



Curriculum Vitae

Personal information

First name(s) / Surname(s) Mohammad Saud Khan
Address E13, Hubertusstrasse 5, 9020 Klagenfurt, Austria.
Telephone(s) 0043 6605041258 Mobile 0043 6605041258
E-mail(s) Mohammadsaud19@gmail.com
Date of birth 19 August 1983
LinkedIn <http://be.linkedin.com/pub/mohammad-saud-khan/23/928/b90>

Work Experience

Dates April 2012 – June 2014 (**Doctoral thesis defended on 23rd June 2014**)
Occupation or position held Doctorate (PhD) in Innovation Management and Entrepreneurship at Alpen Adria Universität Klagenfurt, Austria. Currently working as Researcher.
Main activities Investigated the role of Trust, Conflict and Diversity within Innovative Entrepreneurial Teams based in High-tech business incubators within Austria.
Teaching: Bachelor Seminar in Innovation Management and Entrepreneurship, including basics of Scientific Writing.
Theses supervision: Supervised a master thesis on “Virtual Teams” and Bachelor theses in the area of entrepreneurship.
Dates Dec 2010- June 2011
Occupation or position held Junior Marketing Professional
Main activities Composing & coordinating marketing material in cooperation with the marketing team. Analysis of competition. Developing a Lead Generation methodology for specific leads in key industries. Market Research.
Name and address of employer Agfa Gevaert, Materials Technology Centre, Antwerp (Belgium).
Type of business or sector Chemicals
Dates January 2006 – May 2007
Occupation or position held International Mobile Field Engineer
Main activities Worked as an International Mobile Coiled Tubing Field Engineer (Well Services) in Saudi Arabia. The work involved design, execution and evaluation of the entire job package at the well site. Technical Training at Schlumberger United Kingdom Training Centre. Well Control Certification in UK by International Association of Drilling Contractors. Quality, Health, Safety Environment Training in Bahrain. Client Interaction involved Saudi Aramco and other service providers’ onsite.

Name and address of employer Schlumberger Oilfield Services, Dammam/Dhahran, Saudi Arabia; Bottesford, United Kingdom. Manama, Bahrain.

Type of business or sector Oil and Gas Services.

Consulting Projects

Dates June 2011- June 2012

Occupation or position held Technical Recruiter

Main activities Drive the placement process and supporting the Recruitment Managers. Source and qualify potential candidates for technical aptitude and soft skills. Provide summary write-ups on candidate submissions to Recruitment Managers. Coordinate and schedule interviews. Gather feedback and de-brief candidates after interviews.

Name and address of employer Jobber PRS, Poland.

Type of business or sector IT Recruitment Consultancy.

Dates March 2011 – May 2011

Occupation or position held Environment and Business Consultant

Main activities Researching and listing particular industry's major operations. Researching, analyzing, and listing common (widespread in all 50 states) environmental aspects (air, water, etc.) or entity related services (recycling centres, environmental groups, etc.). Suggesting environmental benefits that could be served without suggesting new or modified internal business approaches that negatively impact profit and other mechanisms. Listing the benefits to the environment and the business. Developing a framework to implement for similar industries.

Name and address of employer Currently under NDA.

Type of business or sector IT Business

Dates November 2010 - March 2011

Occupation or position held Senior Sustainability Researcher

Main activities The project was to build a variety of Eco Profiles of companies worldwide. This involved improving and providing more structure to the profiles. The implementation was done through research of sustainability reports on company websites and on other specific sites to find the information and populate the profile, according to predefined sustainability dimensions.

Name and address of employer Eco desk, Bath, United Kingdom.

Publications Knapp, M., Breitenecker R.J., Khan, M.S., (2014) Achievement Motivation Diversity and Entrepreneurial Team Performance: The Mediating Role of Cohesion. *European Journal of International Management*, Forthcoming.
Khan, M.S., Breitenecker R.J., Schwarz E.J (2014) Entrepreneurial Team Locus of Control: Diversity and Trust. *Management Decision*, 52(6) 1057-1081.
Khan, M.S., (2013) Development of a Mobile Medical Robot Using ER1 Technology: A Case Study. *IEEE Potential*, 32(4), 34-37.

Journal Articles & Peer Reviewed Publications Breitenecker R.J., Khan, M.S (2013) Die Berücksichtigung von Heterogenität in der Forschung zu unternehmerischen Teams, In D. Krause (eds), *Kreativität, Innovation, Entrepreneurship*, 215-232, Springer.
Khan, M.S., (2012) Role of Trust and Relationships in Geographically Distributed Teams: exploratory study on development sector. *International Journal of Networking and Virtual*

Organizations, 10(1), 40-58.

Khan, M. S., (2010). Pakistan's Nuclearization – A Compulsive Geo-Political Necessity. *Geopolitics, History, and International Relations*, 2(2), 233-247.

Conference Presentations

Khan, M. S., Breiteneker R.J., Schwarz, E.J., (2014) Need for Achievement Diversity and Relationship Conflicts in Entrepreneurial Teams. *74th Annual Meeting of the Academy of Management, Philadelphia, PA, USA*, 01-05 August.

Khan, M. S., Breiteneker R.J., Gustafsson V., Schwarz E.J (2014) Understanding Entrepreneurial Teams through Trust and Conflicts. *59th Annual International Council for Small Business (ICSB) World Conference, Dublin, Ireland*, June 11-14.

