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Innovation and Entrepreneurs' Subjective Well-being

The mediation effect of job satisfaction and satisfaction with work-life balance

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Abstract

The aim of the article is to study the relationship between the subjective well-being of the entrepreneur and innovation according to the mediation effect of job satisfaction and satisfaction with work-life balance. we define the concepts and interpret theoretical contributions to identify our assumptions. The research design based on correlational relationship, mediation effect and interaction effect to explore relationship among innovation, life satisfaction, job satisfaction and satisfaction with work-life balance of the entrepreneur.

JEL : M13, O31, L29
Key words : entrepreneur, subjective well-being, innovation, work life balance, job satisfaction

Introduction

Research on entrepreneur and entrepreneurship focus mainly on the figure of the entrepreneur as the source of business performance, as turnover, sales, profit, or either innovation. Research has also shown the correlation between the entrepreneur's profile and his ability to perform. Rare research is focused on the subjective well-being (SWB) of the entrepreneur. In a special issue devoted on this topic of the *Journal of Business Venturing*, Wiklund *et al*. (2019) mentioned notably Stephan (2018) who identifies only four studies on this subject published in entrepreneurship journal between 1950 and 2010. Sharing the statement of Wiklund *et al*. (2019) that this theme is important and promising, the aim of our article is precisely to study the relationship between the SWB of the entrepreneur and innovation according to the mediation effect of job satisfaction and satisfaction with work-life balance.

The remainder consists of four sections. In section 1, we define the concepts of happiness as SWB, job satisfaction, satisfaction with work-life balance and the one of entrepreneur. We interpret theoretical contributions to identify our assumptions. Section 2 is devoted to the empirical strategy as methodology, sampling and evaluated variables. In section 3, we describe the research design based on correlational relationship, mediation effect and interaction effect to explore relationship among innovation, life satisfaction, job satisfaction and satisfaction with work-life balance of the entrepreneur. We validate our hypothesis based on the research findings. We discuss the results and conclude in section 4.

1. Theoretical Background and Hypothesis

1.1. Life satisfaction and innovation

SWB is mostly measured by Life Satisfaction based on the question "All things considered, how satisfied are you with your life as a whole these days? 1(dissatisfied) … 10 (very satisfied)". In this research, we follow Veenhoven's definition of happiness as satisfaction with one's life as a whole. That is: "*the degree to which an individual judge the overall quality of his/her life-as- a-whole favorably, in other words: how much one likes the life one leads"* (Veenhoven, 1984, p. 22). Only few researches have examined this topic of innovation and SWB. In this regard, the work of Binder (2013), Binder and Witt (2011), Aghion *et al*. (2016), Dolan and Meltcalfe (2012) are pioneers. In this study, we focus on innovation of entrepreneurs as product

and market in the sense of GEM (2014).

The performance of innovative tasks is likely to promote more positive interpretations of autonomy and mastery, and hence promote self-actualization. Indeed, creative people often feel more enthusiastic and optimistic, which is known to spillover, positively, into their social life (Jensen *et al.* 2017), also, because innovation involves the implementation of ideas that are useful and beneficial for others. Thus, it seems reasonable to think that entrepreneurs' satisfaction from innovativeness spillovers from the work domain into a wide range of non-work domains is impacted positively. We propose thus this hypothesis: **H1. Innovation benefits life satisfaction of the entrepreneur**

1.2. Job Satisfaction, Life Satisfaction and Innovation

The measurement of job satisfaction plays a fundamental role in valuing the well-being of working people (Spreitzer *et al.,* 1997; Blustein, 2008). Job satisfaction represents a combination of positive feelings that workers have toward their work and is closely linked to individuals' behavior in the work place (Davis and Nestrom, 1985). It is a sense of achievement and success arising from work and related to productivity and SWB (Oswald, Proto and Sgroi (2015)). Some studies indicated there is a positive relationship between job satisfaction and life satisfaction (Jensen *et al*., 2017). Unanue *et al.* (2017) state that higher job satisfaction predicted higher life satisfaction. Circumstances around individuals' jobs constitute important elements in individuals' evaluations of their lives (Pavot and Diener, 1993). The measurement of job satisfaction is complex, since it should take into account many influential factors, it can be used as a measurement for the well-being of working people, which shows the emotional state of working people (Leka and Cox, 2010; Büssing and Bissels, 1998).

Innovativeness may put possibly strains on people, as participating in innovative work and derive from the often complex, non-linear, and uncertain road of innovation outcomes (Huhtala and Parzefall, 2007). This strain may decrease individual job satisfaction. In contrast, if the innovation process is properly organized, these stains may be overcome, and innovation work may invoke positive emotions and enhance job satisfaction (Belias and Koustelios, 2014; Rasulzada and Dackert, 2009). Beside bringing emotion effect, innovation capability positively affects employee performance (Osman e*t al.* 2016), which is strongly connected with job satisfaction. We propose thus this second hypothesis: **H2. Innovation benefits job satisfaction of the entrepreneur**

1.3. Work-life balance, Life Satisfaction and Innovation

Clark *et al*. (2008) proposed work-family border theory, to explain how individuals manage and negotiate the spheres and the borders of work and family to attain balance. In prior studies, Thomas and Ganster (1995) focused on the negative effect of work-family policies on work-family conflict. Valcour (2007) indicated working hours have a negative impact on satisfaction with work-life balance (WLB), but job complexity and job control positively affect satisfaction with work-life balance.

Researchers have provided evidence showing that the work and family microsystems are interconnected (Rhoades *et al*., 2001; Lee *et al.*, 2014). Positive experience in one domain, at home or at work, may enrich life in the other, enhancing a higher level of WLB (McNall *et al*., 2010), the level of WLB is associated with life satisfaction. Perception of WLB and sense of life satisfaction in relation to personality has become imperative for organizations to ensure enhanced performance among employees (Gorsy and Panwar, 2018). Yusuf and Sajid (2019) indicate that WLB dimensions significantly predict life satisfaction and there is a positive relationship between WLB and life satisfaction.

Janssen and Yperen (2004) found one of the strains associated with working on innovation tasks is that the workload in both quantitative and qualitative terms may be considerably larger than for ordinary tasks. Such high workloads may cause strain on an entrepreneur and put their work-life balance under pressure. However, a high workload may not necessarily induce tensions and perceptions of stress for the entrepreneur as long as the entrepreneur perceives himself or herself to be in control of the innovation process (Karasek, 1979). In addition, WLB is not just a matter of the relative time spent in work and non-work environments, but also a result of cognitive evaluations of being in control of demands imposed from either of the two environments, the high degree of job control involved in innovative work may actually increase perceptions of WLB (Jensen *et al.* 2017*)*.

When job demands are perceived to be high and not controllable, individuals often get physically as well as emotionally drained, which can result in negative spill-over effects into non-work environments such as the family. With the higher degree of flexibility, autonomy, and job control associated with innovative work, such physical and emotional drains, as well as their negative spill-over effects are less likely to occur. Thus, innovation could help entrepreneurs experience a higher work-life balance. In accordance with these considerations, we state the third hypothesis: **H3. Innovation benefits satisfaction with WLB.**

Like WLB, job satisfaction is generally to be considered significantly related to life

satisfaction (Rode, 2004). There is now robust evidence that entrepreneurs experience higher levels of job satisfaction than employees (Parker and Ajayi-Obe, 2003; Blanchflower, 2004; Benz and Frey, 2008), and most entrepreneurs rate their life satisfaction substantially higher than employees (Larsson and Thulin, 2018).

