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# Does intellectual capital affect the venture creation decision in India?



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## Abstract

**Purpose:** Although the intellectual capital (IC) has already received much attention from the researchers in the field of innovation performance, there is still a paucity in measuring the role of IC in venture creation. The present study is an attempt to examine the influence of IC on start-ups.

**Methodology:** In this study, a large data set of 3413 respondents from India has been used. The data has been provided by the largest entrepreneurship research project GEM. A logistic regression technique has been applied to measure the influence of IC on entrepreneurial intentions.

**Findings:** It has been found that the components of intellectual capital, i.e., knowledge and skills, entrepreneurial opportunities, knowing other entrepreneurs, business angel, and educational level have a positive and significant impact on the entrepreneurial intentions.

**Contribution:** To the best of our knowledge, it is among the initial studies, which have examined the relationship between intellectual capital and entrepreneurial intentions. Only a few studies have already been done in developing countries like India by using a large data set.

**Keywords:** Intellectual capital, Entrepreneurial intention, Entrepreneurial opportunities, Knowledge & Skills, Network and educational, Global entrepreneurship monitor, Logistic regression, India

## Introduction

In the present scenario, high attention is being given to the venture creation as it is considered as an important tool pertaining to economic development that generates employment at every level and enhances creativity and innovation with regard to opportunity and socio-economic welfare in the economy (Zoltan J Acs, Desai, & Klapper, 2008; Arafat, Saleem, Dwiwedi, & Khan, 2018). Reynolds et al. (2005) contend that entrepreneurship helps in adjusting the economic system mainly by following the course of actions: “creating new businesses,” “refocusing of the present businesses,” and “re-orientation of national institutions.” As the relevance of entrepreneurship for economic development has already been established, it is very important to explore those factors which influence the entrepreneurship in either way. Many researchers have found that intellectual capital also influences the venture creation capacity of individuals, and without understanding it properly, it would be very difficult to design any policy for the

development and betterment of entrepreneurship (Khan, Arafat, & Raushan, 2019; Khan, Arafat, Raushan, et al., 2019).

The economic emphasis has gradually changed from manufacturing only to the more knowledge-intensive processes over the past two decades (Guthrie & Petty, 2000; Bernard Marr, Schiuma, & Neely, 2004). The firms that are aiming at gaining competitive edge and create value are bound to nurture their intellectual capital which can be in form of knowledge, brands, patents and trademarks, customer relationships, human capital, and research and development.(Dženopoljac, Janošević, & Bontis, 2016; Forte, Tucker, Matonti, & Nicolò, 2017; Lev, Cañibano, & Marr, 2005; Sonnier, Carson, & Carson, 2009; Yi & Davey, 2010).

Intellectual capital has been defined differently by researchers, but the deliberations are going on (Andrikopoulos, 2010). Edvinsson and Sullivan (1996) define it as “that knowledge which can be converted into value.” It is the set of intangible assets from which the competitive advantage, profit enhancement, and value creation for the ventures can be driven (Bontis, 1998, 2001; Hormiga, Batista-Canino, & Sánchez-Medina, 2011; Sveiby, 1997). A lot of academicians define intellectual capital as the component that generates wealth for firms (Seng, Kumarasinghe, & Pandey, 2018).

Researchers have investigated the concept of intellectual capital through different dimensions. Some have expounded the concept of intellectual capital theoretically (Bontis, 1998; Roos & Roos, 1997; Stewart, 1997; Wu, 2005) while others have dealt with the concept through intellectual capital measurement models, e.g., Intangible Asset Monitor, VAIC™, Skandia IC Navigator, IC-Index™, etc.(Corrado, Hulten, & Sichel, 2004; Pulic, 2000; Stewart, 1997) and examined the relationship of IC with some key factors at different levels (Al-Musalli & Ismail, 2012; El-Bannany, 2008; Liang, Huang, & Lin, 2011; Schiavone, Meles, Verdoliva, & Del Giudice, 2014). The relationship between a firm’s intellectual capital and its operating performance, financial performance, and enterprise value is the recent research thrust area. (Chen, Cheng, & Hwang, 2005; Firer & Mitchell Williams, 2003; Raushan & Khan, 2018).

