766	12.34967	15.91964	14.47238
Most Extreme Differences	Absolute	.245	.215	.221	.250	.163
	Positive	.245	.215	.221	.250	.163
	Negative	-.180	-.160	-.114	-.106	-.087
Kolmogorov-Smirnov Z	4.792	4.214	4.331	4.905	3.198	
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
a. Test distribution is Normal. b. Calculated from data.						

Source: Research findings

To review test of the stated hypotheses, Kolmogorov–Smirnov test was used. Findings indicate that the statistic value of the test (sig) exists between all variables as mentioned in Table No. 3, and considering the comparison with the critical value at error level (five per cent), test statistics stand at the acceptable region (H_0). Therefore, it is argued that data has no normal distribution. Because the dependent variable shall be normal for regression models; thereby before taking the test of hypotheses, this variable will be normalized. In the present research, to normalize data, Johnson Transformation is used and through Minitab.16 software, the data were analyzed. Results of Kolmogorov–Smirnov test, upon normalization of data, are included in Table No. 4.

Table 5. Results of Test of Normality of Dependent Variable of Research upon Normalization Process

Variable	N	K-S	Sig
Y	384	1.569	0.698
Fx _{1,i}	384	1.137	0.529
Fx _{2,i}	384	1.761	0.367
Fx _{3,i}	384	1.298	0.597
Fx _{4,i}	384	1.943	0.864

Source: Research findings

Considering Table No. 5, since upon normalization of data, level of significance of statistics of Kolmogorov–Smirnov for dependent variable is higher than 0.05, i.e. 0.762; thereby hypothesis (H_0) is verified at a confidence level of 95 per cent, indicating the normal distribution of dependent variable upon normalization process.

Cronbach's alpha Test (To review the validity and reliability of the questionnaire)

Generally, assessment of validity and reliability of data may be determined through making use of Cronbach's alpha test. In case the results of the test are more than 0.70, data of research has validity and reliability. In this research, upon the collection of data from the primary sample, data were analyzed by SPSS and coefficient of Cronbach's alpha was calculated, which was approximately 0.798 for the whole questionnaire.

Table 6: Descriptive Statistics of Cronbach's alpha Calculations for Validity and Reliability of the Questionnaire

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Y	339.5405	12237.820	.523	.484	.790
Fx _{1,i} (role of government)	282.4987	8941.130	.789	.927	.681
Fx _{2,i} (Creativity and Innovation)	325.5326	10867.443	.869	.890	.740
Fx _{3,i} (social capital)	321.9634	10629.768	.870	.873	.731
Fx _{4,i} (Business Intelligence)	295.8695	9086.946	.800	.946	.684
Total	159.9608	2809.378	.992	.986	.798

Source: Research findings

Therefore, considering results for Cronbach's alpha coefficient calculated to determine validity and reliability of questionnaire as mentioned in Table No. 6, since the coefficient of the stated test for each variable is higher than Cronbach's alpha coefficient, validity and reliability of questionnaire are verified.

2.2 Test of Research Hypotheses

In the present research, the Student's t-test and Fisher exact test (F-test) were conducted, and for review of research hypotheses, an ANOVA was conducted to review difference in a sample mean of research hypotheses, and Pearson correlation coefficient was calculated to review correlation or relationship among variables of the model.

Table. 7. Findings of Regression Test related to Research Hypotheses

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Y	.633 ^a	.401	.395	1.83080
a. Predictors: (Constant), F4, F1, F3, F2				

Table. 8. Findings of the Regression Test related to Research Hypotheses (Cont.)

Coefficients ^a						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Result Test of Model
	B	Std. Error	Beta			
(Constant)	.738	.330		2.235	.026	Significant
Fx _{1,i} (role of governmnt)	.120	.013	.612	9.070	.000	Significant
Fx _{2,i} (Creativity and Innovation)	8.347E-5	.018	.000	.005	.996	Non-Significant
Fx _{3,i} (social capital)	-.014	.014	-.094	-1.020	.308	Non-Significant
Fx _{4,i} (Business Intelligence)	.025	.011	.157	2.366	.018	Significant
a. Dependent Variable: y						

Source: Research findings

Table No. 7 representing the results of the related regression test of research hypotheses, reveals that solely role of the government and business intelligence (as independent variables) have impacted on the

financing strategies of new technology ventures in Iran (as a dependent

variable), however, creativity and innovation and social capital do not have a significant impact on the dependent variable of financing strategies of new technology ventures in Iran. As the coefficient resulted from experimental regression test mentioned in Table No. 6 reveals that the factor related to the role of the government and business intelligence (as independent variables) account for almost 63.30 per cent of financing strategies of new technology ventures in Iran (as a dependent variable), and such factors as creativity and innovation and social capital do not have a significant impact on the dependent variable of financing strategies of new technology ventures in Iran and will be eliminated from the main model of research.