Can we expect a direct effect of innovation on entrepreneur's life satisfaction when we, at the same time, consider the mediating effects of job satisfaction and WLB? In others words, is the impact of innovation on entrepreneur's life satisfaction only partly, rather than fully, mediated by job satisfaction and work-life balance? To address these questions, we express the fourth and fifth hypothesis: **H4. Job satisfaction has mediation effect on the relationship between innovation and life satisfaction. H5: Satisfaction with WLB has mediation effect on the relationship between innovation and life satisfaction.**

1.4. Entrepreneurs

In this research, we followed the entrepreneurship, one of the distinguishing features of Global Entrepreneurship Monitor (GEM), to identify and characterize entrepreneurs. Based on their motivation to start a business, entrepreneurs can be classified as opportunity entrepreneurs and necessity entrepreneurs. This concept was introduced in 2001, entrepreneurship reflect the pursuit of opportunity and thus a necessity for engagement when there is an absence of employment opportunities (Reynolds *et al*., 2002; Okpara, 2007; Binder and Coad, 2013; Fairlie and Fossen, 2018). Innovation exploits a change as an opportunity and this creative act involves a high level of self-determination, but not equally so for all entrepreneurs (Jensen *et al.*, 2017), which means it may have different impacts on the opportunity entrepreneurs and necessity entrepreneurs. In addition, necessity entrepreneurs are less likely to be involved in product innovation than opportunity entrepreneurs (Darnihamedani and Hessels, 2016). This leads to hypothesis 6 and 7: **H6: Comparing with necessity entrepreneurs, opportunity entrepreneurs have stronger mediation effects of job satisfaction and satisfaction with WLB. H7: Innovation has more effect on the life satisfaction of opportunity entrepreneurs than that of necessity entrepreneurs.**

2. Methodology

We focused on entrepreneurs in particular opportunity entrepreneurs and necessity entrepreneurs. The population of entrepreneurs is surveyed by the Global Entrepreneurship

Monitor (GEM), which conducts an annual survey of the world's adults across 70 countries. The GEM carries out two surveys, one, the Adult Population Survey (APS) and two, the National Expert Survey (NES). Additionally, the GEM also began analyzing well-being of entrepreneurs as a special topic in 2013. We accessed the GEM 2013 APS database using entrepreneurship status.

We target on owner-managers. Opportunity and necessity driven entrepreneurship is assessed by asking the following question: *Are you involved in this start-up to take advantage of a business opportunity or because you have no better choices for work?* Two main answers are possible: *"take advantage of business opportunity"*, indicate the opportunity entrepreneurs, and *"No better choices for work"*, the necessity entrepreneurs. The sampling yielded 19844 entrepreneurs who own and manage a starting or operating business. According to their start-up motivation, this sample can be divided into two groups, 8981 opportunity entrepreneurs and 9205 necessity entrepreneurs.

In the GEM 2013 APS survey, life satisfaction is measured with questions taken from the Satisfaction with Life Scale (SWLS), a five-item instrument designed to measure global cognitive judgments of satisfaction with one's life (GEM 2013). The five questions use a five-point Likert scales, from 1 "Strongly Disagree" to 5 "Strong Agree", and are given below: *1. In most ways, my life is close to my ideal, 2. The conditions of my life are excellent, 3. I am satisfied with my life, 4. So far, I have obtained the important things I want in life, 5. If I could live my life again, I would not change anything.*

These five questions are positively correlated, with high reliability (Cronbach alpha 0.820), they produce similar results under consistent conditions. An exploratory analysis of these five questions reveals a single factor, all of them belong to one component in the rotated component matrix. Thus, the five life satisfaction questions can be combined into an index of life-satisfaction. This measure of life satisfaction is also being used in others studies of entrepreneurs. (Larsson and Thulin 2017).

In the GEM 2013 APS survey, job satisfaction was measured in a specific block by asking respondents to rate the following statements: *1. I can decide on my own how I go about doing my work, 2. The work I do is meaningful to me, 3. At my work, I am not exposed to excessive stress, 4. I am satisfied with my current work, 5. I am satisfied with my current income from work.* The five statements also use five-point Likert response scales, from 1 "Strongly Disagree" to 5 "Strong Agree".

Analysis showed the responses were positively correlated, with a Cronbach's Alpha of 0.73 with a very high-reliability level. Deleting the third question might have improved the total

reliability (from 0.733 to 0.752), however, we decided to keep it in order to keep the integrity of this questionnaire. Exploratory factor analysis showed that the index of the fourth question and fifth question were lower than 0.5 and the fifth question because a wrong dimension, since there is no large gap between this index (0.470 and 0.434). Thus, the five questions can be combined into an index of job-satisfaction.

The satisfaction with balance between work and life in the GEM 2013 APS survey is measured using three items, the first is a sense of success in balancing work and personal life, the second is a sense of confidence about individual ability to manage time, the third is for the respondent to have the opportunity to be master of his or her time. These three statements have been adapted from previous surveys (Valcour, 2007) and are as follows: *1. I am satisfied with the way my time is divided between work and private life, 2. I am satisfied with my ability to balance the needs of my work with those of my personal or family life, 3. I am satisfied with the opportunity to perform well at work and to substantially contribute to home-related responsibilities at the same time.*

The five-point Likert response scale goes from 1 "Strongly Disagree" to 5 "Strong Agree". The response data was positively correlated with high reliability, Cronbach alpha = 0.854 and the random error from the measurement process was acceptable. The three questions belong to one component in the rotated component matrix, with the exploratory factor analysis revealing a clear single factor, so they can be combined into an index of satisfaction with work-life balance.

The measurement of innovation in GEM 2013 survey are in the entrepreneurial aspirations module. It is viewed from the perspective of the market and industry, which in line with Schumpeter's view of innovate entrepreneurship as new product-market combinations destructing older, obsolete products and services and pushing the production frontier forwards (Schumpeter, 1942). Innovation was measured by asking the entrepreneurs starting a business, the questions as follow: *1. Have the technologies or procedures required for this product or service been available for less than a year, or between one to five years, or longer than five years?*, *2. Will all, some, or none of your potential customers consider this product or service new and unfamiliar?, 3. Right now, are there many, few, or no other businesses offering the same products or services to your potential customers?* Each question has three possible responses which were coded on a scale from 1 to 3 for increasing innovation.

The variables correlate positively but not with a high correlation. The Cronbach's Alpha of the data was only 0.271. Exploratory factor analysis revealed a clear single factor. The index is

formative rather than reflective[1]. Thus, the responses can be combined, averaged into an index of innovation. This evaluation approach has also been adopted in previous research. (Jensen *et al*., 2017).

2.1. Control Variables

Some variables relating to innovation and SWB may influence experimental results. In order to test the relationship between interest variables, we kept the following variables constant and unchanged throughout the process of the analysis. At the individual level, gender, which is coded 0 for women and 1for man; age, which is measured in years; education, is classified as pre and primary education, secondary education; post-secondary education, tertiary education, and is coded 1, 2, 3, 4, respectively. To do the processing linear regression, we formed dummy variables for secondary education, post-secondary education, and tertiary education based on pre and primary education. Income, is classified as the lowest 33% tile, middle 33% tile, upper 33% tile of household income of the sampled adults within each country, and is coded 1, 2, 3, respectively; To do the processing linear regression, we formed dummy variables for middle 33% tile, upper 33% tile of household income which base on the lowest 33% tile.

At the firm-level, firm age is counted in years, and is logged in this study to reduce skew. At the region level, the classification of economies by geographic region is adopted from the United Nation's composition of the world's macro geographical regions. The classification of economies by economic development level is adopted from the World Economic Forum (WEF), all of the economics are classified as factor-driven, efficiency-driven and innovation-driven economies, and coded 1, 2, 3, respectively. To do the processing linear regression, we formed dummy variables for efficiency-driven economies and innovation-driven economies based on t factor-driven economies.

Since all of the variables were based on interviews taken from the GEM 2014, the Harmans singles factor test was used to examine whether there is a common source bias among these variables. In exploratory factor analysis, we examine the un-rotated factor solution to determine the number of factors that are necessary to account for variance in the variables. The response shows that the first factor only explains 16. 216% of the variance, which was so low to show there is no problem of common method bias.

[1] The formative measurement approach generally minimizes the overlap between complementary indicators. The reflective measurement approach focuses on maximizing the overlap between interchangeable indicators.