Knapp, M., Breiteneker R.J., Khan, M.S., (2014) Achievement Motivation Diversity and Entrepreneurial Team Performance: The Mediating Role of Cohesion. *12th Annual Interdisciplinary European Conference on Entrepreneurship Research, Chur, Switzerland, 12-14 February*.

Khan, M. S., Breiteneker R.J., Schwarz E.J (2013) Entrepreneurial Team Locus of Control: Impact of Locus of Control Diversity and Affective Trust. *4th Annual GW Global Entrepreneurship Research and Policy Conference, Washington D.C. USA, 17-19 October*.

Khan, M. S., Breiteneker R.J., Gustafsson V., Schwarz E.J (2012) Trust and Conflict: Tug of War in Entrepreneurial Teams. *International Conference on Schumpeterian Entrepreneurship and the spread of Entrepreneurship, Lahore, Pakistan*, 9-11 December.

Khan, M. S., Breiteneker R.J., Gustafsson V., Schwarz E.J (2012) Revealing the Conflict - Trust Relationship in Entrepreneurial Teams. *16th Annual Interdisciplinary Entrepreneurship Conference (G-Forum), Potsdam, Germany*, November 8-9.

Khan, M. S., (2005) Developing a Mobile Medical Robot Using ER 1 Technology. *International Conference on Engineering Education Gliwice, Poland*, July 25-30.

Khan, M. S., (2004). Pakistan's Nuclearization – A Compulsive Geo-Political Necessity. *International Youth Nuclear Congress Toronto, Canada*, May 09-13.

Reviewer

Journal of Managerial Psychology (2013)

European Journal of Engineering Education (2013)

Creativity and Innovation Management (2013)

Management Decision (2013)

74th Annual Meeting of the Academy of Management (2014)

European Academy of management (2014)

iNEER (International Network for Engineering Education) Special Volumes (2010 & 2011) titled "INNOVATIONS 2010 - WORLD INNOVATIONS IN ENGINEERING EDUCATION AND RESEARCH".

International Conference on Engineering Education (2011): Engineering Sustainability for a Global Economy, Belfast, Northern Ireland, UK.

Honours and Awards

Honours and Awards

Paper titled "Entrepreneurial Team Locus of Control: Diversity and Trust" conferred as 2nd best paper for "Excellence in Publishing during the year 2013" at the Faculty of Management and Economics, University of Klagenfurt.

Appointed country representative for the International Youth Nuclear Congress (IYNC) in Pakistan (2004).

Represented Pakistan in a team of six students at the ABU-Asia Pacific Robot Contest - Robocon in Bangkok, Thailand (2003).

Appointed Prefect in O Levels and selected as the Head Boy of St.Marys Academy to lead and represent school strength of 2000 students.

Scholarship awarded during Bachelors program for scoring outstanding (higher than 3.50/4.00) semester Grade Point Average (GPA).

Scholarship awarded on admission at ETH Zurich for Masters program due to an excellent academic record.

Final year engineering project was amongst the top 3 projects for the best project in the mechatronics department (2005).

Recruited by Schlumberger Oilfield Services as an international mobile employee

along with only one other engineer from Pakistan during the recruitment. The first assignment being in Saudi Arabia.

Extra-Curricular Activities Contribution of articles in the annual school magazine. A poem selected by Poetry.com online publications titled “Numbers”.
Participated in Environment Activities arranged by World Wildlife.
Vice-Captain of the school Cricket team.

Education

Dates	September 2008 - June 2010
Title of qualification	MSc Management, Technology & Economics (CGPA of 5.33/6.00)
Principal subjects / occupational skills covered	General Management & HR Management, Marketing, Technology & Innovation Management, Information Management, Operations Management, Quantitative and Qualitative Methods, Economics, Financial Management.
Name of organization providing education and training	Eidgenössische Technische Hochschule (ETH) Zürich, Switzerland
Dates	September 2007 – August 2008
Title of qualification	MSc Engineering Management (Course Work).
Name of organization providing education and training	National University of Sciences and Technology. Islamabad, Pakistan.
Dates	December 2001 – June 2005
Title of qualification	BE Mechatronics Engineering. (Distinction with a CGPA 3.39/4.00)
Name of organization providing education and training	National University of Sciences and Technology. Islamabad, Pakistan.
Dates	September 1999 – August 2001
Title of qualification	GCE Advanced Level, University of Cambridge.
Name of organization providing education and training	St.Marys Academy. Rawalpindi, Pakistan.
Dates	August 1997 – August 1999
Title of qualification	GCE Ordinary Level, University of Cambridge. (6 A grades with an overall score of 94 %)
Name of organization providing education and training	St.Marys Academy. Rawalpindi, Pakistan.
Languages	Urdu, Hindi, English

Univ.-Prof. DI Dr. Erich Schwarz
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To Whom It May Concern

December 18th, 2013

This is a letter of introduction and recommendation for Mr. Mohammad Saud Khan. Since April 2012 Mr. Khan has been a PhD student at the Faculty of Management and Economics at the University of Klagenfurt working under my direction. During that time he conducted a rather ambitious study of heterogeneity in new venture teams. The work done so far was of the highest calibre.

