



Individual and Business Environment: How Effective Interaction Affects SME Development

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ABSTRACT

Exploring and conceptualizing different aspect of entrepreneurship is top priority of policymakers at present days. Importance of entrepreneurial research is increasing day by day in the present complex and changing business environment. In this regard, it has become absolutely pertinent to re-examine the mechanism of interaction between environment and personality in entrepreneurial ecosystem to understand its impact on entrepreneurial development on MSME perspectives. Perfect interaction of personality characteristics with institutional variables can lead towards sustainable development. Significant personality characteristics or optimum business environment can't alone make any difference. It is the magnitude of proper interaction between them which can increase the resultant vector in many folds. An attempt has been made in this paper to identify the significant interaction variables that can create impact during different entrepreneurial growth stage. The research is of a dynamic and multiregional structure and was conducted on the target sample based on the longitudinal study of GEDI (Global Entrepreneurship Development Institute report) report 2012-2016. The study confirms that interaction within ecosystem is complex as well as different in nature for different stage of business. The present study also explores the intricate situation and developed a suitable model for each stage of business development. The most notable part of this study is considering the heteroscedasticity and autocorrelation of the data. Panel Corrected Standard Error (PCSE) model has been used in our paper. The analysis of the present study indicates the positive and negative interaction variables for each stage of business development that can be used for policy making considering the present situation of the country.

Notation Used: In equation [1], [2], [3], i indicates individual Country, t indicates year, y_{it} indicate Nascent Entrepreneurship Rate, Established Business Ownership Rate and Sustainability. α and β are coefficients and ϵ indicate error term. In equation [4] X represents the explanatory variables, whereas Ω is the covariance matrix for all error terms.

Keywords--- Small and Medium Enterprise, Entrepreneurship, Business Environment, Stages of Business

I. INTRODUCTION

During last decades, entrepreneurship has become increasingly important issue as it helps in reducing many social and economic problems of society. With growing opportunity to bridge the gap of economic disparity, entrepreneurship becomes major concern for policymakers. According to GEM concepts (Reynolds et al. 2005) development of entrepreneurship consist three different stages. Among this nascent entrepreneurship is first stage which is reflected by active involvement in setting up a business and it is now the prime subject of discussion and studies for governments, academicians. Newly founded firms are important for the economic development of nations and regions (Carree and Thurik, 2002). Entrepreneurs at this level are in fact operating in pre-start-up mode; the activities undertaken during this phase can play an important role in stabilizing the new venture (Carter, Gartner and Reynolds 1996; Castrogiovanni 1996, Van Auken and Neeley 2000). The next phase of development is new business development stage where. Nascent entrepreneurs became owner-manager of an established business that has paid salaries, wages, or any other payments to the owners for more than 42 months. Later phases of this entrepreneurship process, especially from nascent entrepreneurship onwards, have received increasing attention from empirical researchers in the recent past (e.g., Gartner et al. 2004; Davidsson 2006). Last phase of the entrepreneurial process, is Sustainable phase. This stage has also generated wide interest for researchers in recent years because more than 50% of new

firms exit the market within the first five years of activity (Audretsch and Mahmood, 1995; Audretsch, Santarelli and Vivarelli, 1999a; Johnson, 2005). This unfortunate discontinuation rate indicates some loophole in entrepreneur ecosystem. There may be different reasons for failure. Inadequate entrepreneur attitude is one of them. As we indicate previously about the role of government, i.e., beside creating favorable environment for entrepreneurs it is also important to develop entrepreneurial attitude among small business owners through training or some social inclusion programmers. An entrepreneur would certainly be defined from non-entrepreneur in terms of some trait developed within him by some external influences but a successful entrepreneur need not have these entire traits together in all stages.

To develop suitable model that can enhance overall entrepreneurial development it is essential to have detail knowledge of how personality characteristics interact with institutional variables at different stage of Entrepreneurship development i.e. nascent entrepreneurship stage, new Business Ownership stage and for sustainable stage. Better understanding of all these interaction variables can help government for effective policy formulation that can boost economic performance of a country. An attempt has been made by the present researchers to explore all interaction variables i.e. Personality attributes along with proper institutional variables and reveals their influence at nascent entrepreneurship stage, New Business Ownership stage and for sustainability stage. It is identified that two major schools of entrepreneurial thought, (Kurtako DF, Nodgett 2007) namely, the macro view and micro view, keeping in mind the success and failure issue, where the macro view identifies a number of environmental variables that may determine the success and failure of modern entrepreneurial ventures. Most of the factors are always beyond the control of the entrepreneurs. On the other hand, The Micro view identifies the factors that are controlled by entrepreneurs. This thought indicates that the potential entrepreneur has the ability to direct or adjust the outcome of each major influence.