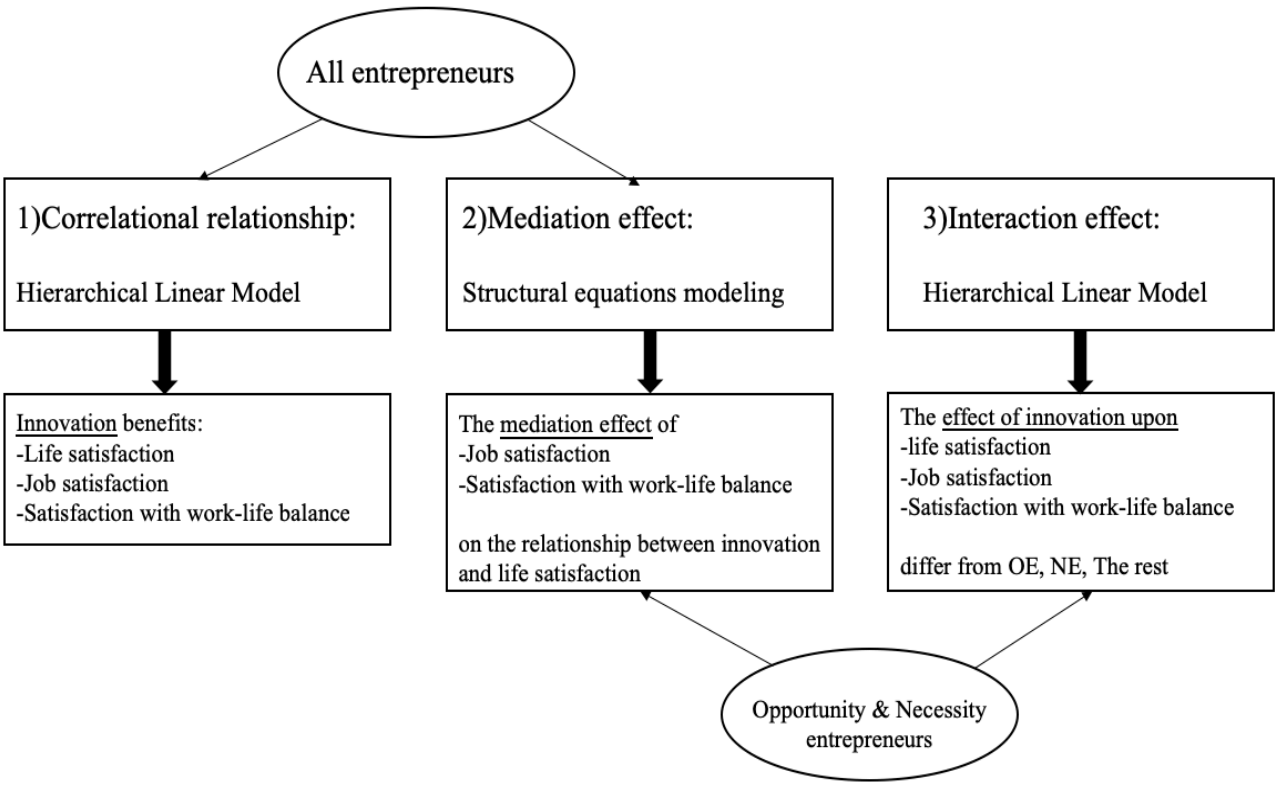
2.2. Method – Function construction - SWB function

The respective relationship can be stated in a simple SWB function: $SWB = f(x, \theta' y, \vartheta' z)$ (1)

The function indicates entrepreneurs' happiness in term of SWB depends on innovation x, a set $\theta' y$ of individual-level determinants, i.e. age, gender and a set $\vartheta' z$ of macro-level determinants, i.e. firm age and country status.

3. Research design

The research design is summarized by this following figure 1.



3.1. Correlational relationship

In this research, we establish satisfaction functions on the basis of equations built by Baron and Kenny (1986). The cognitive components of SWB are life satisfaction and satisfaction with specific life domains. In order to calculate the relevant happiness measures, a SWB function

can be estimated as a hierarchical linear model applying hierarchical linear regression. Three specifications of an empirical life satisfaction function, job satisfaction function, and satisfaction with work-life balance function are given below:

$$LS_i = \lambda_0 + \lambda_1 x_i + \lambda' y_i + \lambda'' z_i + \varepsilon_i \quad (5)$$

$$JS_i = \gamma_0 + \gamma_1 x_i + \gamma' y_i + \gamma'' z_i + \epsilon_i \quad (6)$$

$$WLB_i = \kappa_0 + \kappa_1 x_i + \kappa' y_i + \kappa'' z_i + \sigma_i \quad (7)$$

In these specifications, LS_i, JS_i, and WLB_i stand for report life satisfaction, job satisfaction and satisfaction with work-life balance as specific measures of SWB of entrepreneur i, x_i indicates the innovation index of an entrepreneur starting a business. Vector y_i captures individual-level determinants and vector z_i captures macro-level determinants, ε_i , ϵ_i, σ_i represent error terms. A common specification of an empirical SWB function used to consider the influence from work life domain, is given below:

$$Y_i = \beta_0 + \beta_1 x_i + \beta_2 JS_i + \beta_3 WLB_i + \beta' y_i + \beta'' z_i + \rho_i \quad (8)$$

In this specification, Y_i stands for life satisfaction which considers the influence of work life domain. x_i indicates the innovation index of an entrepreneur starting a business. JS_i indicates the job satisfaction of individual i, WLB_i measures the satisfaction of work-life balance of individual i, Vector y_i again captures individual-level determinants and vector z_i captures macro-level determinants, ρ_i represent error terms.

3.2. Mediation effect and Interaction Effect

For the mediation effect, instead of using the "three + Sobel z-test" which is recommend by Baron and Kenny (1986), we followed the argument of Zhao *et al*. (2010).

Adding interaction terms to a regression model increase the understanding of whether the effect of innovation on life satisfaction, job satisfaction and satisfaction with work-life balance are the same or different between opportunity or necessity entrepreneurs and the rest entrepreneurs. Thus, we added two dummy variables TP for opportunity entrepreneurs (value =1) *versus* all the rest of entrepreneurs (value=0); necessity entrepreneurs (value =1) *versus* all the rest of entrepreneurs(value=0). Based on the regression model, the effect of innovation upon

satisfaction is tested by including the interaction item, the product of the dummy variables with innovation using the following functions:

$$LS_i = \lambda_0 + \lambda_1 x_i + \lambda_2 TP + \lambda_3 x_i \times TP + \lambda' y_i + \lambda'' z_i + \varepsilon_i \quad (9)$$

$$JS_i = \gamma_0 + \gamma_1 x_i + \gamma_2 TP + \gamma_3 x_i \times TP + \gamma' y_i + \gamma'' z_i + \epsilon_i \quad (10)$$

$$WLB_i = \kappa_0 + \kappa_1 x_i + \kappa_2 TP + \kappa_3 x_i \times TP + \kappa' y_i + \kappa'' z_i + \sigma_i \quad (11)$$

TP stands for opportunity or necessity entrepreneurs *versus* the rest of entrepreneurs, $x_i \times TP$ indicates the interaction effect of innovation upon life satisfaction, job satisfaction and satisfaction with work-life balance. Vector y_i again captures individual-level determinants and vector z_i captures macro-level determinants, ε_i , ϵ_i and σ_i represent error terms. The presence of a significant interaction indicates that the effect of one predictor variable on the response variable is different at different values of the other predictor variable. This is tested by adding a term to the model in which the two predictor variables are multiplied ($x_i \times TP$).

4. Results

4.1. Descriptive information

4.1.1 All Entrepreneurs

The sample included 62.1% male and 37.9% female, most were aged between 25 and 54 (75.5%). Interestingly, 48.3% of respondents had only finished secondary education, and only 34.1% of them had an upper-level income. The majority of entrepreneurs came from efficiency-driven countries (53.3%), only 28.3% came from factor-driven countries and 18.4% came from innovation-driven countries. The total entrepreneurs sample split almost equally in opportunity entrepreneurs (45.3%) and necessity entrepreneurs (46.4%).