The managerial perspective of intellectual capital has been in the abovementioned studies; some researchers have measured the relationship between the economic performance of the firm with IC (Ya-Hui, 2013), and the relationship of IC with the venture performance or innovation performance has also been assessed (Agostini, Nosella, & Filippini, 2017; Yitmen, 2011). To bring the much desired socio-economic development, policy makers in developing countries are shifting towards the new venture creation (Audretsch, 2004). Researchers have also explored the role of intellectual capital as a factor towards the initiation of new venture creation or start-ups (Hayton, 2005; Hormiga et al., 2011; Link & Ruhm, 2009; Martina & Ahsan, 2013; Peña, 2002).

It can be inferred from the above studies that intellectual capital has an important role to play when it comes to new venture creation and the area has been progressively explored by the researchers, but the contribution of IC on entrepreneurial intentions needs to be explored (Kamath, 2017). The impact of intellectual capital on the entrepreneurial intentions has been analyzed in this study as the intention is considered as an important factor for predicting entrepreneurial activity (Krueger, Jr Reilly, & Carsrud, 2000). The impact of intellectual capital on the entrepreneurial intentions is the main objective of this study. Intellectual capital has established its importance with businesses these days; hence, it is being considered by the authors that the IC would be

relevant for venture creation. A number of studies have analyzed the impact of intellectual capital on entrepreneurship intention (Arafat & Saleem, 2017; Matricano, 2016; Ramos-Rodríguez, José-Aurelio, José-Daniel, & Ruiz-Navarro, 2010; Ramos-Rodríguez, Medina-Garrido, & Ruiz-Navarro, 2012), but those researches were conducted in different context and demographic settings from this study as it is being conducted in India which is a developing nation economy. The factors influencing a business in a developed country are very different from that of the developing country, a fact that has been highlighted by previous studies that also needs to be reinstated. Therefore, we assume that the study of intellectual capital and the new venture creation relationship will come up with some new and interesting insights that can be utilized for the formation of entrepreneurial promotional policies.

To measure the effect of IC on the venture creation, this paper is structured in the following manner. In the “[Literature review](#)” section, the relevant literature has been reviewed for understanding the concept of IC. After mentioning the detailed description of the dependent variable (entrepreneurial intentions), the IC has also explained in lieu of the entrepreneurial studies. In the “[Hypotheses of the study](#)” section, the hypotheses of the study have been discussed. In the “[Research methodology](#)” section, the research methodology (binary logistic regression model) and the research design are elaborated. The empirical part has been done by the help of secondary data provided by the Global Entrepreneurship Monitor (GEM) website for 2015 in India. In the “[Results and discussion](#)” section, the findings of the analysis have been discussed. In the “[Implications of the study](#)” section, the managerial implications related to the study have been given. In the “[Limitations](#)” section, the limitations of the study have been highlighted. At last, in the “[Conclusion](#)” section, the overall conclusion of the study has been discussed.

### **Literature review**

The concept of IC has been applied to different dimensions as from financial performance to the innovation performance; therefore, it can be supposed that the IC also plays a significant role in the venture creation or start-up intentions. The IC theorists believe that knowledge improves an individual's cognitive skills and allow them to work more productively and efficiently (Becker, 1964; Mincer, 1974; Schultz, 1959). Entrepreneurs discover opportunities easily because their experiences and education help them to understand the value of new information easily as compared to others (Roberts, 1991; Shane, 2000). The knowledge base that constitutes the intellectual capital and that could determine the individual's capacity to recognize business opportunities consists of, among other factors, their educational level, their knowledge and skills relating to business start-ups, and their previous experience as an entrepreneur. Intellectual capital has been classified into different components by different authors. It is also very difficult to decide which classification is incorrect. This study considers knowledge and skills, entrepreneurial opportunities, networking, and education as the proxy measures for calculating the intellectual capital of Indians.