Literature Review: Entrepreneurial Trait School of Thought is one of the major thoughts under this category. This approach focuses on researchers about successful entrepreneurs and recognized key traits and characteristic. The literature on entrepreneurship illustrate many issues of entrepreneurship, among this one of the vital issues is personality of entrepreneur. There are different personality dimensions that are quite likely to be present in successful entrepreneurs. The combination of many of these dimensions, with the right support ensure high growth and sustainable businesses. There is a plethora of empirical literature on the relevance of entrepreneurial personality in the framework of entrepreneurship research. These authors explain that understanding entrepreneurial personality is important in order to better understand entrepreneurship as

a whole. It is logical to differentiate between different phases during the entrepreneurship development (Shane/Venkataraman 2000; Davidsson 2006). Most of the empirical evidence is based upon nascent entrepreneurs (e.g., Gartner et al. 2004), although they are not defined in the same way in all studies. Researchers found that age, experience and education can create the outline of the personality of the entrepreneurs. Davidson 2000 found a negative or curvilinear effect of age on the probability of becoming a nascent entrepreneur. Older people tend to be more risk-averse than younger people, a fact that offsets the influence of age and experience (Parker 2004: 70).

Research Gap: Most of the researchers concentrated on the personality dimension, like according to Westhead et al. (2011) the possession of certain personality characteristics exposes an individual toward entrepreneurial behavior. Studies shows that personality traits are one of the most common psychological theories used to explain and predict the actions of humans, including in entrepreneurship (Ahmad 2010: 203). Major part of this research examined the characteristics that determine who is more likely to start a business.

Another part of the research consists of measuring the relationship between personality traits and firm performance. Empirical evidence supports that an entrepreneur's personal characteristics have a direct effect on the business' performance. (Zhang and Bruning 2011: 82-86). But connecting the personal traits of entrepreneurs to the success of a business venture can be very problematic because the methodological problems that arose when attempting to measure the personality characteristics of entrepreneur because the characteristics are not stable for different countries where degree of development is not same, Different measures usually ignored environmental and cultural influences. The role of learning, training and education is many times left out and issues such as sex, social class, race and age also ignored. (Burns 2005: 20-21). For a long time, researchers have studied what decisive factor makes entrepreneurs more successful. Still, a thorough theory of success is still missing. (Zhang and Bruning 2011: 94).

Majority of the empirical studies consider only one phase of entrepreneurship but do not consider different phases during the entrepreneurial process. Identifying the level of entrepreneurial personality of a country corresponding to the stage of development and its role in development of entrepreneurship is missing in previous studies. Some scholars also pointed out that good entrepreneur environment not only necessary for business startup and growing up, it also it increases desire of being entrepreneur among youths. In one-word Performance of the small business sector is affected by two main factors namely external and internal environmental factors, Musranmunizu (2010). These two factors of entrepreneur constantly interact with each other. Different scholars worked on this area and many of them find out the

parameters within the external environment and their relative importance. A group of scholars mainly concentrated on one or two major parameters and discussed briefly about their impact on overall business situation but the existing measures of entrepreneur orientation or environmental related models fail to describe stage base interaction model of entrepreneurship, empirically or conceptually. Interaction mapping, in general, is necessary to identifying the significant factors of personality along with optimum contact variables at different stage of entrepreneur development considering the stage of development of that particular country.

Research Objective: In light of the broader impact of reforming the entrepreneurial ecosystem, and the necessity of a greater impact of the SME sector, it seems relevant to think about how redesigning the entrepreneur's characteristics and institutional conditions can reform entrepreneurial ecosystem.

An attempt has been made in this paper to understand the role of specific identified traits for new business development in the both developing and developed nations. The paper also aims at looking into the existence of inter-linkage between personality traits of entrepreneurs, institutional variables and firm development stage. The research objectives may be recapitulated as the identification of important dimensions within entrepreneur ecosystem which is favorable for business startup, its continuation and sustainability and also find out other variables which create negative impact for business development at different stages of business.

In order to do so the subsequent sections are arranged in order to the following sections correspond to these objectives. In Section II we discuss the choice of dependent and independent variables followed by section III which talk about sources of data and the methodology. Section IV explores the data and conducts the analysis. Section V gives the major findings and policy recommendations. Section V concludes the paper.

II. DETERMINANTS OF ENTREPRENURIAL INTERACTION

Dependent variables

Opportunity Perception: This opportunity perception potential is an essential ingredient of entrepreneurial start-ups. The individual variable within this pillar is Opportunity Recognition. It measures the percentage of the population that can identify good opportunities to start a business in the area where they live.'

Start-Up Skills: Launching a successful venture requires the potential entrepreneur to have the necessary start-up skills. Skill Perception measures the percentage of the population who believe they have adequate start-up skills.