The mean value and standard deviation of innovation, job satisfaction, satisfaction with work-life balance, and life satisfaction of all sample, which are classified by demographic characteristics are shown in table 1. Except for job satisfaction, males stayed higher for innovation, work-life balance and were more satisfied with their lives than the female respondents. Older entrepreneurs had higher SWB and people aged 18 to 24 were less satisfied with their work and lives. People aged 65-99 had the highest innovation among all age groups. Entrepreneurs' job satisfaction, satisfaction with work-life life balance, and life satisfaction

increase with increasing education level and income level.

Entrepreneurs living in efficiency-driven countries had more highly innovative, and more satisfied with their job and work-life balance when comparing with entrepreneurs who live in factor-driven countries and innovation-driven countries. Entrepreneurs who lived in innovation-driven countries were more satisfied with their lives comparing with other entrepreneurs, this may be due to their higher living standards.

4.1.2 Opportunity entrepreneurs versus necessity entrepreneurs

There are 45.3% opportunity entrepreneurs and 46.4% necessity entrepreneurs (see table 2.). From table 4 it can be seen that necessity entrepreneurs were less satisfied with their life, 16.06%, range from -5 to 25, compare with opportunity entrepreneurs (17.70%) and all entrepreneurs (16.92%). Opportunity entrepreneurs are more satisfied with their jobs (19.40%) and work-life balance (11.38%) than necessity entrepreneurs and all entrepreneurs. Necessity entrepreneurs fluctuate with respect to life satisfaction, job satisfaction, and satisfaction with work-life balance, while opportunity entrepreneurs were found to have relatively stable job satisfaction, satisfaction with work-life balance and life satisfaction.

4.2. Correlation Matrix

All of the bivariate correlations are presented in the table 2, Pearson's correlation coefficient was used to compare the strength of the linear relationship between the paired data.

In the first column of table 2, life satisfaction was positively correlated with job satisfaction and satisfaction with work-life balance. Both of their coefficients were significant. Innovation was also significantly correlated with life satisfaction though the Pearson's correlation coefficient is weak.

There was a strongly significant correlation between job satisfaction and being satisfied with work-life balance. Innovation was positively significantly correlated with job satisfaction and work-life balance. Pre and primary school, the lowest education level, was negatively correlated with life satisfaction, job satisfaction and being satisfied with work-life balance. Entrepreneurs who had low income or live in factor-driven countries were less satisfied with their jobs and life.

Opportunity entrepreneurs were more satisfied with their work and life, in their country, however, being necessity entrepreneurs decreased life satisfaction, job satisfaction and satisfaction with work-life balance.

4.3. Effect of innovation on satisfaction with work-life balance, job satisfaction and life satisfaction

4.3.1 All Entrepreneurs

We tested hypotheses 1, 2 and 3 using the linear models presented in Table 3. The columns show the standardized coefficient of basic equations (5), (6) and (7). The asterisks show the level of statistical significance. Innovation was assumed to benefit life satisfaction, job satisfaction and being satisfied with work-life balance. The total effect of innovation on life satisfaction, job satisfaction and being satisfied with work-life balance were tested using a hierarchical linear regression.

With respect to hypothesis 1: Without the effect of mediators the relationship between innovation and life satisfaction is positive and significant indicated by standardized coefficient of 0.042 (P<0.0005). The main effect of innovation on life satisfaction was proven. Except for gender and firm age, the OLS estimate shows all control variables are highly correlated with life satisfaction. Thus, H**ypothesis 1 is supported. Innovation benefits life satisfaction.**

With respect to hypothesis 1: Job satisfaction was positively affected by innovation with a high significance, coefficient =0.064. There was no significant relationship between job satisfaction and gender, not necessary, age, and education all significantly affect job satisfaction. Unexpectedly, compared with lower income respondents, higher income respondents had no significant correlation with job satisfaction. Country-level OLS regression showed that, compare with living in factor-driven countries, living in efficiency-driven and innovation-driven counties positively affect job satisfaction with high significance. Thus, **Hypothesis 2 is supported. Innovation benefits job satisfaction.**

With respect to hypothesis 3: After controlling for the effects of individual-level and macro-level variables, from table 6 it can be seen that innovation is highly significantly correlated with be satisfied with work-life balance for entrepreneurial respondents. The positive correlation was confirmed using a hierarchical linear regression, coefficient=0.042, P<0.0005. Being satisfied with work-life balance was positively affected by age and education. Comparing with the low-income group, people who achieve middle-level and upper-level incomes are less satisfied with their work-life balance. People who live in efficiency-driven and innovation-

driven countries have a higher work-life balance than people living in factor-driven countries. Thus, **Hypothesis 3 is supported. Innovation benefits work-life balance.**

4.3.2 Opportunity entrepreneurs versus necessity entrepreneurs

The effects of innovation on satisfaction with work-life balance, job satisfaction and life satisfaction were tested using a hierarchical linear model, and the results of the OLS estimation are shown in table 4. The correlation between satisfaction with work-life balance and innovation was positive but not significant for opportunity entrepreneurs, Std. coefficient= 0.019, P=0.117, however, innovation positively and significantly affected satisfaction with work-life balance of necessity entrepreneurs, Std. coefficient= 0.056, P < 0.001. Innovation was positively related to job satisfaction and life satisfaction for both opportunity entrepreneurs and necessity entrepreneurs, all of the standardized coefficients were significant. Comparing with opportunity entrepreneurs, innovation promotes more job satisfaction and life satisfaction for necessity entrepreneurs.

4.4. Correlation analysis of innovation, satisfaction with work-life balance and job satisfaction on life satisfaction

4.4.1 All Entrepreneurs

The basic model and the extended model of life satisfaction with the full set of dependent variables available for all entrepreneurs is shown in table 5. The standardized coefficients of the basic equation (5) and the standardized coefficients of the extend equation (8), are shown in the column, which adds mediating variables respectively. The asterisks indicate levels of statistical significance. All of the variance inflation factors were less than 2 which indicates there was no multi-collinearity issue for the regression. In the first columns, when controlling the effect of individual-level, firm-level and country-level variables, the standardized coefficient of innovation was significantly positive, coefficient= 0.042, p<0.0005, innovation was relevant, as predicted, but its effect was not powerful. The R square of the equation was 0.069, the proportion of the variance in the all dependent variables was low, the basic equation (5) had a low degree of prediction, however, satisfaction with work-life balance was powerfully and significant in the second model (coefficient= 0.411, *P*<0.0005), the coefficient of innovation is reduced to about half, 0.025 ,*P*<0.0005, the prediction increased to 0.232. The third column represents the extended model which considers the effect of job satisfaction. The

standardized coefficient of innovation decreased to 0.008 and became insignificant, the prediction proportion of dependent variable for the equation increased to 0.329.

4.4.2 Opportunity entrepreneurs versus necessity entrepreneurs

The basic equations of life satisfaction are shown of model (1). Taking away the effect of job satisfaction and satisfaction with work-life balance, innovation was positively correlated with life satisfaction for both opportunity, Std. coefficient= 0.032, P <0.005, and necessity entrepreneurs Std. coefficient= 0.045, P< 0.001, the effects of innovation on life satisfaction of opportunity entrepreneurs were less significant than those for necessity entrepreneurs.

Adding a dependent variable, satisfaction with work-life balance, for necessity entrepreneurs, the effect of innovation on life satisfaction became insignificant, even the Std. coefficient of satisfaction with work life balance was positive and significant, Std. coefficient = 0.412, P <0.001. Satisfaction with work-life balance may be the mediator between innovation and life satisfaction of necessity entrepreneurs, however, satisfaction with work-life balance had less effect on the relationship between innovation and life satisfaction of opportunity entrepreneurs, shown in model (2), the Std. coefficient of innovation decreased less from 0.032 to 0.025, still with the same significance. Therefore, satisfaction with work-life balance had a sight impact on the relationship between innovation and life satisfaction, however, we could not negate the mediation effect of satisfaction with work-life balance, this was tested using bootstrapping.