Table. 9. Results of Correlation Coefficient of Model in Sample Related to Research Hypotheses

		Correlations				
		Y	Fx _{1,i}	Fx _{2,i}	Fx _{3,i}	Fx _{4,i}
Y	Pearson Correlation	1	.623**	.504**	.377**	.341**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	384	384	384	384	384
Fx _{1,i}	Pearson Correlation	.623**	1	.795**	.566**	.423**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	384	384	384	384	384
Fx _{2,i}	Pearson Correlation	.504**	.795**	1	.815**	.610**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	384	384	384	384	384
Fx _{3,i}	Pearson Correlation	.377**	.566**	.815**	1	.796**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	384	384	384	384	384
Fx _{4,i}	Pearson Correlation	.341**	.423**	.610**	.796**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	384	384	384	384	384

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research findings

Considering results of correlation coefficient test in the sample related to research hypotheses mentioned in Table No. 9, the correlation coefficient is significant and it is verified that correlation among such factors as role of the government, creativity and innovation, social capital and business intelligence (as independent variables) and financing strategies of new technology ventures in Iran (as a dependent variable) is significant; thereby, hypothesis zero (H_0) is refuted and research hypothesis is verified, i.e. on error level of five per cent, there is a significant relationship among the role of the government, creativity

and innovation, social capital and business intelligence (as independent variables) and financing strategies of new technology ventures in Iran (as a dependent variable). Furthermore, the results of this test may be generalized to all new technology ventures in Iran with a confidence of 95 per cent.

Table. 10. Results of Variance Analysis Test (ANOVA) (Comparison of Mean) Coefficients of Research Hypotheses Model

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	848.348	4	212.087	63.275	.000 ^a
	Residual	1266.994	378	3.352		
	Total	2115.342	382			
a. Predictors: (Constant), F4, F1, F3, F2						
b. Dependent Variable: Y						

Source: Research findings

Table No.10 represents results of variance analysis test (ANOVA) related to research hypotheses, and results of multivariate regression test pertinent to an experimental model of the second hypothesis, with the confidence level of 95 per cent, with an error level of five per cent, has significant correlation, i.e. Sig=0.000.

Interpretation of Results of Table No. 6 to Table No. 10

Table No. 7 to Table No. 10 represent the statistical description of research hypotheses; thereby considering the significant level (Sig), test for independent variables, solely the factors of the role of the government and business intelligence (as independent variables) have to impact on financing strategies of new technology ventures in Iran (as a dependent variable), however, other factors such as creativity and innovation and social capital do not have a significant impact on the dependent variable of financing

Strategies of new technology ventures in Iran. Results of correlation coefficient indicated a correlation coefficient of 63.30 per cent, i.e. square correlation coefficient or the coefficient of determination (level of variability independent variable which may be explained through regression. Furthermore, the results of this test may be generalized to all new technology ventures in Iran with a confidence of 95 per cent.

Conclusions

New technology ventures and commercialization thereof may considerably affect the economy and business environment. Establishment and launching of these companies and financing thereof are highly complicated, resulting in either huge success, or complete failure of the project.

A rational rise in the budget in capital market directs investors towards innovative experimental investment, raising innovation rate. Considering this viewpoint, the abundance of capital in investment cycles, in addition to defining more new technological development projects, play an important role in commercialization and marketing technological products. Therefore, financial investment cycles may create innovative cycles.

Because new technology ventures require capital throughout their activity; thereby selection of financing methods is of significance to the aforesaid. The main objective of the present research is the review of the effects of internal and external factors on the selection of financing strategies of new technology ventures. Therefore, through a survey of proactive agents and experts of financing strategies and startup companies, important factors were identified. Research findings indicate that solely the factors of the role of the government and business intelligence (as the independent variable) have an impact on financing strategies of new technology ventures in Iran (as a dependent variable), however, such factors as creativity and innovation and social capital do not have a significant impact on the dependent variable of financing strategies of new technology ventures in Iran. Therefore, the selection of financing strategies of the stated companies must be considered. Based on the research findings, several executive recommendations and suggested studies are as follows:

Results of present research indicate that sub-dimensions of business intelligence in identifying and selecting financing strategies of new technology ventures in Iran are of importance. Thus, it is recommended that startup companies shall firstly pay attention to management as the most important approach. Since evidence of research indicated that training and experience of entrepreneurs have a positive impact on the financial performance of knowledge-based companies. Furthermore, flexibility and management of change, information technology, the field of business, in tandem with management shall be considered for the attraction of resources. The stated researchers considered the role of dimensions of business intelligence in the growth of various businesses, in particular identification and selection of financing strategies of startup companies. Results of the present research

indicate that sub-dimensions of the role of the government have an impact on identification and selection of financing strategies of new technology ventures in Iran; thereby it is recommended that startups shall firstly pay attention to monetary and credit policies for financing. Notably, supports such as science and technology parks, financial liberalization, financial and tax policies, ease of business environment, in tandem with monetary and credit policies are important for the attraction of resources. Of note, the results of the present research are in line with researches conducted by the World Bank Group [64], and Ranani. The stated researchers considered the role of sub-dimensions of the government in the growth of various businesses, in particular identification and selection of financing strategies of startups companies. Furthermore, based on the findings of the present research, major recommendations for conducting studies are as follows:

- A study on the role of laws and regulations in the financing of startup companies;
- A study on the role of intellectual capital and valuation of goods and services in financing startup companies;
- A study on the role of commercialization of ideas in financing startups companies.

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