Non-Fear of Failure: Non-Fear of Failure or Risk Perception is defined as the percentage of the population who do not believe that fear of failure would prevent them

from starting a business. Business Risk reflects the availability and reliability of corporate financial information, legal protections for creditors, and institutional support of intercompany transactions.

Networking: Networking combines an entrepreneur's personal knowledge with their ability to use the Internet for business purposes.

Cultural Support: This pillar is a combined measure of how a country's inhabitants view entrepreneurs in term of status and career choice, and how the level of corruption in that country affects this view.

Opportunity Start-up: This is a measure of start-ups by people who are motivated by opportunity but face regulatory constraints. Opportunity entrepreneurs are believed to be better prepared, to have superior skills, and to earn more than what we call necessity entrepreneurs. The institutional variable applied here is Business Freedom.

Technology Absorption: The Technology Level variable is a measure of the businesses that are in technology sectors. The institutional variable Tech Absorption is a measure of a country's capacity for firm-level technology absorption, as reported by the World Economic Forum.

Human Capital: The prevalence of high-quality human capital is vitally important for ventures that are highly innovative and require an educated, experienced, and healthy workforce to continue to grow. An important feature of a venture with high growth potential is the entrepreneur's level of education.

Competition: Competition is a measure of a business's product or market uniqueness, combined with the market power of existing businesses and business groups. The variable Competitors is defined as the percentage of Total Entrepreneurship Activity of businesses that have only a few competitors offering the same product or service.

Product Innovation: New Product is a measure of a country's potential to generate new products and to adopt or imitate existing products. In order to quantify the potential for new product innovation, an institutional variable related to technology and innovation transfer seems to be relevant.

Process Innovation: Applying and/or creating new technology is another important feature of businesses with high growth potential. New Tech is defined as the percentage of businesses whose principal underlying technology is less than five years old. An appropriate institutional variable applied here is research and development (R&D). Gross Domestic Expenditure on Research and Development (GERD) is the R&D percentage of GDP as reported by OECD.

High Growth: This is a combined measure of the percentage of high-growth businesses that intend to employ at least ten people and plan to grow more than 50 percent in five years (Gazelle variable) with business strategy sophistication (Business Strategy variable). High

Growth combines high growth potential with a sophisticated strategy.

Internationalization: A widely applied proxy for internationalization is exporting. Exporting demands capabilities beyond those needed by businesses that produce only for domestic markets. A country's openness to international entrepreneurs—that is, the potential for internationalization—can be estimated by its degree of globalization. The internationalization pillar is designed to

capture the degree to which a country's entrepreneurs are internationalized, as measured by the exporting potential of businesses, controlling for the extent to which the country is economically globalized.

Risk Capital: The availability of risk finance, particularly equity rather than debt, is an essential precondition for fulfilling entrepreneurial aspirations that are beyond an individual entrepreneur's personal financial resource.

TABLE 1: STRUCTURE OF THE GEDI INDEX

Institute variable	Individual variable	Pillar	Sub Index
Market Agglomeration	Opportunity Recognition	Opportunity Perception	Entrepreneurial attitudes
Tertiary Education	Skill Perception	Startup Skills	
	Risk Acceptance		
Internet Usage	Know Entrepreneurs	Net working	
Corruption	Career status	Cultural Support	
Freedom	Opportunity Motivation	Opportunity Start up	Entrepreneurial abilities
Tech Absorption	Technology Level	Tech Sector	
Staff Training	Educational Level	Quality of Human Resources	
Market Dominance	Competitors	Competition	
Technology Transfer	New Product	Product Innovation	Entrepreneurial aspirations
GERD	New Tech	Process Innovation	
Business Strategy	Gazette	High Growth	
Globalization	Export	Internationalization	
Depth of Capital Market	Informal Investment	Risk Capital	

TABLE 2: DESCRIPTION OF THE INDIVIDUAL VARIABLES USED TO CREATE THE GEDI INDEX

Individual variable	Description
Opportunity Recognition	The percentage of the 18-64 aged population recognizing good conditions to start business next 6 months in area he/she lives.
Skill perception	The percentage of the 18-64 aged population claiming to possess the required knowledge/skills to start business
Risk Acceptance	The percentage of the 18-64 aged population stating that the fear of failure would not prevent starting a business
Know Entrepreneurs	The percentage of the 18-64 aged population knowing someone who started a business in the past 2 years
Carrier	The percentage of the 18-64 aged population saying that people consider starting business as good carrier choice
Status	The percentage of the 18-64 aged population thinking that people attach high status to successful entrepreneurs
Career Status	The status and respect of entrepreneurs calculated as the average of Carrier and status
Opportunity Motivation	Percentage of the TEA businesses initiated because of opportunity start-up motive.
Technology Level	Percentage of the TEA businesses that are active in technology sectors (high or medium)
Educational Level	Percentage of the TEA businesses owner/managers having participated over secondary education
Competitors	Percentage of the TEA businesses started in those markets where not many businesses offer the same product
New Product	Percentage of the TEA businesses offering products that are new to at least some of the customers
New Tech	Percentage of the TEA businesses using new technology that is less than 5 years old average (including 1 year)
Gazelle	Percentage of the TEA businesses having high job expectation average (over 10 more employees and 50% in 5 years)
Export	Percentage of the TEA businesses where at least some customers are outside Country (over 1%)
Average informal investment	The mean amount of 3 year informal investment
Business Angel	The percentage of the 18-64 aged population who provided funds for new business in past 3 years excluding stocks & funds. average
Informal Investment	The amount of informal investment calculated as Average informal investment * Business Angel