Finally, we considered the effect of job satisfaction on life satisfaction. Job satisfaction positively and highly significant affected life satisfaction with large Std. coefficients, 0.409 for opportunity entrepreneurs and 0.442 for necessity entrepreneur, for both opportunity and necessity entrepreneurs, the effect of satisfaction with work-life balance on life satisfaction decreased with adding this new variable, but are still significant, however, the effects of innovation on life satisfaction become insignificant at the same time. There was a strong influence of job satisfaction on the relationship between innovation and life satisfaction.

4.5. Mediation effect of job satisfaction and satisfaction with work-life balance

4.5.1 All Entrepreneurs

Overall, the extended model (5) explained about 32.9% of the variance in the life satisfaction of the entrepreneurs ($R^2 = 0.329, P < 0.0005$). Innovation, job satisfaction and satisfaction with work-life balance contributed to the variance of life satisfaction. Based on the past research, the beneficial effect of innovation on life satisfaction is mediated by job satisfaction and satisfaction with work-life balance (Jensen *et al.,* 2017). Regression estimate from the table 6 show the change of innovation effect on life satisfaction when adding dependent variables, job satisfaction and satisfaction with work-life balance, has been assigned for our data are shown as regression estimates in table 6.

4.5.1.1 The mediation effect of job satisfaction

With respect to Hypothesis 4: From the table 6, we can see that the total effect of innovation on life satisfaction is substantial as indicated by the standardized coefficient λ_1= 0.070, P = 0.001, with bias-corrected 95% confidence intervals, 0.053 to 0.086, which doesn't include 0, the total effect is significant though it is not very powerful.

The direct effect $\beta_1$of innovation on life satisfaction (P=0.005) is also significant with a coefficient value of 0.021. The indirect effect $\gamma_1 \times \beta_2$ of innovation on life satisfaction mediated by job satisfaction is significant, P < 0.001, with a coefficient of 0.039, with the bias-corrected 95% confidence intervals which valued from 0.032 to 0.046, does not include 0. In the indirect path, a unit increase in innovation increases job satisfaction by 0.092 units; $\beta_2 = 0.42$, so holding innovation constant, a unit increase in job satisfaction increases life satisfaction by 0.42 units. Since $\gamma_1 \times \beta_2 \times \beta_1$ (0.00081) is positive, job satisfaction has a it is a complementary mediation effect between innovation and life satisfaction. Thus, **Hypothesis 4 is supported. Job satisfaction has a mediating effect on the relationship between innovation and life satisfaction.**

4.5.1.2 The mediation effect of satisfaction with work-life balance

With respect to Hypothesis 5 : The indirect effect $\kappa_1 \times \beta_3$ of satisfaction with work-life is also positive and significant. The standardized coefficient is 0.010, P = 0.001, with bias-corrected 95% confidence intervals from 0.007 to 0.013. In the indirect path, a unit increase in innovation increases satisfaction with work-life balance by 0.055 units; $\beta_3 = 0.181$, so holding constant innovation, a unit increase in job satisfaction increases life satisfaction by 0.181 units. Since $\kappa_1 \times \beta_3 \times \beta_1$ (0.00021) is positive, it is a complementary mediation. Thus, **Hypothesis 5 is supported. Satisfaction with work-life balance has a mediating effect on the relationship between innovation and life satisfaction.**

4.5.2 Opportunity entrepreneurs versus necessity entrepreneurs

With respect to hypothesis 6, we make the following test. Based on the mediation effect analysis program of Zhao *et al.* (2010) and the multiple mediator model of Preacher and Hayes (2008) equations (2) to (4), individual *i* in equations (5) to (7) will match with the sample, opportunity entrepreneurs (OE) and necessity entrepreneurs (NE), we tested the mediation effect of innovation on satisfaction with work-life balance and job satisfaction by using bootstrapping. The sample size was 5000 for opportunity and necessity entrepreneurs respectively at 95% confidence interval, λ_1 , and β_1 represented total effect and direct effect, $\gamma_1 \times \beta_2$ and $\kappa_1 \times \beta_3$ represent indirect effect of job satisfaction and satisfaction with work-life balance on life satisfaction.

4.5.2.1 Opportunity entrepreneurs

The mediation effect of job satisfaction

Looking at table 7, we observe that the total effect from bootstrap analysis was positive and significant, $\lambda_{1OE} = 0.053, P = 0.001$, at a 95% confidence interval excluding zero. The mean indirect effect of job satisfaction from the bootstrap analysis was positive and significant, $\gamma_{1OE} \times \beta_{2OE} = 0.029, P = 0.001$, with a Bias-corrected 95% confidence interval excluding zero, 0.020 to 0.039. In the indirect path, a unit increase in innovation increases job satisfaction by 0.072 units; $\beta_{2OE} = 0.4$, so holding innovation constant, a unit increase in job satisfaction increases life satisfaction by 0.4 units. The direct effect β_{1OE}, 0.018 was

insignificant, P= 0.099. Above all, job satisfaction had an indirect-only mediation effect on the relationship between innovation and life satisfaction of opportunity entrepreneurs.

The mediation effect of satisfaction with work-life balance

The mean indirect effect from the bootstrap analysis was positive and significant, $\kappa_{1OE}\times\beta_{3OE} = 0.006, P = 0.003$, with a Bias-corrected 95% confidence interval excluding zero, 0.002 to 0.012. In the indirect path, a unit increase in innovation increased satisfaction with work-life balance by 0.034 units; $\beta_{3OE} = 0.018$, so holding innovation constant, a unit increased in job satisfaction increases life satisfaction by 0.018 units. Since the direct effect β_{1OE} 0.018 was insignificant, P= 0.099, satisfaction with work-life balance had an indirect-only mediation effect on the relationship between innovation and life satisfaction of necessity entrepreneurs.

4.5.2.2 Necessity entrepreneurs

The mediation effect of job satisfaction

The total effect λ_{1NE} is shown in table 10 using bootstrapping, and is positive and significant, $\lambda_{1NE} = 0.074, P = 0.001$, with a bias-corrected 95% confidence interval excluding zero, 0.049 to 0.099. The indirect effect of job satisfaction is positive and significant, $\gamma_{1NE}\times\beta_{2NE} = 0.040, P = 0.001$, with a Bias-corrected 95% confidence interval excluding zero, 0.020 to 0.039. In the indirect path, a unit increase in innovation increases job satisfaction by $0.091\ \gamma_{1NE}$ units; $\beta_{2NE} = 0.438$, so holding constant innovation, a unit increase in job satisfaction increases life satisfaction by 0.438 units. Since $\gamma_{1NE}\times\beta_{2NE}\times\ \beta_{1NE}$, 0.00092, was positive, and a complementary mediation.

The mediation effect of satisfaction with work-life balance

The indirect effect of satisfaction with work-life balance was positive and significant, $\kappa_{1NE}\times\beta_{3NE} = 0.011, P = 0.001$, with a Bias-corrected 95% confidence interval excluding zero, 0.030 to 0.050. In the indirect path, a unit increased in innovation increases satisfaction with work-life balance by 0.064 units; $\beta_{3NE} = 0.177$, so holding innovation constant, a unit increase in job satisfaction increased life satisfaction by 0.177 units. Since $\kappa_{1NE}\times\beta_{3NE}\times\ \beta_{1NE}$, 0.00025, is positive, it is a complementary mediation.