### **Entrepreneurial intention**

The main research question which has been framed in this research paper is to measure the relevancy of IC in aspiring entrepreneurs. Does the IC have any relevant impact on venture creation or not? The proxy measure for entrepreneurial intention (latent

variable) is the expectation to start-up, i.e., the inclination of intentional entrepreneurs towards initiating new ventures.

It is the set of reasons that determines individuals to engage in a particular behavior or for venture creation (Shane, Locke, & Collins, 2003). The intention to start a new venture generally depends on three perceptions: individual perception (knowing existing entrepreneurs or self efficacy), perception of economic opportunities (entrepreneurial opportunities), and socio-cultural perceptions (Arafat et al., 2018; Khan, Arafat, & Raushan, 2019; Liñán, Santos, & Fernández, 2011).

In the present scenario, researchers are keenly interested in knowing the propensity towards entrepreneurship (Ajzen, 1991; Baron, 2004; Bird, 1988; Krueger et al., 2000; Lee & Wong, 2004; Matricano, 2016; Shaver & Scott, 1991). It is quite clear from what-ever has been discussed so far that the entrepreneurs have a stronger inclination towards start-ups or venture creation while the non-entrepreneurs have a weaker inclination or even have no inclination. Entrepreneurial intentions have been presumed as a dependent variable and it is a proxy measure for inclination towards entrepreneurship or venture creation.

### **Knowledge and skills**

These skills and knowledge are not necessarily linked to the educational level. In fact, some authors claim that entrepreneurs frequently possess a wide range of abilities without having an advanced or specific education (Leazar, 2005; Murphy, Shleifer, & Vishny, 1991). These skills and knowledge generally acquired through past experiences and those people who possess the knowledge and skills are more likely to start their own business (Shane, 2003; Szivas, 2001). If individuals consider they have the necessary skills, knowledge, and ability to start their own business, they would be more inclined to engage in activities relating to entrepreneurship (such as opportunity recognition). The effect of knowledge and skills on the start-up intentions of Indians has been hypothesized on the basis of the above discussion.

### **Ability to recognize opportunities**

The start-ups can use the acts of recognition, discovery, or creation for knowledge creation (Alvarez & Barney, 2008; Matricano, 2016; Sarasvathy, Dew, Velamuri, & Venkataraman, 2005). The aspiring entrepreneurs can use the entrepreneurial opportunities which already exist, mainly technological and social contexts. The entrepreneurs need to recognize them through systematic research (Arafat & Saleem, 2017; Khan, Arafat, Raushan, et al., 2019). In the other dimension, the entrepreneurs are being supposed to play a more important role by possessing some specific capabilities to discover new entrepreneurial opportunities which already exist in the economic context, e.g., temporary gaps occurring in the market (Kirzner, 1973).

In both the abovementioned acts, the relationship between entrepreneurs and opportunities is dualistic, but in the last act, it is no longer dualistic. The entrepreneurs are bound to create entrepreneurial opportunities for their survival. It is known as the act of creation.

It is quite clear that the entrepreneurs must have to collaborate with the knowledge in the external environment (recognition or discovery) or predict the external environment

(creation) in order to generate new knowledge which possesses the entrepreneurial opportunities (Matricano, 2016).

It is presumed here that the identification of new entrepreneurial opportunities neither belongs to the aspiring entrepreneurs nor the external environment. In fact, they are a third-person opportunity (McMullen & Shepherd, 2006), i.e., a possible opportunity for someone (registered patents represent a clear example). The entrepreneurial opportunities are expected to affect the start-up intentions, and the ability to recognize entrepreneurial abilities is the basis for this assumption (Matricano, 2016). The main argument is that the entrepreneurial opportunities are directly proportional to the entrepreneurship intentions of Indians.