TABLE 3: DESCRIPTION AND SOURCE OF GEDI APPLIED INSTITUTIONAL VARIABLES

Institutional variable	Description
Domestic Market	Domestic market size that is the sum of gross domestic product plus value of imports of goods and services, minus value of exports of goods and services.
Urbanization	Urbanization that is the percentage of the population living in urban areas.
Market Agglomeration	The size of the market: a combined measure of the domestic market size and the urbanization that later measures the potential agglomeration effect.
Tertiary Education	Gross enrolment ratio in tertiary education,

Business Risk	The business climate rate “assesses the overall business environment quality in a country. It reflects whether corporate financial information is available and reliable, whether the legal system provides fair and efficient creditor protection, and whether a country’s institutional framework is favorable to intercompany transactions
Internet Usage	The number of Internet users in a particular country per 100 inhabitants, 2013 data
Corruption	The Corruption Perceptions Index (CPI) measures the perceived level of public-sector corruption in a country. “The CPI is a ‘survey of surveys’, based on 13 different expert and business.
Economic Freedom	“Business freedom is a quantitative measure of the ability to start, operate, and close a business that represents the overall burden of regulation, as well as the efficiency of government in the regulatory process.

Independent variables

Nascent Entrepreneurship Rate: is defined as the percentage of 18-64 population who are currently a nascent entrepreneur, i.e., actively involved in setting up a business they will own or co-own; this business has not paid salaries, wages, or any other payments to the owners for more than three months.

Established Business Ownership Rate: Percentage of 18-64 population who are currently an owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months.

Sustainability: is estimated by the ratio of percentage increase in new entrepreneurial venture and percentage discontinuation of existing one

III. SOURCES OF DATA AND METHODOLOGY

Methods of Collection of Data: The research is of a dynamic and multiregional structure and was conducted on the target sample based on the longitudinal study of GEDI report 2012-2016 (Global Entrepreneurship Development Institute report).

The Global Entrepreneurship and Development Index (GEDI) project came to alive to provide a suitable measure of entrepreneurship based on the multidimensional definition of entrepreneurship and to present a useful platform for policy analysis and outreach. The distinguished features of GEDI are (1) the contextualization of individual-level data by a country's institutional conditions; (2) the use of 14 context-weighted measures of entrepreneurial attitudes, abilities and aspirations; (3) the recognition that different pillars combine to produce system-level performance; and (4) the consequent recognition that national entrepreneurial performance may be held back by bottleneck factors - i.e. poorly performing pillars that may constrain system

performance (Acs et al., 2013a). This research also uses the data of GEM (Global Entrepreneurship Monitor) report, 2012-2016, which was conducted on the target sample based on the longitudinal study. The GEM research project was designed as a long-term multinational endeavor with the purpose of providing a database to study the complex relationship between entrepreneurship and economic growth (Reynolds, Hay, and Camp, 1999) and facilitating evidence-based policies that enhance entrepreneurship (Reynolds et al., 2005)

Methodology: This study attempts to empirically investigate the determinant of nascent entrepreneurship rate at stage 1, determinant of new business ownership rate at stage 2 and also determinant of sustainability at stage 3 from entrepreneur’s personality point of view. For this the methodology adopted in this paper is Panel Regression Analysis.

Panel Data Analysis employs both time series and cross-sectional data. Since both time series vertical data and cross-sectional horizontal data are attached, panel data have an advantage of a large observation sample. The multi-co-linearity problem is also less in panel data methods. Finally, panel data permit us to make econometric analysis with short period of time series data or deficient cross-section data. Panel data models are usually estimated using either fixed or random effect techniques. If the individuals are thought to be very similar, then OLS is appropriate; if the individual-specific factors are not independent with respect to the explanatory variables or assumed that the countries are very different, the fixed effects estimator is used. The random effect estimator is used if the individual-specific component is assumed to be random with respect to the explanatory variables (Dewan, Hussein, 2001: 27; Giorgioni, Holden, 2003: 215). If the subject specific effects are assumed random and not correlated with the regressors (independent variables), the model becomes random effects. These effects are included to the random effects model as a component of the error term (B.H.