After working closely with him on three papers I can say without hesitation that he is an extremely diligent and creative researcher. He expresses himself very well and in my opinion has great promise to be an outstanding researcher in our field.

I am particularly impressed by his ability to listen to advice and to objectively consider critical review during the project. It is not uncommon for him to contemplate these comments and advice and to devise solutions or alternatives, superior to those originally suggested to him. It is to his credit that during his stay at our department he has very favorably impressed those with whom he has worked.

For my part, I consider it my good fortune to work with Mr. Khan, and I look forward to continued collaboration with him. I feel that I have come to know him very well and it is without reservation that I can recommend him as an excellent PhD student and an outstanding young man. Therefore, I have extended to him my offer to assist him in any way I can for him to stay at our department as a researcher after finishing the PhD.

Please accept this as my personal and professional recommendation of Mr. Khan.


ALPEN-ADRIA
UNIVERSITÄT
KLAGENFURT | WIEN GRAZ
Innovationsmanagement und Unternehmensgründung
Univ.-Prof. DI Dr. Erich Schwarz
Universitätsstr. 65-67 - 9020 Klagenfurt, AUSTRIA

Univ.-Prof. Dipl.-Ing. Dr. Erich J. Schwarz

Head of the Department of Innovation Management and Entrepreneurship
Dean of the Faculty of Management and Economics

Ass.-Prof. Dr. Robert Breitenecker
Department of Innovation Management
and Entrepreneurship
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A-9020 Klagenfurt
phone: +43 (0) 463/2700-4053
fax: +43 (0) 463/2700-994053
e-mail: robert.breitenecker@aau.at

To whom it may concern!

Klagenfurt, 07. August 2014

Letter of Recommendation for Mohammad Saud Khan

Mohammad Saud Khan, MSc was a project assistant and PhD student who worked as a member of the research group on entrepreneurial teams at the Department of Innovation Management and Entrepreneurship at the Alpen-Adria-Universität Klagenfurt. We allocated him this position because we were searching for a young researcher with publication experience and who was able to take over a project position in an already running research project concerning entrepreneurial teams. Saud was able to fulfill all these requirements.

In the last two years Saud was able to write with coauthors five scientific articles. One manuscript is published in a springer book and two articles are published in Management Decision and European Journal of International Management. Currently, two further manuscripts are under review (2nd round) in high ranked management outlets. This result was only possible because Saud was able to become acquainted with the topic of entrepreneurial teams very quickly. He was able to familiarize himself with the subject in a very short period of time.

I have personally worked with Saud throughout the project and found him extremely focused, concentrated as well as someone who possesses a logical and analytical way of thinking. He is a promising, hardworking and high performing researcher. It was and is pleasant to work with him in a team. He is valued as a friendly and courteous colleague who was able to integrate quite well within the department. I am sure that he will find his place in the scientific world.

Although, we would like to work with him for a few more years, Saud is searching for a more stable full time position. In short, our aim would be to hold Saud for additional years at the department. Wherever Saud is pulled, I hope we can still stay in touch and work together on further projects and contributions.

Mohammad Saud Khan has my highest recommendation, and I am happy to furnish more details if you would like to have additional information.



Dr. Robert Breitenecker

Ass.-Prof. Dr. Veronika Gustafsson,
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Entrepreneurship
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A-9020 Klagenfurt
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E-Mail: veronika.gustafsson@aau.at

Klagenfurt, 25th of November, 2013

Letter of Recommendation

To whom it may concern,

I have had a pleasure to work with Mr Mohammad Saud Khan, MSc., since April 2012. Saud was employed at the Department of Innovation Management and Entrepreneurship at the Alpen-Adria Universitaet Klagenfurt (Austria) as a Ph.D. Candidate and project assistant. His responsibilities, both for the Ph.D. studies and within the research project included analyzing available data in the project database and providing publication output.

Saud has demonstrated excellent research and publication capacity. Within a short time period available to him, he was able to fully master a complex area of team research and to co-author several papers, also accepted for publication in a top-tier management journal.

Despite being relatively new to the field of academic research, Saud was able to demonstrate excellent research potential. He is thorough, hard-working and inquisitive; he has propensity for theory-driven research. His high integrity and work ethics make him give full attention to details and always strive for the best result.

He is a talented young researcher with much promise, an intelligent and reliable co-author, a true team-player and a very good mixer. I am happy to be his colleague and to see him realize his considerable research potential.

Yours sincerely,



Veronika Gustafsson, Ph.D.

Assistant Professor

Department of Innovation Management and Entrepreneurship (IUG)

Alpen-Adria Universitaet Klagenfurt

Course number: 601.906
Course title: Bachelorseminar aus
IME

Teacher: M.Sc. Mohammad Saud
Khan , Dkfm. Mag. Malgorzata
Wdowiak
Type: Seminar

Semester: 14S
Hours/Week: 2

Number of students entitled to give
feedback: 16

Feedback attendance: 5

Percentage of attendance: 31.2 %



Comments on the course

1.) I was interested in the subject matter of this course.