### **Networking**

It is all about the value of relationships with different stakeholders who are not related internally to the business, such as the knowledge of market channels, customers, suppliers, and regulatory agencies (Madinios, Mandilas, Gstraunthaler, & Alonso, 2009). It includes not only the set of external relationships established by the firm, but also other dimensions such as branding and reputation. It consists the understanding planted in various relationships of an organization; these relationships are with customers, competitors, suppliers, trade associations, or government bodies (Nick Bontis, 1999; Lowendahl, 2005; Sveiby, 1997; Urde, 1999; Wong & Merrilles, 2008).

The relationships are being created by both the established business organizations as well as the entrepreneurs (Johannisson, 1986, 1988; Matricano, 2016; Starr & Macmillan, 1990). These relationships are very important for the entrepreneurs because they need to acquire the resources and the guidance from the existing entrepreneurs at every stage of their ventures. By the help of their entrepreneurial networks, they can acquire the resources in the short term through a planned or intended strategy while in the long term by implementing an unplanned or unintended strategy (Galkina, 2013). The networking can be described in two ways: networking with other entrepreneurs and business angel.

#### ***Networking with existing entrepreneurs***

It is always better for the entrepreneurs to involve with known existing entrepreneurs in their networks as the trust-based relationship already exists between them and many things can be done informally also while making entrepreneurial network among the unknown people is a time-consuming and formal process (Greve, 1995; Larson & Starr, 1993; Smith & Lohrke, 2008).

The entrepreneurial networks are always beneficial for the entrepreneurs because they get the guidance from those people who already have their own experiences. Apart from the guidance, entrepreneurs also get monetary help from their friend and family which is known as business angel or informal loans. The entrepreneurial networks are the outcome of their relationship with the existing entrepreneurs who are external to the business as well.

#### ***Business angel***

Business angels use their previous knowledge of entrepreneurship in making investment decisions (Maula, Autio, & Arenius, 2005). From the perspective of TPB, previous experience as an entrepreneur can lead to the development of a positive attitude

towards investment in entrepreneurship (Ajzen, 1991). Further, a positive attitude can also lead to the outcome behavior, i.e., becoming an entrepreneur. They are more likely to assume more risk. Thus, we can conclude that business angels are most likely to become future entrepreneurs (Amit, Glosten, & Muller, 1993; Mancuso, 1975). This idea is also consistent with “role theory.” The business angels are more likely to assume the roles of entrepreneurs (Veciana, 2007). The primary reason for adopting such roles is the exposure, familiarity, and the awareness of success stories of entrepreneurs whom they have been funding. Similarly, the network theory suggests that the members of a network (like entrepreneurs in our case) can be important sources of information related to ideas, information, and resources that are critical to a creation of a firm (Burge, 2017; Larson & Starr, 1993; Ramos-rod ríguez et al., 2012; Santiago-Roman, 2013).

### Education

The educational level has been treated as a demographic variable by some researchers (Arenius & Minniti, 2005) while others treat it as a part of the entrepreneurial intellectual capital (Davidsson & Honig, 2003). It is found in some researches that the entrepreneurs generally have tacit knowledge rather than having a formal education (Leazar, 2005; Murphy et al., 1991). It had been contradicted by some other researches who found that a high educational level has a positive impact on the creation of technology firms in rich countries (Blanchflower, 2004).

Actually, the acceptability of education system depends upon the reciprocity among the countries. Those people who would like to create something in the knowledge industry are being supposed to have a high educational level, while it would not be necessary if they just want to exploit a market opportunity (Arenius & Minniti, 2005).

### Hypotheses of the study

The main objective of this study is to measure the impact of intellectual capital on venture creation or start-up intentions. To fulfill this objective, it is necessary to examine the relationship of all four components of IC with start-up intentions.