Baltagi,2010). Hausman (1978) provides a test for discriminating between the estimators of fixed and random effects. The two estimators of the coefficient vectors of FEM and REM are compared in the test.

We used ordinary least square (OLS), Fixed effect model (FEM) and random effect model (REM) to estimate the effective interaction variable i.e. interaction of personality with appropriate institutional variable of an entrepreneur. Hausman specification test and Breusch-Pagan Lagrange Multiplier test are also used (see Breusch and Pagan, 1979, Gujarati,2003, Hsiao, 2003 etc.). The two estimators of the coefficient vectors of FEM and REM are compared in Hausman test. The estimator of random effects is efficient and consistent under the null hypothesis and inconsistent under the alternative hypothesis. Then testing for homoscedasticity is performed by using modified Wald test for the null hypothesis of homoscedasticity against the heteroscedastic alternative. Panel Corrected Standard Error (PCSE) model has been used in our paper. In PCSE model the problem of heteroscedasticity, autocorrelation and correlation across panels will be eliminated, whereas fixed and random effects models allow for including the individual effects.

Econometric Modeling: To explore the true picture of the effective interaction of personality and institutional variable with respect to nascent entrepreneurship rate, new business rata and sustainability ratio the fixed effects model and the random effects model which are the most common panel data model is used. If the country effects are correlated with the independent variables, then they are known as fixed effects. The fixed effects model is:

[1]

$$y_{it} = \alpha_i + \beta_1 \text{OpportunityPerception}_{it} + \beta_2 \text{StartUpSkills}_{it} + \beta_3 \text{NonFearofFailure}_{it} + \beta_4 \text{Networking}_{it} + \beta_5 \text{CulturalSupport} + \beta_6 \text{OpportunityStartup} + \beta_7 \text{TechnologyAbsorption} + \beta_8 \text{HumanCapital} + \beta_9 \text{Competition} + \beta_{10} \text{ProductInnovation} + \beta_{11} \text{ProcessInnovation} + \beta_{12} \text{Highgrowth} + \beta_{13} \text{Internationalization} + \beta_{13} \text{Riskcapital} + \varepsilon_{it}$$

Here i indicate the country, t stands for the year, is the error term for the fixed effects model and y_{it} indicate nascent entrepreneurship rate at stage 2/new business ownership rate at stage 2 / sustainability at stage 3.

If the country effects are uncorrelated with the independent variables, they are known as random effects. In the random effects model, there is no correlation between the country specific effects and the independent variables. The random effects model is:

[2]

$$y_{it} = \beta_1 \text{OpportunityPerception}_{it} + \beta_2 \text{StartUpSkills}_{it} + \beta_3 \text{NonFearofFailure}_{it} + \beta_4 \text{Networking}_{it} + \beta_5 \text{CulturalSupport} + \beta_6 \text{OpportunityStartup} + \beta_7 \text{TechnologyAbsorption} + \beta_8 \text{HumanCapital} + \beta_9 \text{Competition} + \beta_{10} \text{ProductInnovation} + \beta_{11} \text{ProcessInnovation} + \beta_{12} \text{Highgrowth} + \beta_{13} \text{Internationalization} + \beta_{13} \text{Riskcapital} + \varepsilon_{it} + \alpha_i$$

If there is no country specific effect in the model, then the model becomes as the pooled ordinary least squares regression which is:

[3]

$$y_{it} = \alpha + \beta_1 \text{OpportunityPerception}_{it} + \beta_2 \text{StartUpSkills}_{it} + \beta_3 \text{NonFearofFailure}_{it} + \beta_4 \text{Networking}_{it} + \beta_5 \text{CulturalSupport} + \beta_6 \text{OpportunityStartup} + \beta_7 \text{TechnologyAbsorption} + \beta_8 \text{HumanCapital} + \beta_9 \text{Competition} + \beta_{10} \text{ProductInnovation} + \beta_{11} \text{ProcessInnovation} + \beta_{12} \text{Highgrowth} + \beta_{13} \text{Internationalization} + \beta_{13} \text{Riskcapital} + \varepsilon_{it}$$

Both fixed and random effects models include strong assumptions regarding the error terms. For this before making any conclusions, the validity of error term's features has to be checked. So, heteroscedasticity and autocorrelation must be checked. If the error terms are auto correlated or heteroscedastic, fixed and random effects estimators is no longer effective. For such cases Beck and Katz [1995] suggested estimating the parameters of the model by Prais-Winsten method and then adjusting the standard errors for the panel data. Panel Corrected Standard Errors (PCSE) are calculated with the use of following formula:

[4]

$$\text{Var}\{\hat{\beta}^{\text{PCSE}}\} = (X'X)^{-1}X'\Omega X(X'X)^{-1}$$

Matrix X represents the explanatory variables, whereas Ω is the covariance matrix for all error terms. In PCSE model the problem of heteroscedasticity, autocorrelation and correlation across panels will be eliminated.