[single choice] ↑

- agree :  100 %
- mostly agree : 0 %
- hardly agree : 0 %
- disagree : 0 %
- no response : 0 %

2.) I particularly liked about this course:

[text] ↑

- *Sehr herzliche LV Leiter, haben das Thema interessant präsentiert und zu Diskussionen angeregt*
- *the way the lectures were structured; the explainigs given by professors*
- *- die Atmosphäre während des Kurses - die Aufbereitung der Vorträge der Professoren - die Offenheit der Professoren für Fragen von Studierenden (die Professoren sind im Allgemeinen ein einzigartiges Team) - Diskussionen zu unterschiedlichen Themenbereichen - die Teilnehmeranzahl des Kurses (kleine, sehr angenehme Gruppe) - die Sprache, in der die LV abgehalten wurde (Englisch) - Präsentationen wurden in Englisch gehalten*
- *Mir hat besonders gut gefallen, dass zwei Lehrer den Unterricht gestaltet haben. Somit hat man noch mehr Input bekommen und auch der englische Unterricht war einmal ganz was Neues für mich. Die englische Unterrichtssprache war für mich eine gute Erfahrung aber auch eine Herausforderung, denn hin und wieder habe ich nicht alles verstanden.*



3.) I would like to make the following critical comments and/or suggestions for improvement:

[text] ↑

- *Keine*
- *Ich habe keine Kritikpunkte an dieser Lehrveranstaltung.*



4.) The teacher initiated an oral feedback in class after about half time of the course had passed (possibly using the +/-/? method).

[single choice] ↑

- yes : 0 %
- no :  40 %
- no response :  60 %


5.) In this course I made progress:

[single choice] ↑

- very good :  80 %
- good :  20 %
- reasonable : 0 %
- little : 0 %
- no : 0 %
- no response : 0 %

6.) On the whole this course was:

[single choice] ↑

- very good :  100 %
- good : 0 %
- average : 0 %
- bad : 0 %

very bad : 0 %

no response : 0 %

7.) The teacher treated the students equally (irrespective of their sex/gender, sexual orientation, physical abilities, race, origin, religious beliefs, age).

[single choice] ↑

agree :  100 %

mostly agree : 0 %

hardly agree : 0 %

disagree : 0 %

no response : 0 %

Comments on this questionnaire

1.) On this questionnaire/feedback arrangement I have the following comments:

[text] ↑

This question was answered not once.

Teacher's comments on the feedback results:

Dear Students

We are delighted with such a positive resonance of our course. We would like to thank you for your commitment and discussions and we wish you perseverance and success in the writing of your bachelor thesis.

Kind regards

Malgorzata & Saud

Certificate of Academic Performance

Office to which the certificate will be presented, plus reference number

Registration Number
1161718

Social Security No.
HAKJ190883

Date of Birth
19.08.1983

Mohammad Saud Khan
Hubertusstraße 5/E13
9020 Klagenfurt

DVR: 0027693
Official in charge: Renate Knauder
Phone: (0463)2700/9131
E-Mail: Renate.Knauder@aau.at

The following examinations and academic writings were successfully completed in the period from 17.04.2012 to 05.05.2014:

Course(s)/Exmination(s)/Written paper(s)	Type	ECTS-Credits	Semester Hours	Date	Grade
Study: 784 154 Dr.-Studium d.Sozial- u.Wirtschaftswiss. Angewandte Betriebswirtschaft					
Course examinations:					
605.290/13W Doctoral seminar in Innovation Management and Entrpereneurship	SE	4,0	2,0	10.03.2014	1
605.241/13W Experimental Research	SE	4,0	2,0	18.12.2013	2
605.290/13S PhD Seminar in Innovation Management / Entrpereneurship	SE	4,0	2,0	11.12.2013	1
605.500/13W Project seminar: presenting the results of the thesis	PM	4,0	2,0	21.11.2013	1
602.993/13S Special Topics: Innovation & Entrepreneurship: case studies	KU	6,0	2,0	22.05.2013	2
605.290/12W Doctoral seminar in Innovation Management and Entrpereneurship	SE	4,0	2,0	25.03.2013	1
605.100/12W Seminar: Introduction to the PhD degree programme (orientation phase including basic methodology)	SE	4,0	2,0	03.12.2012	1
605.290/12S Dissertant/inn/enseminar im Bereich Innovationsmanagement und Unternehmensgründung	SE	4,0	2,0	10.07.2012	1
Total		34,0	16,0		

Key:

Course types

KU Course

PM Project Seminar

SE Seminar

ECTS-European Credit Transfer System

Grades:

Excellent (1), Good (2), Satisfactory (3), Pass/Sufficient (4), Fail/Insufficient (5), Participated successfully (MET), Participated without success (OET)