The mediation effect of satisfaction with work-life balance, 0.060, is stronger than that of job satisfaction (0.029) for opportunity entrepreneurs, while satisfaction with work-life balance, 0.040, has more of a mediation effect than job satisfaction (0.011) does on who opportunity entrepreneurs. Compared with opportunity entrepreneurs, necessity entrepreneurs' job satisfaction has a greater impact on the relationship of innovation and life satisfaction (0.040 to 0.029), however, comparing with necessity entrepreneurs, opportunity entrepreneurs' satisfaction with work-life balance influenced the relationship between innovation and life satisfaction more, 0.060 to 0.011. Thus, **Hypothesis 6 is not supported. Comparing with necessity entrepreneurs, opportunity entrepreneurs has weak mediation effects of job satisfaction and satisfaction with work-life balance.**

4.6. Interaction effect

With respect to hypothesis 7, we make the following testing. Whether the effect of innovation upon satisfaction with work-life balance, job satisfaction and life satisfaction differ from opportunity entrepreneurs (OE) and the rest entrepreneurs; or necessity entrepreneurs (NE) and the rest entrepreneurs is shown in table 10, respectively in columns (1) and (2). Dummy variables "OE *VS.* Rest", opportunity entrepreneurs =1, and "NE *VS.* Rest", necessity entrepreneurs = 1, introduced in equations (9), (10) and (11). The main effect was estimated using hierarchical linear modal and controlling for the disturbance of individual level, firm level, and country level variables. The interaction effect was tested by estimating the interaction items, the product of innovation and OE *VS.* Rest; innovation and NE *VS.* Rest. I have also given standardized coefficients in table 11 for the benefit of comparing effect.

Looking at table 9, compared with the all of rest entrepreneurs, opportunity entrepreneurs were more satisfied with their work-life balance,0.079, P <0.001, job, 0.108, P <0.001, and life, 0.037, P <0.001. Necessity entrepreneurs were less satisfied with their work-life balance, -0.084, P <0.001, job, -0.119, P <0.001 and life, 0.124, P <0.001 when compared to the rest entrepreneurs. Adding the interaction term changed the value of λ_1, $\gamma_{1,}$ κ_1, the direct of innovation, λ_2, $\gamma_{2,}$ κ_2, the direct effect of being different types of entrepreneurs.

4.6.1. Interaction effect of innovation on satisfaction with work-life balance

The effect of innovation on satisfaction with work-life balance became $0.06+,-0.03,\times TP$ and $0.02+,0.028,\times TP$. The effect of innovation was $0.06+(-0.03)\times 1=0.03$, for opportunity entrepreneurs tested in model (1), TP=1, . Thus, for being an opportunity entrepreneur, the effect of innovation upon satisfaction with work-life balance was lower than

that of the rest entrepreneurs, TP=0, the effect of innovation is 0.06. The effect of innovation is $0.02 + (0.028)\times 1 = 0.048$, for necessity entrepreneurs tested in model (2), TP=1,. Since the effect of innovation for the rest entrepreneurs was 0.02 (TP=0), compare to the rest entrepreneurs, innovation had more impact on satisfaction with work-life balance of the necessity entrepreneurs.

4.6.2. Interaction effect of innovation on job satisfaction

The effect of innovation on job satisfaction was $0.077+, -0.25, \times TP$ and $0.077 + ,0.011, \times TP$: for opportunity entrepreneurs, TP=1, the effect of innovation is $0.077 + (-0.25)\times 1 = -0.173$. For being opportunity entrepreneurs, the effect of innovation upon job satisfaction was lower than that of the rest entrepreneurs (TP=0, the effect of innovation was 0.077). Innovation had less impact on the job satisfaction of opportunity entrepreneurs. The value of innovation × NE was 0.011 with P-value 0.297, the effect of innovation on job satisfaction did not significantly differ from necessity entrepreneurs and the rest entrepreneurs.

4.6.3 Interaction effect of innovation on life satisfaction

The insignificant coefficients of -0.010 and 0.008 for both opportunity and necessity entrepreneurs indicates there was no obviously different effect of innovation on life satisfaction between opportunity or necessity entrepreneurs and the rest entrepreneurs. Thus, **Hypothesis 7 is not supported. Innovation has more effect on the life satisfaction of necessity entrepreneurs than that of opportunity entrepreneurs.**

What do we know?

We aimed to prove the seven hypotheses given in the first part of this paper about the relationship between innovation and life satisfaction of entrepreneurs. What did we learn?

The direct effect of innovation on life satisfaction

For all entrepreneurs, the available findings showed that the innovation benefits life satisfaction. The relationship between innovation and life satisfaction were not very strong but highly significant. When we sorted sample into opportunity and necessity entrepreneurs, this relationship did not change, however, necessity entrepreneurs' life satisfaction was more affected by innovation compared to opportunity entrepreneurs.

The direct effect of innovation and job satisfaction

There was a significantly positive relationship between innovation and job satisfaction, as well as that of opportunity and necessity entrepreneurs. For all entrepreneurs, innovation benefited their job satisfaction.

The direct effect of innovation and satisfaction with work-life balance

Innovation had a direct impact on satisfaction with work-life balance for all the entrepreneurs, for necessity entrepreneurs' innovation also had a significantly positive impact on life satisfaction, however, for opportunity entrepreneurs' satisfaction with work-life balance was not affected by innovation. Thus, in our research, innovation benefits life-satisfaction for all entrepreneurs and but when split to necessity entrepreneurs and opportunity entrepreneurs, the opportunity entrepreneurs are not affected.

The mediation effect of job satisfaction

Job satisfaction played a mediating role in the relationship between innovation and life satisfaction for all entrepreneurs, both for opportunity and necessity entrepreneurs. Job satisfaction had a complementary mediation effect on the relationship between innovation and life satisfaction for all entrepreneurs and opportunity entrepreneurs, but an indirect, only mediation effect on that relationship of necessity entrepreneurs.

The mediation effect of satisfaction with work-life balance

Like job satisfaction, satisfaction with work-life balance had a complementary mediation effect on the relationship between innovation and life satisfaction for all entrepreneurs and opportunity entrepreneurs, but an indirect-only mediation effect on that relationship of necessity entrepreneurs.

The effect of innovation on life satisfaction, job satisfaction and satisfaction with work-life balance, for opportunity entrepreneurs or necessity entrepreneurs versus the rest entrepreneurs

Innovation had less impact on satisfaction on work-life balance and job satisfaction than that of the rest entrepreneurs for opportunity entrepreneurs, however, innovation had more impact on job satisfaction for necessity entrepreneurs when compare to rest entrepreneurs. The effect of innovation on life satisfaction for both opportunity and necessity entrepreneurs did not differ from that of the rest entrepreneurs.

What we do not know?

The effect of industry types

There are various industries in society, and not all of them have the same need of innovation at product and market level, so entrepreneurs working in different industries, such as high-tech and low-tech industries, may have disparate desires for innovation which will impact on their life satisfaction differently. We do not know what type of industries entrepreneurs work in may decrease the accuracy of final results.

The effect of omitted mediator

Since job satisfaction and satisfaction with work-life balance have a complementary mediation effect on the relationship between innovation and life satisfaction for all entrepreneurs and opportunity entrepreneurs, the theoretical framework was incomplete, thus, it is probable that there is an omitted mediator we did not consider in the "direct" path.

Topics for further research

The above-mentioned deficiencies provide us with a diversion on future research: we need to get a perspective on contingencies in the relationship between innovation and life satisfaction, we need data sets that are sufficiently large enough and well documented to allow detailed a splitting, to see what the effect of entrepreneurship on SWB are in particular categories such as the different industries entrepreneurs worked in. Such studies should not only consider the impact of industries heterogeneity, but also the institutions in society which influence the relationships between innovation and subjective well-being. Considering the different effect of innovation upon an entrepreneur's life satisfaction that are driven by regional differences, no matter at economic development field or regional policy field would also be very interesting.

Conclusion

This article contributes to our understanding of how the innovation activities of entrepreneurs benefit their life satisfaction and the role job satisfaction and satisfaction with work-life balance play in the relationship between innovation and life satisfaction. The research design was divided into three parts. In the first part, the effects of innovation were tested using data from the GEM survey of 2013 and a hierarchical linear model. The available findings showed innovation benefits life satisfaction, job satisfaction and satisfaction with work-life

balance. We tested the mediation effects of job satisfaction and satisfaction with work-life balance on the same data using a bootstrap test in the second part, and found that the relationship between innovation and life satisfaction was mediated by job satisfaction and satisfaction with work-life balance, and that the type of mediation effect differs for opportunity and necessity entrepreneurs. Finally, we researched again using the same data, the interaction effect of innovation on satisfaction with work-life balance, job satisfaction and life satisfaction. We concluded that: whether starting up a business in an opportunity-driven position or driven to escape unemployment, the effect of innovation on life satisfaction does not differ for opportunity or necessity entrepreneurs and when compared to rest entrepreneurs and all entrepreneurs had good reasonable work, satisfaction with life as a whole balance.