Model Development:

Model I –Stage I- Nascent-Interaction Model: At first was examined whether the intercept take a common value of α i.e. test for heterogeneity. For this we go for F test first.

$$F(14, 284) = 8.00 \text{ and } \text{Prob} > F = 0.0000$$

Here P value is zero. This indicates strong support for the case for retaining country specific effects in the model specification. So, the pooled ordinary least squares model is inconsistent. Breusch-Pagan test indicate p-value is (preferably) 0.05 or smaller. In present instance the p-

value is less than 0.05 that indicate heteroskedasticity in the data. In this study $F(1, 297) = 4.70$ $\text{Prob} > F = 0.0309$. So, the pooled ordinary least squares model is not suitable here and recommend for random effect.

TABLE 4: POOLED OLS, FIXED EFFECT AND RANDOM EFFECT MODELS

Variable	OLS Coef p>ItI		Fixed Effect		Random Effect	
	opportunit~g	0.357	0.000	0.053	0.323	0.119
startupski~g	0.052	0.35	-0.017	0.848	-0.022	0.734
lognonfear~e	-0.073	0.22	0.008	0.836	-0.024	0.522
lognetwork~g	-0.231	0.005	-0.018	0.780	-0.053	0.374
logcultura~t	-0.005	0.956	-0.058	0.579	-0.092	0.313
logopportu~p	-0.266	0.006	-0.012	0.867	-0.079	0.251
logtechnol~r	0.134	0.030	0.092	0.013	0.096	0.008
logquality~s	-0.044	0.481	-0.116	0.031	-0.108	0.025
logcompeti~n	0.027	0.777	-0.052	0.554	0.012	0.814
logproduct~n	0.902	0.204	0.023	0.693	0.008	0.836
logprocess~n	-0.273	0.000	0.055	0.222	0.027	0.64
loghighgro~h	0.057	0.381	0.026	0.674	-0.016	0.732
loginterna~n	0.065	0.251	-0.006	0.899	-0.016	0.732
logriskcap~l	-0.048	0.401	-0.005	0.868	0.000	0.990

Fixed effects model is rejected in the analysis based on Hausman specification test (1978), the higher value of Hausman Test i.e. $\text{Prob} > \chi^2 = 0.3838$ rejects the validity of Fixed effect model. The empirical results (Table 5.3) obtained from Random Effect model shows that regression model with dependent variable Nascent Entrepreneurship rate fits well with independent determinant variables as value of rho in case of Random Effect is 0.86., i.e. 87 percentage of the variation is explained by individual specific effect. But the goodness of fit of both models as assessed by R^2 is low. After performing Modified Wald test for group wise heteroskedasticity it was found that error variance matrix reveals heteroskedasticity and correlation across panels ($\text{Prob} > \chi^2 = 0.0000$). Therefore, PraisWinsten estimation

with panel corrected standard errors was carried out. The results are shown in Table 5.

TABLE 5: RESULT-1

Prais-Winsten model with PCSE and common AR (1) for all panels		
Variable	Coeff.	Prob.
opportunit~g	0.267492	0
startupski~g	-0.01422	0.823
lognonfear~e	-0.07541	0.129
lognetwork~g	-0.16359	0.044
logcultura~t	-0.05397	0.588

logopportu~p	-0.20626	0.019
logtechnol~r	0.102399	0.113
logquality~s	-0.0652	0.418
logcompeti~n	0.067036	0.456
logproduct~n	0.036598	0.606
logprocess~n	-0.1508	0.004
loghighgro~h	0.042144	0.578
loginterna~n	0.027206	0.631
logriskcap~l	-0.00226	0.965
Total	0.267492	0

R ²	0.4529	-
rho	.5503242	-

In terms of goodness of fit, the PCSE model seems to be the best. In general, opportunity perception, networking, opportunity start up and process innovation are found significant.

The study confirms that statistically significant positive associations have been found between opportunity perception and nascent entrepreneurship rate. Rest of the variables holds negative association.

Model II –Stage II-Established Business Ownership Rate -interaction Model: In the Established Business Ownership Rate model, the pooled OLS, Fixed Effect, Random effect analysis has been performed directly considering Established Business Ownership Rate as dependent variable with respect to fourteen personality parameters.