Certificate of Academic Performance

Office to which the certificate will be presented, plus reference number


Registration Number
1161718

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Date of Birth
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Mohammad Saud Khan
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Signature Value	S0Y12bR1/XoKn30EYFpni79JFzq0VOOWHp1wLYbbiR3q1DQrPYqmMv10F4xj3I1maMytoZeiLXK1/NluwtGokszP/4Q AHhhIEh/H4hK14BeQZCb6KLS7s5mJMSKLEQOY+51ZRBKRcjfM3XHnTHJmIIZvIzPsCNZC2GzL8hI5bv2gX+PLHaEaO1 WFrvaLf7wENXyL5V8cfEEw7V+IaDw07UWb5/PtR7GGOYM8/nXFATyDhLp0lce7JpRTPWqOQ2GcSnMS1fKh3CEGueFJ1 27GFbZ2HFuFIXIFzD1NhsizsStHgZ6W/TVqrTcL7sXwphYHR2/BiCnImWKetuxFfgu+eA==	
	Signatory	Alpen-Adria-Universität Klagenfurt C=AT; serialNumber=144551637206
	Date/Time-UTC	2014-05-05T13:12:41+02:00
	Issuer-Certificate	CN=a-sign-corporate-light-02,OU=a-sign-corporate-light-02,O=A-Trust Ges. f. Sicherheitssysteme im elektr. Datenverkehr GmbH,C=AT
	Serial-No.	813782
	Method	urn:pdfsigfilter:bka.gv.at:binaer:v1.1.0
	Parameter	etsi-bka-moa-1.0
Verification	Information about the verification of the electronic signature and of the printout can be found at: http://www.signaturpruefung.gv.at	
Note	This document was signed with an official signature. According to § 20 E-Government-Act a printout of this document has the probative value of an official document.	

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Alpen-Adria-Universität Klagenfurt

U R K U N D E

Unter dem Rektorat des
Univ.-Prof. Dr. Oliver Vitouch
und dem Dekanat des
Univ.-Prof. Dipl.-Ing. Dr. Erich Schwarz
bestätigt die Studienrektorin
Ass.-Prof.ⁱⁿ Mag.^a Dr.ⁱⁿ Doris Hattenberger,
dass

Herrn

Mohammad Saud Khan, MSc ETH

geboren am 19. August 1983, Staatsbürgerschaft: Pakistan

nach Erfüllung der gesetzlichen Voraussetzungen
der akademische Grad

Doktor der Sozial- und Wirtschaftswissenschaften
(Doctor rerum socialium oeconomicarumque, Dr. rer. soc. oec.)

verliehen wurde.

Klagenfurt, am 4. Juli 2014



Rektor



Dekan



Studienrektorin

Entrepreneurial Team Locus of Control: Diversity and Trust

Introduction

Research has shown that teams tend to start innovative ventures during the first few years of their existence (Cooper et al., 1990, Kamm et al., 1990, Watson et al., 1995). Compared to a solo entrepreneur, an entrepreneurial team appears to cope more successfully with uncertainties and volatilities in an innovative start-up, where flexibility and complexity of decision-making is imperative (Vesper, 1990). Hence, an understanding of entrepreneurial teams is essential in order to comprehend the creation and performance of new ventures. It has also been emphasized that entrepreneurship research requires a concentrated effort towards studying the context of entrepreneurial activities (Zahra and Wright, 2011), and in particular the under-researched context of entrepreneurial teams based in incubators (Phan et al., 2005) within Austria.

It is argued that, given the variety of entrepreneurial teams and their various associated challenges, "... any definition that goes beyond the number of members and their common but possibly unequal concern for a small set of superordinate goals, which are themselves subject to negotiation, is really seeking to distinguish *effective* teams rather than teams" (Schjoedt et al., 2013, 3-4). Thus, for the purposes of this study, an entrepreneurial team is described as consisting of two or more individuals who hold shares in the firm, work actively in the venture and exert influence upon the strategic decision-making within the venture (Almer-Jarz et al., 2008), during the early phase (Schjoedt and Kraus, 2009) (up to eight years including pre start-up and founding) of the development of the venture. The term "development of venture" highlights the dynamic nature of the firms and acknowledges that team members can join (or leave) at any stage of the maturation of the firm (Cooney, 2005). Thus, the definition encompasses entrepreneurial teams at different phases of the life cycle and is not solely restricted to a pre start-up phase.

Surface level variables are manifested demographic characteristics such as age, race, education etc., whereas deep-level variables including personality factors, values, and attitudes towards the task at hand are generally found to have a more substantial influence on team success over time (Stewart, 2006, Bell, 2007). Entrepreneurship research highlights the importance of investigating specific personality traits that could be linked to entrepreneurial tasks (Baum and Locke, 2004). As a specific entrepreneurial trait, internal Locus of Control (LOC), the belief that one has control over one's fate (Boone and Hendriks, 2009), has proven to substantially increase motivation and the determination to achieve success (Rauch and Frese, 2007a). The importance of studying this specific deep-level characteristic is that it indicates fundamental differences amongst individuals (Boone and Brabander, 1993), and control perceptions form a salient feature of effective management (Boone et al., 2005), especially for entrepreneurs.

As entrepreneurial team research has predominantly dealt with functional or demographic characteristics (Hellerstedt and Aldrich, 2008), the prospect of revealing the relationship between team composition variables and team performance has yet to be exploited (Arthur

et al., 2007). Within entrepreneurship research personality traits including LOC have been extensively studied at the individual level; however, little attention has been given so far to the analysis of the team level (Weiss and Brettel, 2010). Thus, this study focuses on internal LOC as a well-established entrepreneurial personality trait (Rauch and Frese, 2007b) at the team level. It seeks to determine whether internal LOC at an individual level as a predictor of entrepreneurial success, can also predict success at the team level. In doing so, it acknowledges that human behaviour within teams is affected by sentiments and interactions among team members (Homan, 1974), thereby producing collective influences, which could differ from individual behaviour.