Both intellectual capital and entrepreneurial intentions are latent variables, so we need to take some proxy measures to calculate the latent variables. The intellectual capital has been measured by the help of new entrepreneurial opportunities, the amount of knowledge, skills, and expertise carried by the aspiring entrepreneurs, the relations with existing entrepreneurs, business angel, and education. The entrepreneurial intention has been measured by the expectation to start a new business after some time. All these variables have been measured by the secondary data extracted by GEM.

In Fig. 1, we have shown the hypothesized relationship between the components of intellectual capital and the entrepreneurial intention.

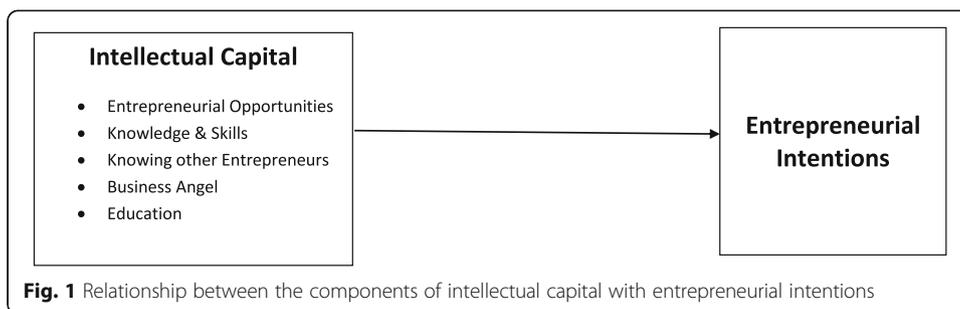
H1: Knowledge and skills have a positive influence on entrepreneurial intentions.

H2: Entrepreneurial opportunities have a positive influence on entrepreneurial intentions.

H3i: Networking has a positive influence on entrepreneurial intention.

H3ii: Being a business angel has a positive influence on entrepreneurial intentions.

H4: Educational level has a positive influence on entrepreneurial intentions.



### Research methodology

#### Data

It has been stated earlier that the present study is based on a cross-sectional survey and the data for empirical analysis have been extracted from the GEM database. The main aim of this study is to measure the effect of intellectual capital on the start-up intentions in India for 2015. The data used for the analysis has been extracted from the Global Entrepreneurship Monitor (GEM) database.

The questionnaires of GEM also contain items related to intellectual capital and entrepreneurial intentions which help to examine the entrepreneurial activity up to a decent level (Reynolds et al., 2005). The GEM database is not meant to provide all the information about the entrepreneurial intentions, and it is also quite difficult to analyze all the variables available, so only a few can be analyzed (Arafat & Saleem, 2017). The data of GEM is generated through a large international survey of general Adult Population Survey (APS), so it has overcome the previous limitations. This data set relies upon the interviews of 3413 respondents from India. The data had been gathered accordingly to the collection procedure of GEM which had been discussed by Reynolds et al. 2005. Moreover, the survey provides data on many variables; we selected those variables which are coherent to the objectives of this study.

#### Measures

Table 1 provides the detailed description of the dependent and independent variables.

**Table 1** Description of variables

Dependent variables	Description	
Entrepreneurial intention	Do you expect to start a new business in the next 3 years?	If yes = 1
		No = 0
Independent variables	Perceives to have the required knowledge and skills to start a business	If yes = 1
		No = 0
	Perceives good opportunities to start a business in the area where you live	If yes = 1
		No = 0
Intellectual capital	Personally knows someone who started a firm in the past 2 years	If yes = 1
		No = 0
	In the past 3 years, you have provided personal funds to help other people start up a business. Do not include investment in bonds, shares, or mutual funds	If yes = 1
		No = 0
Perceives harmonized educational attainment		If yes = 1
		No = 0

**Logistic regression**

The logistic regression model has been used because the dependent variables as well as the independent variables are both dichotomous or categorical. It helps in estimating that a respondent belongs to a particular group (dependent = 1) or not (independent = 0).