TABLE 6: RESULT-2

Variable	OLS Coef p> t		Fixed Effect		Random Effect	
opportunit~g	-0.00539	0.935	-0.0007	0.989	0.063711	0.157
startupski~g	-0.14517	0.276	-0.07486	0.362	-0.11535	0.068
lognonfear~e	0.01893	0.696	0.04658	0.205	0.009151	0.797
lognetwork~g	-0.02876	0.747	-0.00315	0.958	-0.00541	0.922
logcultura~t	-0.23479	0.124	-0.17776	0.062	-0.14712	0.083
logopportu~p	0.07350	0.427	0.06329	0.352	0.009528	0.882
logtechnol~r	0.04321	0.386	0.06356	0.059	0.041634	0.208
logquality~s	-0.13869	0.093	-0.183	0	-0.20154	0
logcompeti~n	-0.13382	0.27	-0.12081	0.128	-0.10811	0.141
logproduct~n	-0.083517	0.388	-0.03783	0.485	-0.01613	0.751
logprocess~n	0.06507	0.077	0.06155	0.136	0.035943	0.362
loghighgro~h	0.136313	0.131	0.11010	0.051	0.09961	0.054
loginterna~n	0.075181	0.248	0.04786	0.323	-0.01723	0.702
logriskcap~l	0.062869	0.094	0.02315	0.474	0.036797	0.25
Total	1.11892	0.000	1.414921	0	1.311613	0

F test imply that there is a country specific effects in the model specification. So, the pooled ordinary least squares model is inconsistent. Howeverhausman suggest fixed effect model.

The most important assumptions of the fixed effects estimator are homoscedasticity, no serial correlation and no contemporaneous correlation. Testing for homoscedasticity is performed by using modified Wald test for the null hypothesis of homoscedasticity against the heteroscedastic alternative. (Prob>chi2 = 0.0052)

The Wald test (also called the Wald Chi-Squared Test) is a way to find out if explanatory variables in a model are significant. The goodness of fit of both models as assessed by R² is also low (0.13). To address the issue, PraisWinsten estimation with panel corrected standard errors (PCSE) was carried out. The results are shown in Table 7.

TABLE 7: RESULT-3

rais-Winsten model with PCSE and common AR (1) for all panels		
Variable	Coeff.	Prob.
opportunit~g	0.19538	0
startupski~g	-0.11743	0.073
lognonfear~e	-0.1193	0.035
lognetwork~g	-0.0381	0.585
logcultura~t	0.09403	0.363
logopportu~p	-0.05177	0.581

logtechnol~r	-0.05872	0.233
logquality~s	-0.17889	0.032
logcompeti~n	-0.14371	0.045
logproduct~n	0.031	0.644
logprocess~n	-0.08757	0.066
loghighgro~h	0.10888	0.298
loginterna~n	-0.14203	0.022
logriskcap~l	0.09638	0.03
Total	1.11892	0
R ²	0.45	
rho	0.47	

Here in PSCE model goodness of fit, seems to be the best. (R² 0.45). It is found that, opportunity perception, non-fear of failure, quality of human-resources, competition and risk capital and international are found important influencing traits of en entrepreneurs. Among these opportunity perception and risk capital hold positive relationship with new business development.

Model III –Stage III-Sustainability -Interaction Model: In case of sustainability personality model at first simple OLS, Fixed effect test have been carried out.

TABLE 8: ESTIMATED RESULTS OF TWO TYPE OF PANEL MODELS

Variable	OLS Coef p>Itf		Fixed Effect		Random Effect	
opportunit~g	-0.21	0.18	-0.03	0.74	-0.10	0.13
startupski~g	0.04	0.77	-0.24	0.16	-0.08	0.27
lognonfear~e	0.01	0.96	0.11	0.17	0.08	0.22
lognetwork~g	0.74	0.00	0.47	0.00	0.39	0.00
logcultura~t	0.02	0.95	0.39	0.06	0.06	0.63
logopportu~p	0.22	0.39	-0.13	0.37	-0.06	0.58
logtechnol~r	-0.13	0.56	0.19	0.01	0.16	0.01
logquality~s	0.12	0.55	-0.11	0.26	-0.02	0.78

logcompeti~n	0.43	0.06	0.23	0.17	0.22	0.04
logproduct~n	-0.14	0.46	0.04	0.72	-0.03	0.74
logprocess~n	-0.36	0.09	-0.28	0.00	-0.18	0.00
loghighgro~h	0.12	0.53	-0.15	0.20	-0.08	0.31
loginterna~n	-0.66	0.00	-0.07	0.51	-0.24	0.00
logriskcap~l	-0.02	0.91	0.06	0.42	0.05	0.35
Total	-0.07	0.51	0.38	0.05	0.12	0.26

The goodness of fit of all the models as assessed by R^2 is low. The individual effects are not identified in both cases. However, hausman (Prob>chi2 = 0.0555) suggest fixed effect model. Fixed effects method indicates three significant fundamental variables test imply that there is a country specific effect in the model specification. So, the pooled ordinary least squares model is inconsistent. Testing for homoscedasticity is performed by using modified Wald test (Prob>chi2=0.0000) for the null hypothesis of homoscedasticity against the heteroscedastic alternative. To address the issue, PraisWinsten estimation with panel corrected standard errors (PCSE) was carried out. The results are shown in Table 9.