Most research on team diversity centres on surface-level differences such as demographic characteristics (e.g. Milliken and Martins, 1996, Williams and O'Reilly, 1998). However, empirical research has revealed that deep-level differences such as attitudes, beliefs and opinions become more important for teams in the long run (Pelled et al., 1999). Although diversity in such personality differences could have consequences for team functioning (Barrick et al., 1998, Barsade et al., 2000), attention has rarely been paid to the context of innovative entrepreneurial teams (IETs). The interest in investigating diversity in internal LOC stems from the fact that, although entrepreneurs are expected to possess an internal LOC, differences in such a belief could have an impact on team performance. A particularly important question is if and how diversity in internal LOC affects team performance in the above mentioned context.

Previous studies have found a combination of locus of control and interpersonal trust to be better predictors than locus of control alone (Doherty and Ryder, 1979, Sheng Wang et al., 2010). The importance and relevance of affective trust for entrepreneurs is seen for two reasons. Firstly, the impact of affect on behaviour is greater when the task is relevant to the individual (Forgas, 1999). Entrepreneurs are extremely committed to their vision, ideas and companies, and so are likely to experience the effects of affect more intensely (Delgado-García et al., 2012). Secondly, it has been found that the influence of affect is especially pertinent when the tasks and decisions are complex, and require vigilant and constructive thinking (Fielder, 1990, Forgas, 1995). This is typical of an entrepreneurial environment that is comprised of novelty, unpredictability and quick change, combined with little structure (Delgado-García et al., 2012), which pushes the entrepreneurs' capacities to their limits (Baron, 2007, Lichtenstein et al., 2006). So, trust based on such affect (affective trust) could influence the relationship between internal LOC and team performance.

It is recognized that setting objective performance targets at the early stages of an innovative business is extremely difficult in many cases, because of its complex and uncertain nature (Gemuenden and Hoegl, 1998). While effectiveness captures the aspect of doing the right things, efficiency measures aspects of doing the things right. Effectiveness reflects the degree to which the targeted need is met by focusing on the end, whereas efficiency deals with the process aspects or means of doing things. Thus, it is argued that to be successful a two pronged approach of simultaneously being effective and efficient is necessary (Sudit, 1996). Therefore, subjective attributions of effectiveness and efficiency constituted team performance in this study.

This study provides a first empirical test of the LOC construct using technology oriented entrepreneurial teams within Austria. In addition, it contributes to entrepreneurship

literature in several ways. Firstly, it sheds light on if and how internal LOC at the team level impacts entrepreneurial team performance. This would help entrepreneurial practice to build more effective and efficient teams as far as LOC is concerned. Secondly, it systematically analyses how diversity in internal LOC interacts with internal LOC at the team level. The paper takes a pioneering step by employing the key methodological contribution of addressing the inherent bias in measuring the diversity of small teams. Finally, it is one of the first studies to show the importance of affective trust in the domain of entrepreneurship by investigating how it impacts the internal LOC – team performance linkage.

Theory and Hypotheses

Locus of Control and Entrepreneurial Performance

Locus of control is an important and well-documented personality trait that relates to a generalized belief of internal and external control (Boone et al., 2005). The theoretical rationale for this generalized belief and expectancy of behaviour reinforcement is embedded in the social learning theory (Rotter, 1960). This is explained as the reinforcement of a certain behaviour being fortified and then such a behaviour leading to the reoccurrence of this reinforced behaviour in the future. Having an internal locus of control is seen as an important precondition for the entrepreneurial motivation to achieve success (Rauch and Frese, 2007a). Empirical studies also support the claim that entrepreneurs are more internal than non-entrepreneurs (Bonnett and Furnham, 1991).

Previous studies on internal locus of control and entrepreneurial success have yielded positive correlations (Rauch and Frese, 2007b). Individuals with an internal locus of control perceive themselves as active agents who can control events in their lives through skill and effort (Boone et al., 1998). Innovative start-ups in particular require more flexibility and manage greater complexities of decision-making (Vesper, 1990). It has been observed that managers with an internal LOC are prone to consultative decision-making (Selart, 2005). At the same time, it is vital for entrepreneurs to believe in their own active influence as it helps to increase motivation and attain success (Rauch and Frese, 2007a). Such internal individuals would proactively pursue laws, which govern the way in which the environment reacts to their own behaviour. The more widespread such investigations, the greater are the chances of detecting crucial contingencies (Boone et al., 1991, Lefcourt, 1982, Welsch and Young, 1982). An entrepreneurial team encompassing a greater number of internals as compared to a solo entrepreneur would thus be more likely to have a broader view when dealing with the kind of uncertainties that can occur in an innovative start up.

Vliamos and Tzeremes (2012) established LOC as one of the key factors that affect entrepreneurial activity and subsequent business creation. They argue that entrepreneurial LOC could indirectly impact knowledge creation and transmission by influencing entrepreneurial activity. Similarly, it is acknowledged that internals are more disposed towards searching for relevant information; they also learn more from feedback and past experiences (Phares, 1976). Phares (1976 p.78) concluded that internals “acquire more information, make more attempts at acquiring it, are better at retaining it, are less satisfied with the amount of information they possess, are better at utilizing information and

devising rules to process it and generally pay more attention to relevant cues in the situation". Entrepreneurial activity quite often requires outside of the box solutions, for which it requires a variety of information. An entrepreneurial team is commonly confronted with complex problems and needs to formulate the corresponding plans. The more complex a problem, the greater is the need for team members to generate information from new perspectives (cf. Ashby, 1956). Personality research states that internal individuals have large information processing capacities (Govindarajan, 1988, Govindarajan, 1989), and can thus acquire more information and utilize it more effectively in decision-making (Boone et al., 2005).