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Appendix

Table 1. Mean, standard deviation of innovation, job satisfaction and life satisfaction

	Innovation		Job Satisfaction		work-life balance		Life satisfaction	
	Mean	Std.deviation	Mean	Std.deviation	Mean	Std.deviation	Mean	Std.deviation
Gender								
Male	1.35	0.50	18.65	4.24	11.17	3.20	17.02	5.02
Female	1.33	0.53	19.00	4.30	11.03	3.27	16.75	5.10
Age								
Below18	1.31	0.55	18.89	4.79	11.41	3.27	17.01	5.13
18-24	1.34	0.57	17.58	4.75	10.51	3.48	15.92	5.41
25-34	1.37	0.53	18.65	4.33	10.89	3.29	16.61	5.12
35-44	1.36	0.50	18.94	4.17	11.02	3.21	16.95	5.01
45-54	1.33	0.49	19.08	4.04	11.26	3.13	17.09	4.89
55-64	1.29	0.51	19.24	4.27	11.39	3.19	17.38	4.97
65-99	1.39	0.49	20.89	4.49	12.41	3.16	19.81	3.89
Education								
Pre and primary	1.28	0.49	17.77	4.87	10.70	3.61	15.55	5.614
Secondary	1.36	0.51	19.00	4.19	11.19	3.14	16.93	4.93
Post-secondary	1.31	0.54	19.20	3.94	11.19	3.12	17.22	4.7
Tertiary school l	1.39	0.50	19.43	3.88	11.13	3.15	17.95	4.61
Income								
Lower	1.34	0.52	18.44	4.30	11.04	3.30	15.93	5.25
Middle	1.35	0.51	18.76	4.28	11.02	3.19	16.93	4.88
Upper	1.36	0.50	19.18	4.24	11.15	3.20	17.68	4.87
Country Status								
Factor-driven	1.19	0.57	17.30	4.89	10.52	3.61	15.16	5.69
Efficiency-driven	1.44	0.48	19.60	3.82	11.42	3.00	17.57	4.55
Innovation-driven	1.29	0.43	19.17	3.88	10.97	3.21	17.73	4.73

Source: GEM (2013).

Table 2. Correlations Matrix

(1) Life satisfaction	1.00																	
(2) Job satisfaction	.541**																	
	0.000																	
(3) Work-life balance	.427**	.638**																
	0.000	0.000																
(4) Innovation	.087**	.103**	.071**															
	0.000	0.000	0.000															
(5) Gender(Male:1)	.026**	.040**	-.022**	.026**														
	0.000	0.000	0.002	0.000														
(6) Age	.083**	.089**	.073**	-.023**	.035**													
	0.000	0.000	0.000	0.001	0.000													
(7) Pre and premary school	-.133**	-.126**	-.058**	-.058**	-.080**	.030**												
	0.000	0.000	0.000	0.000	0.000	0.000												
(8) Secondary school	0.003	.028**	.031**	.024**	.027**	-.057**	-.477**											
	0.714	0.000	0.000	0.001	0.000	0.000	0.000											
(9) Post-secondary school	.020**	.025**	0.011	-.019**	0.003	-.014*	-.163**	-.319**										
	0.005	0.000	0.114	0.007	0.658	0.046	0.000	0.000										
(10) Teriamry school	.108**	.069**	0.007	.044**	.044**	.049**	-.260**	-.510**	-.174**									
	0.000	0.000	0.301	0.000	0.000	0.000	0.000	0.000	0.000									
(11) Lower	-.119**	-.061**	-0.009	-0.002	-.061**	-0.004	.256**	.014*	-.076**	-.206**								
	0.000	0.000	0.229	0.827	0.000	0.568	0.000	0.046	0.000	0.000								
(12) Middle	0.002	-.015*	-0.013	0.001	-0.012	-0.002	-.031**	.075**	0.004	-.061**	-.371**							
	0.757	0.033	0.078	0.841	0.105	0.778	0.000	0.000	0.536	0.000	0.000							
(13) Upper	.109**	.052**	.014*	.022**	.072**	-0.009	-.160**	-.080**	.036**	.227**	-.437**	-.438**						
	0.000	0.000	0.043	0.002	0.000	0.222	0.000	0.000	0.000	0.000	0.000	0.000						
(14) Factor-driven	-.219**	-.231**	-.108**	-.188**	-.116**	-.203**	.292**	-.054**	-.050**	-.180**	.133**	-0.007	-.030**					
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.292	0.000					
(15) Efficiency-driven	.138**	.182**	.111**	.209**	.080**	.036**	-.130**	.087**	.017*	0.012	-.024**	-0.003	.021**	-.671**				
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.101	0.001	0.714	0.003	0.000				
(16) Innovation-driven	.076**	.033**	-.017*	-.051**	.033**	.190**	-.172**	-.049**	.036**	.194**	-.124**	0.012	0.008	-.299**	-.508**			
	0.000	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.248	0.000	0.000			
(17) Looged firm age	.047**	.030**	-0.004	-.092**	.110**	.375**	.031**	-.037**	-0.012	.023**	-.024**	-0.006	-0.003	-.116**	-.017*	.158**		
	0.000	0.000	0.596	0.000	0.000	0.000	0.000	0.000	0.138	0.003	0.002	0.473	0.701	0.000	0.035	0.000		
(18) Opportunity entreprenuer	.141**	.113**	.082**	.056**	.015*	-.023**	-.091**	-.039**	.032**	.108**	-.092**	-.016*	.099**	-0.005	-.038**	.055**	-.055**	
	0.000	0.000	0.000	0.000	0.035	0.001	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.443	0.000	0.000	0.000	
(19) Necessity Entrepreneur	-.158**	-.135**	-.089**	-.052**	-.030**	-0.009	.135**	.047**	-.040**	-.153**	.121**	.037**	-.114**	.066**	.036**	-.123**	0.010	-.846**

∗*P* *P* *P* *Source: GEM (2013).*

Table 3. Effect of innovation on satisfaction of all entrepreneurs

All variables	Work-life balance	Job satisfaction	Life satisfaction
Innovation	0.042***	0.064***	0.042***
Gender	-0.031***	0.010	-0.011
Age	0.092***	0.075***	0.045***
Education	0.038***	0.092***	0.094***
Income: Lower			
Middle	-0.029**	-0.014	0.033***
Upper	-0.013	0.018*	0.091***
Logged firm age	-0.034***	-0.008	0.015
Economics: Factor-driven			
Efficiency-driven	0.122***	0.226***	0.187***
Innovation-driven	0.040***	0.129**	0.153***
N entrepreneur	16060	16060	16060

Source: GEM (2013).

Table 4. Effect of innovation on satisfaction of opportunity and necessity entrepreneurs

Necessity entrepreneurs			
Innovation	0.056***	0.058***	0.044***
Gender	-0.012	0.013	-0.020
Age	0.100***	0.085***	0.036**
Education	0.020*	0.073***	0.068***
Income: Lower			
Middle	-0.025*	-0.006	0.035**
Upper	-0.017	-0.002	0.060***
Logged firm age	-0.052***	-0.008	0.022
Economics: Factor-driven			
Efficiency-driven	0.110***	0.231***	0.172***
Innovation-driven	-0.004	0.070***	0.088***
N entrepreneur	7575	7575	7575
Opportunity entrepreneurs	**Work-life balance**	**Job satisfaction**	**Life satisfaction**
Innovation	0.019	0.052***	0.032**
Gender	-0.050***	0.004	-0.011
Age	0.082***	0.061***	0.049***
Education	0.020*	0.067***	0.083***
Income: Lower			
Middle	-0.037**	-0.027*	0.027*
Upper	-0.022	0.018	0.105***
Logged firm age	-0.008	0.002	0.014
Economics: Factor-driven			
Efficiency-driven	0.139***	0.217***	0.196***
Innovation-driven	0.066***	0.154***	0.174***
N entrepreneur	7236	7236	7236

*P<0.05, **P<0.01, ***P<0.001

Source: GEM (2013).