TABLE 9: RESULT-4

Prais-Winsten model with PCSE and common AR (1) for all panels		
Variable	Coeff.	Prob.
opportunit~g	-0.13	0.02
startupski~g	-0.06	0.39
lognonfear~e	0.05	0.40
lognetwork~g	0.35	0.00
logcultura~t	0.01	0.91
logopportu~p	0.01	0.94

logtechnol~r	0.10	0.21
logquality~s	0.00	0.95
logcompeti~n	0.24	0.03
logproduct~n	-0.04	0.55
logprocess~n	-0.13	0.02
loghighgro~h	-0.04	0.57
loginterna~n	-0.29	0.00
logriskcap~l	0.07	0.20
Total	0.07	0.49
R^2		0.15
rho		0.39

The study confirms that statistically significant factors are opportunity perception; networking, competition, process innovation and internationalization are found important influencing traits of en entrepreneurs. Among these opportunity perception, competition and networking holds positive association with sustainability. Summary of stage wise three models are presented in table 10.

TABLE 10: STAGE WISE IMPORTANT VARIABLES

	Stage1 (Nascent)	Stage2 (New Business)	Stage3 (Sustainability)
Variables	Opportunity perception (positive) networking, (negative) opportunity start up (negative) process innovation	opportunity perception, (positive) non-fear of failure, (negative) quality of human resources,	Opportunity perception (positive) networking, (positive) competition, (positive) process innovation (negative)

	(negative)	competition, (negative) risk capital (positive) international (negative)	internationalization (negative)
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IV. IMPLICATION AND CONCLUSION

The outcome of this research paper has several implications for researchers and policymakers. First of all, the findings of this study support the importance of the role of effective interaction of personal and institutional variables in entrepreneurial ecosystems. These findings also suggest an integrated approach which can minimize the negative influence and maximize the positive ones to develop the competent entrepreneurial situation in terms of nascent entrepreneurship rate, new business development rate and sustainability.

In nascent stage, future entrepreneurs are actively involved in setting up a business and they are highly motivated by the opportunity perception i.e. they are looking for new opportunities to start a business. In business development stage, entrepreneurs manage its ongoing business. Opportunity perception again could be the important one for scale up its existing one or invest in the new business having potential in future. It indicates that the size of the market/potentiality of the market can motivate a person to startup but this market potentiality can be utilized by the organization with their potential human resources to beat the competition. Risk capital also play significant role here because the availability of risk finance, particularly equity rather than debt, is an essential precondition for fulfilling entrepreneurial aspirations that are beyond an individual entrepreneur's personal financial resources.

Market opportunity remains the dominating factors even in the stage of sustainability and the outcome is quite justified as the success of the business venture depends mostly on the business growth in the existing market as also creation of the new potential area of business. Networking emerge as one of the positive influential factors at this stage because it enhances the spectrum of understanding of the entrepreneurs regarding business environment, new technology, process invention, latent market demand and also new challenges of the business. Market competition is also becoming an influencing factor for the improvement of the business as the entrepreneurs look for process and product innovation as well as finding new markets with their existing products for their sustenance. As a result, they go for product or market uniqueness that can save them from profit sharing. On the other hand, negative attributes are those which are hindering the total entrepreneurial development. Process innovation which is reflected by using new technology and making expenditure towards R&D also hold negative relation with nascent entrepreneurship rate and sustainability. That can be explicated by crunch of financial resources and improper training which may lead

further fund shortage. In business development stage when entrepreneur began to take things more seriously and increases his investment then always undergo with fear for competition and failure. It has also been noticed that increased quality of human resource holds back an entrepreneur to start a new business. That reflect cultural bottleneck of society where entrepreneurship is seen as a secondary choice. When countries entrepreneurs are more internationalized then new entrepreneur registration rate decrease because of incompetency fear and also at later stage mainly big companies take the full advantage of export-oriented profit. Also exporting more without inventory management and creating global image without proper technology up gradation seems to lead a firm towards unstable condition. It is now matter of question that how Gross Domestic Expenditure on Research and Development (GERD) help small entrepreneurs. For this Process Innovation also consider as negative influential factor at sustainable stage. To overcome financial crisis and technical incompetency government can play pivotal role and it is the time to redesign the entrepreneur ecosystem which is mainly control by government.

V. FUTURE SCOPE

Extension of this study can be used to ascertain the extent of differences in the context of the relationships between the interaction variables and entrepreneurial development across different segmentations, segmentation being made on the basis of the magnitude of the interaction traits such as low and high and also on the basis of developed and developing nations.

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