Sebora et al. (2009) have reported LOC as being positively related to the success of e-commerce start-ups. Moreover, out of all the critical success factors examined it was seen that LOC made the greatest contribution in explaining this success. Innovative start-ups are often challenged by strategies involving novel technologies, unanticipated customer and competitor reactions, alongside ambiguous marketing dynamics (Wijbenga and van Witteloostuijn, 2007). Internal entrepreneurs have been found to desire innovative strategies to exercise control over their operational settings (Boone et al., 1996, Miller, 1983, Miller et al., 1982, Miller and Toulouse, 1986a, Miller and Toulouse, 1986b). Moreover, internals are also seen to be enthusiastic and more involved in complex tasks (Spector, 1982), which is an important feature in the work environment of high-tech entrepreneurial teams.

The above discussion highlights that the prominence of skills associated with internality is higher in uncertain and ambiguous situations. Extrapolating the given argument to the team level, a predominantly internal entrepreneurial team would develop a collective team-level influence. It has been found that this kind of team influence - a collective belief that the team can be effective - is one of the most essential group level factors that define "real-world, real time group effectiveness" (Shea and Guzzo, 1987 p. 26). Such a team would thus feel that they can successfully impact team processes and outcomes (Boone et al., 2005). Based on the above evidence on behavioural and performance implications of internal locus of control, the following hypotheses are proposed:

H1: *The higher the internal LOC at team level, the more effective are such innovative entrepreneurial teams.*

H2: *The higher the internal LOC at team level, the more efficient are such innovative entrepreneurial teams.*

Locus of Control Diversity and Entrepreneurial Performance

Personality differences (Price et al., 2002) such as LOC within entrepreneurial teams are considered to be deep-level (Harrison and Klein, 2007 p. 1200), underlying (Milliken and Martins, 1996), and psychological (Jackson and Ruderman, 1995). Harrison and Klein (2007) explain such deep-level personality differences as diversity of separation. They theoretically rationalize it with the similarity-attraction paradigm, social identity and self-categorization perspective that predict the negative effects of diversity on team outcomes (van Knippenberg and Schippers, 2007). The similarity-attraction paradigm (Byrne, 1971) postulates that people are attracted to and prefer to interact with similar others, because they see it as a reinforcement of their own beliefs and values (Mohammed and Angell,

2004). Likewise, social identity and self-categorization theories (Tajfel, 1978, Turner, 1982), argue that people identify and distinguish themselves as groups. Such a categorization process comes into play when dissimilar members are viewed more negatively than members of their own sub group (Turner, 1982). In addition, due to the motivation of maintaining their own social identity, members with similar characteristics are endowed with a positive bias as part of the same group (Tajfel and Turner, 1986).

Furthermore, diversity with respect to deep-level composition variables can trigger affective responses as it is based on emotional and affective states (Boone and Hendriks, 2009). Team members with differences in LOC have different deep-level self-concepts, attitudes and expectations (Hiller and Hambrick, 2005) that could increase the possibility of affective tensions and processes of separation (Boone and Hendriks, 2009) within entrepreneurial teams. An entrepreneurial team consisting of diverse members in relation to internal LOC would encounter basic differences of analysing, interpreting, feeling and acting on identical decision-making situations (Boone et al., 2005). Thus, LOC diversity could lead to detrimental effects on team performance.

As discussed earlier, internal locus of control is seen to be an important part of being entrepreneurial. Being internal is seen as a prerequisite for action, and from an entrepreneurial standpoint, a disposition to act depends on a psychological predisposition to act and one's perception of control (Krueger Jr and Brazeal, 1994). Theoretically, having an internal LOC orientation could increase the probability of entrepreneurs taking action with regard to their plans (Mueller and Thomas, 2001), thereby presenting a need for members possessing internal LOC within entrepreneurial teams.

Uncertainty, risk taking and innovation form three core ingredients of a typical entrepreneurial set up. Members high on internal LOC feel contented in uncertain scenarios, are motivated to take calculated risks, and plan for their future (Boone and Hendriks, 2009). Likewise, research also shows that internal CEOs are more inclined to follow innovative and risky strategies (Miller et al., 1982), thereby further highlighting the need for highly internal members for an entrepreneurial team context.

Consequently, from an entrepreneurial standpoint, diversity could perhaps play the role of a double edged sword. Conceivably, the addition and removal of members with high internal LOC in an entrepreneurial team could impact team performance, depending on whether the existing team internal LOC is high or low. This would imply that an entrepreneurial team already endowed with a high internal LOC would not benefit from internal LOC diversity. On the contrary, teams with low internal locus of control could perhaps benefit from internal LOC diversity by enhancing their information-processing capacity as a team (Boone et al., 1998).