**Results and discussion**

Analysis of this research has been divided into three parts: descriptive statistics, correlation, and regression analysis.

**Descriptive statistics**

The descriptive statistics (Table 2) show that only 15% of individuals are expected to start their own business in the next 3 years, 42% of individuals are confident in their own skills and knowledge to start a new business, 42% see good opportunities, or having structural capital, in starting their own business, 37% of the respondents have relationship with existing entrepreneur, and only 3% of people have provided personal funds to others.

**Correlation**

The correlation matrix (see Table 3) provides preliminary support for the hypotheses. Table 3 depicts that all the variables except education are correlated with the entrepreneurial intention in the expected direction. However, some of them are negatively correlated also with start-up intention.

**Logistic regression**

In the omnibus test (Table 4), if all the values are lesser than 0.05, it shows that the goodness of fit of the model is acceptable.

To measure the goodness of fit, the Hosmer and Lemeshow test has been used. If the *p* value is greater than .05, it is considered as significant and the hypothesis of an adequate model fit is accepted. In this way, Table 5 shows the model is a good fit.

**Table 2** Descriptive statistics

	Number	Minimum	Maximum	Mean	Std. deviation
Do you expect to start a new business in the next 3 years?	3370	0		.15	.354
Do you have the knowledge, skill, and experience required to start a new business?	3266	0		.42	.493
In the next 6 months, will there be good opportunities for starting a business in the area where you live?	3244	0		.42	.493
Do you know someone personally who started a business in the past 2 years?	3342	0	1	.37	.483
In the past 3 years, you have provided personal funds to help other people start up a business. Do not include investment in bonds, shares, or mutual funds	3397	0	1	.03	.178
GEM harmonized educational attainments	3413	0	1720	860.12	567.950
Valid N (listwise)	3086				

**Table 3** Correlations

	Entrepreneurial intention	Knowledge and skills	Entrepreneurial opportunities	Knowing other entrepreneurs	Business angel	Education level
Entrepreneurial intention	1					
Knowledge and skills	-.296**	1				
Entrepreneurial opportunities	-.318**	-.308**	1			
Knowing other entrepreneurs	-.149**	-.199**	-.235**	1		
Business angel	-.055**	.016	.022	-.096**	1	
Education level	-.601**	-.054	-.018*	-.050**	.007**	1

\*\*Correlation is significant at the 0.01 level

\*Correlation is significant at the 0.05 level

Table 6 presents the binomial logistic regression results with the all intellectual capital factors showing the impact on entrepreneurial intention. All the intellectual capital factors have been found significant in influencing entrepreneurial intention.

In hypothesis 1, it was proposed that knowledge, skills, competences, and expertise positively affect the venture creation intention. The marginal effect for this variable is positive and significant ( $p < .01$ ) with regard to the regression confirming the hypothesis. The odds ratio for this variable is 2.739 which mean those individuals who feel that they have required skill, knowledge, competences, and expertise are more than 2.5 times more likely to start their own business. This finding is also in congruence with previous research examining the influence of knowledge, skill, and entrepreneurial ability on entrepreneurial propensity (Ahmad, Xavier, & Abu Bakar, 2014; Fernández, Liñán, & Santos, 2009; Guzmán-Alfonso & Guzmán-Cuevas, 2012; Honjo, 2015; Liñán et al., 2011; Matricano, 2016; Nishimura & Tristan, 2011; Noguera, Alvarez, & Urbano, 2013; Pathak & Laplume, 2015; Puriwat & Tripopsakul, 2015; Tsai, Chang, & Peng, 2016; Vidal-suñé & López-Panisello, 2013; Wennberg, Pathak, & Autio, 2013) .