Table 5. Life satisfaction function, all entrepreneurs, opportunity entrepreneurs and necessity entrepreneurs

	ALL			Opportunity Entrepreneurs			Necessity Entrepreneurs		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Gender*	-0.011	0.001	-0.012	-0.011	0.008	-0.006	0.019	-0.009	-0.019*
Age	0.045***	0.008	0.000	0.049***	0.014	0.013	0.054**	0.024	0.013
Education: pre and primary									
Secondary	0.070***	0.043***	0.020*	0.058***	0.044**	0.027	0.065***	0.036**	0.016
Post-secondary	0.054***	0.037***	0.018*	0.056***	0.043***	0.027*	0.037**	0.026*	0.011
Tertiary	0.094***	0.079***	0.049***	0.083***	0.076***	0.053***	0.068***	0.063***	0.040**
Income: Lower									
Middle	0.033***	0.044***	0.043***	0.027*	0.041***	0.043***	0.054	0.058***	0.053***
Higher	0.091***	0.097***	0.085***	0.105***	0.114***	0.101***	0.078***	0.077***	0.074***
Logged firm age	0.015	0.029***	0.023***	0.014	0.017	0.014	0.022	0.44***	0.033***
Country status: Factor-driven									
Efficiency-driven	0.187***	0.137***	0.072***	0.196***	0.142***	0.188***	0.180***	0.141***	0.068***
Innovation-driven	0.153***	0.136***	0.091***	0.174***	0.148***	0.102***	0.078***	0.088***	0.050***
Innovation	0.042***	0.025***	0.008	0.032**	0.025**	0.008	0.045***	0.020	0.014
Work-life balance		0.411***	0.142***		0.391***	0.142***		0.412***	0.138***
Job satisfaction			0.435***			0.409***			0.442***
(Constant)	13.011	7.016	3.232	14.216	8.009	4.025	12.523	6.840	3.132
R Square	0.069	0.232	0.329	0.070	0.223	0.313	0.054	0.219	0.327
R Square Change	0.067	0.002	0.162	0.001	0.153	0.090	0.002	0.165	0.108
ANOVA F test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Max. VIF	1.989	1.990	1.997	2.352	2.352	2.357	1.623	1.628	1.810
Durbin-Watson			1.614			1.666			1.585
N entrepreneurs	16060	16060	16060	7236	7236	7236	7575	7575	7575

*P<0.05, **P<0.01, ***P<0.001

Source: GEM (2013).

Table 6: Mediation effect of Job satisfaction and satisfaction with work-life balance

All Entrepreneurs	Std.Estimate	BC 95% Confidence Interval	
		P value	BC
Indirect effect			
Innovation-->Job satisfaction-->Life satisfaction	0.039	0.001	0.032~0.046
Innovation-->Work-life balance-->Life satisfaction	0.010	0.001	0.007~0.013
Direct effect			
Innovation--> Life satisfaction	0.021	0.005	0.006~0.036
Total effect			
Innovation--> Life satisfaction	0.070	0.001	0..053~0.086

BC: Bias-corrected percentile method
Source: GEM (2013).

Table 7: Mediation effect of Job satisfaction and satisfaction with work-life balance

Opportunity Entrepreneurs	Std.Estimate	BC 95% Confidence Interval	
		P value	BC
Indirect effect			
Innovation-->Job satisfaction-->Life satisfaction	0.029	0.001	0.020~0.039
Innovation-->Work-life balance-->Life satisfaction	0.006	0.003	0.002~0.012
Direct effect			
Innovation--> Life satisfaction	0.018	0.099	-0.003~0.039
Total effect			
Innovation--> Life satisfaction	0.053	0.001	0..030~0.078

BC: Bias-corrected percentile method
Source: GEM (2013).

Table 8: Mediation effect of job satisfaction and satisfaction with work-life balance

Necessity Entrepreneurs	Std.Estimate	BC 95% Confidence Interval	
		P value	BC
Indirect effect			
Innovation-->Job satisfaction-->Life satisfaction	0.040	0.001	0.030~0.050
Innovation-->Work-life balance-->Life satisfaction	0.011	0.001	0.007~0.016
Direct effect			
Innovation--> Life satisfaction	0.023	0.044	0.001~0.045
Total effect			
Innovation--> Life satisfaction	0.074	0.001	0..049~0.099

BC: Bias-corrected percentile method
Source: GEM (2013).

Table 9: Effect of innovation on satisfaction for opportunity entrepreneurs or necessity entrepreneurs VS. the rest entrepreneurs

	Work-life balance				Job satisfaction				Life satisfaction			
	Main effect		Interaction		Main effect		Interaction		Main effect		Interaction	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Innovation*OE VS. The rest			-0.031**				-0.025*				-0.010	
Innovation*NE VS. The rest				0.028**				0.011				0.008
OE VS. The rest	0.079***		0.079***		0.108***		0.108***		0.037***		0.118***	
NE VS. The rest		-0.084***		-0.084***		-0.119***		-0.118***		-0.124***		-0.124***
Innovation	0.039***	0.039***	0.060***	0.020	0.060***	0.059***	0.077***	0.052***	0.118***	0.037***	0.043***	0.031**
Gender	0.031***	-0.031***	0.031***	-0.032***	0.011	0.068	0.010	0.009	-0.011	-0.011	-0.012	-0.013
Age	0.092***	0.092***	0.092***	0.092***	0.074***	0.003***	0.075***	0.074***	0.045***	0.045***	0.045***	0.045***
Education: pre and primary												
Secondary	0.067***	0.067***	0.061***	0.059***	0.094***	0.091***	0.087***	0.084***	0.071***	0.071***	0.064***	0.060***
Post-secondary	0.042***	0.042***	0.038***	0.036***	0.068***	0.135***	0.062***	0.059***	0.053***	0.053***	0.046***	0.043***
Tertiary	0.038***	0.038***	0.028*	0.023*	0.093***	0.111***	0.078***	0.071***	0.095***	0.095***	0.079***	0.072***
Income: Lower												
Middle	0.028**	-0.028**	0.029***	-0.028**	-0.014	0.083	-0.016	-0.014	0.033***	0.033***	0.031***	0.033***
Upper	0.013	-0.013	-0.019*	-0.019*	0.019*	0.080*	0.011	0.010	0.092***	0.092***	0.083***	0.083***
Economics: factor-driven												
Efficiency-driven	0.134***	0.134***	0.126***	0.123***	0.244***	0.080***	0.231***	0.228***	0.199***	0.199***	0.194***	0.190***
Innovation-driven	0.045***	0.045***	0.038***	0.033**	0.135***	0.107***	0.126***	0.119***	0.157***	0.157***	0.150***	0.142***
Logged firm age	0.038***	-0.038***	-0.030**	-0.033***	-0.014	0.081	-0.002	-0.005	0.011	0.011	0.021*	0.017*
Constant	9.675	9.675	8.954	9.852	15.774	15.774	14.535	15.818	13.634	13.634	12.580	13.986
R Square	0.029	0.029	0.037	0.038	0.076	0.276	0.092	0.305	0.067	0.259	0.084	0.289
Adjusted R Square	0.029	0.029	0.037	0.037	0.075	0.093	0.091	0.093	0.067	0.067	0.083	0.084
ANOVA F test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N entrepreneur	16059	16059	16059	16059	16059	16059	16059	16059	16059	16059	16059	16059

**P<0.05, **P<0.01, ***P<0.001*
Source: GEM (2013).