Hypothesis 2 proposed that opportunity identification increases the probability of being an entrepreneur. The marginal effect for this variable is positive and significant ( $p < .01$ ) with regard to the regression supporting this hypothesis. In fact, according to the results, this is the variable analyzed that has the strongest effect on the dependent variable, since its odds ratio is 2.729, indicating that opportunity identification increases the likelihood of new start-up more than 2.5 times than the rest of the individuals. This result also coincides with the results of work examining the same relationship (Ahmad et al., 2014; Bux & Honglin, 2016; Fernández et al., 2009; Honjo, 2015; Liñán et al., 2011; Matricano, 2016; Nishimura & Tristan, 2011; Pathak & Laplume, 2015; Puriwat

**Table 4** Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	375.570	5	.000
	Block	375.570	5	.000
	Model	375.570	5	.000

Significant at the 0.05 level

**Table 5** Hosmer and Lemeshow test

Step	Chi-square	df	Sig.
1	13.803	8	.087

Significant at the 0.05 level

& Tripopsakul, 2015; Ramos-rodríguez et al., 2012; Tsai et al., 2016; Vidal-suñé & López-Panisello, 2013).

It was proposed in hypothesis 3 that networking increases the entrepreneurial propensity. It further divided into two sub-hypotheses: knowing existing entrepreneurs and business angel. The marginal effect for both these variables are also positive and significant ( $p < .01$ ) with regard to the regression supporting this hypothesis. According to the result, the odds ratio for knowing other entrepreneurs is 1.499 which indicates that the networking with the existing entrepreneur increases the likelihood of becoming an entrepreneur or entrepreneurial intention almost 1.5 times, while the odds ratio for being a business angel is 2.799 which indicates that being a business angel increases the likelihood of becoming an entrepreneur or entrepreneurial intention by almost three times. These results also confirm the previous findings in the entrepreneurship and IC literature (Ahmad et al., 2014; Bux & Honglin, 2016; Fernández et al., 2009; Honjo, 2015; Liñán et al., 2011; Mancilla & Amoros, 2015; Matricano, 2016; Pathak & Laplume, 2015; Puriwat & Tripopsakul, 2015; Ramos-rodríguez et al., 2012).

In hypothesis 4, it was proposed that education positively affects the entrepreneurial intentions. The marginal effect for this variable is positive and significant ( $p < .01$ ) with regard to the regression confirming the hypothesis. The odds ratio for this variable is 1 which means that as the level of education increases, the entrepreneurial intentions also increase. This finding is also in congruence with previous research examining the influence of education on entrepreneurial intention (Fernández et al., 2009; Liñán et al., 2011; Wennberg et al., 2013).

**Implications of the study**

As the knowledge and skills have a positive and significant impact on the entrepreneurial intentions, which shows those who have the required knowledge, expertise, and skills are more likely to become entrepreneurs. Therefore, the government is required to reframe its policies and start new programs for the development of skills and knowledge.

**Table 6** Logistic regression (dependent variable: entrepreneurial intention)

	B	S.E.	Wald	df	Sig.	Exp (B)
Intellectual capital						
Knowledge and skills	1.008	.127	62.547	1	.000	2.739
Entrepreneurial opportunities	1.004	.129	60.478	1	.000	2.729
Knowing other entrepreneurs	.405	.117	11.977	1	.001	1.499
Business angel	1.029	.221	21.733	1	.000	2.799
Education level			5.523	1	0.19	1.000
Constant	- 3.298	.142	536.996.	1	.000	.037

Significant at the 0.05 level

We also suggest that the government should establish more institutes for entrepreneurial training. In India, at this point in time, only a few institutes are providing knowledge, skills, and training for entrepreneurship, e.g., NIESBUD, IIE, EDI. More importantly, the main focus of the training institutes should be on the practical aspect rather than theoretical education. Because in this research, we also found that education negatively affects entrepreneurial activity.

Our another interesting finding germane to opportunity identification and entrepreneurial intention, which shows those who have the abilities to recognize an opportunity in starting the business are more likely to start their own business than rest of the masses. Policy makers are required to be more focused on developing the ability to recognize opportunities.

The government has to make people more aware about its promotional policies and programs for new start-ups, e.g., promotional policies for the export sector, concept of Make in India, and other sectors in which some kind of subsidies are being provided by the government.

The third component is networking which has two sub-classifications: knowing other entrepreneurs and being a business angel, which have also been found significantly influencing the entrepreneurial intentions in a positive manner. This also provides a road map for the policy makers to foster the entrepreneurial activity. As the result shows, those people who have contact with the existing entrepreneurs and financing or having financed another business as a business angel are more likely to start their own ventures. Therefore, we suggest policy makers should facilitate the interactions and discussions between the existing entrepreneurs and intentional entrepreneurs. So, the existing entrepreneurs can share their own experiences as well as profitable business ideas with the potential entrepreneurs, while the queries and problems of potential entrepreneurs would also be resolved in the light of the experience of existing entrepreneurs. This would also be helpful in mobilizing resources, reduces ambiguity and uncertainties and shows that taking on the entrepreneur role is plausible. Even the finance can be provided directly to the intentional entrepreneurs from existing entrepreneurs.

The government is being supposed to provide a platform or to develop some entrepreneurial forms for the interaction of existing entrepreneurs and intentional entrepreneurs. The associations or networks which have been formed by the entrepreneurs themselves are also working for the upliftment of start-ups, e.g., Association of Muslim Entrepreneurs in Gujarat. A few organizations are not capable enough to cater to the demand in the whole country.

The education also has a positive and significant impact on the entrepreneurial intentions which clearly indicates that the government needs to educate people regarding entrepreneurship. The best level of inculcating the entrepreneurship through education is at the undergraduate level.

### **Limitations**

Like other studies, this study also consists of some research constraints. First one is related to the data provided by GEM consortium; the items related to intellectual capital are few in number. The second constraint is related to the nature of data, as the data was collected on single-item measures. It prevents us more accurate statistical techniques such as structural equation modeling that may show mutual interaction among

the variables. The third aspect is that the model is based on Western countries and the Indians may not fully share the same frame of reference as their Western counterparts. The last constraint is that the respondents that formed entrepreneurial intention would remain stable over time.

## Conclusion

Though intellectual capital research is in its infancy stage (Andrikopoulos, 2010), it is a promising field for researchers (Forte et al., 2017). This is particularly true in developing countries like India, in which very few studies have been undertaken to understand how it affects the venture creation phenomenon.

This study has suggested that the older age and educated people are less likely to become entrepreneurs. The intellectual capital is positively significant with the entrepreneurial intentions. Policy makers should design policies to develop human capital and structural capital and facilitate interaction between existing and potential entrepreneurs so that new venture creation can be fostered. Future researchers should include more aspects of the intellectual capital that will yield better understanding about the relationship between intellectual capital and new venture creations. The data used for this study restrict advanced statistical analysis.

## Abbreviations

AME: Association of Muslim Entrepreneurs; APS: Adult Population Survey; CWEL: Consortium for Women Entrepreneurship of India; EDII: Entrepreneurship Development Institute of India; EI: Entrepreneurial intentions; GEM: Global Entrepreneurship Monitor; IC: Intellectual capital; IIE: Indian Institute of Entrepreneurship; NIESBUD: National Institute for Entrepreneurship and Small Business Development

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## Availability of data and materials

The data had been extracted from the GEM, which is generated through a large international survey of general Adult Population Survey (APS). This data set relies upon the interviews of 3360 respondents from India. The data had been gathered accordingly to the collection procedure of GEM which had been discussed by (Reynolds et al., 2005).

## Authors' contributions

All the authors have read and approved the final manuscript. Both Khan, A.M., and Arafat, M.Y., have contributed the major part while Raushan, M.A., Saleem, I., Khan, N.A., & Khan, M.M. have contributed comparatively lesser.

## Competing interests

The authors declare that they have no competing interests.

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