Based on the above, the following hypotheses (negative interaction) are proposed:

H3: *IETs' internal LOC diversity increases team effectiveness when IETs have low internal LOC, and decreases team effectiveness when IETs have high internal LOC.*

H4: *IETs' internal LOC diversity increases team efficiency when IETs have low internal LOC, and decreases team efficiency when IETs have high internal LOC.*

Locus of Control and Affective Trust

Intra-group trust facilitates cooperation amongst team members (McAllister, 1995) and constitutes a crucial component of interpersonal and group dynamics in teams (Costa et al., 2001). Affective trust is identified as a form of trust (McAllister, 1995) that is intrinsically motivated (Rempel et al., 1985) and has its foundations in reciprocated care, concern and emotional bonds.

Phares (1976) suggests that internals display more helpful behaviour towards others within their social experiences. They are more likely to develop and possess the necessary social skills to manipulate the environment and are more considerate of others (Sabatelli et al., 1983). It has also been established that internals have more effective skills in terms of altering the behaviour of others (cf. Pines, 1973, Strickland, 1977). LOC is seen as a feeling that has noticeable correlates in the expression of affect, where internality is also manifested through assertive voice quality in daily interactions (Hall et al., 1983). Likewise, affect relates closely to demonstration of enthusiasm (Baron, 2008), which is in turn closely linked to persuasiveness (Terry and Hogg, 2000), thereby suggesting positive implications of affect-based trust among entrepreneurs.

Internals are associated with more proactive behaviour towards maintaining positive relationships (Ng et al., 2006), and hence are also seen as initiators of social relationships (Turban and Dougherty, 1994). Likewise, affect is related to the prompting of proactive behaviour (Foo et al., 2009), which, in the case of entrepreneurs, would imply catering for and working towards future venture tasks. Proactive behaviour has been explained as “future focused, mindful and acting in advance with foresight about future events before they occur” (Grant and Ashford, 2008 p. 9). So, affect-based trust could influence an entrepreneur’s proactive behaviour and positively reinforce internal LOC.

Internality is characterized by emotional stability (Boone and Hendriks, 2009), stronger emotional attachment and affective commitment at work (Meyer et al., 2002). Similarly, affective trust also has its foundations in emotional bonds (Lewis and Weigert, 1985), feelings and moods (Hansen et al., 2002). Thus, the presence of this “emotional trust” (Johnson-George and Swap, 1982) and “faith” (emotional security) (Rempel et al., 1985) amongst entrepreneurs could fortify internality.

Similarly, internality has generally been related to positive well-being at work (Spector et al., 2002). Research also indicates that improved personal health is related to an everyday experience of positive affect (Lyubomirsky et al., 2005). Internals experience positive affective reactions towards their work environment (Ng et al., 2006), because they have a sense of control over their work. They are presumed to have better interpersonal relationships with their peers (Wang et al., 2010). All in all, it seems that internals would tend to be more enthusiastic about dedicating psychological resources in order to maintain social relationships (Ng et al., 2006). Being based on emotions and with its subjective nature, affective trust also relies on perceived strength and the degree of security sensed in a relationship (Zur et al., 2012). Thus, affective trust could strengthen the above dynamics, being driven by expressions of care and concern, reliance on the reciprocity of such feelings, and a belief in intrinsic motivation for action and valued relationships (Pennings and Woiceshyn, 1987).

Reliant on positive affect, mutual identification (Jones and George, 1998) and 'deep rooted nature' (Webber, 2008 p. 754), this form of trust implies a positive interaction with internal LOC as a deep-level personality trait.

Based on the above, the following hypotheses (positive interaction) are proposed:

H5: *Innovative Entrepreneurial Teams high on internal LOC increase team effectiveness when affective trust is high.*

H6: *Innovative Entrepreneurial Teams high on internal LOC increase team efficiency when affective trust is high.*

Locus of Control Investigations in Various Countries

An interesting body of research on LOC exists in different cultural contexts, where some of the work also provides a global perspective on LOC. This research can be classified as multiple country studies.

A study spanning 24 countries with individualistic as well as collectivistic populations revealed that the individualism/collectivism level did not moderate the correlations between work LOC and well-being (Spector et al., 2002). Likewise, in a survey of 265 managers from the US, Hong Kong, South Korea and Mexico, it was also observed that culture did not moderate the relationship between LOC and job performance (Leach-Lopez, 2013). Farid (2007) shed light on American and Egyptian entrepreneurial differences (including LOC) as part of an analysis of secular and Islamic societies. He proposed that based on the different meanings attached to money in both cultures, Egyptians were expected to score lower on internal LOC than Americans. In another attempt, Mueller and Thomas (2001) studied LOC orientation and entrepreneurial potential on a student sample of nine countries. They suggested that the culture of a country might have a bearing on the entrepreneurial potential in the sense that a supportive culture *ceteris paribus* would enhance this potential. In terms of LOC, the authors found that individualistic cultures tend to be more internal than collectivistic cultures. Russian entrepreneurs were seen to possess lower internal LOC in comparison to most other countries during the country's transition to a market economy (Kaufmann et al., 1995). Based on these results, it was posited that social/cultural variables could influence psychological measures like LOC.

Even though the present study does not aim towards a cross country comparison, the divided literature highlights that cultural awareness might lead to an improved understanding of LOC. Thus, the current study presents a cultural setting in Austria, which has remained unexplored to date, as far as LOC is concerned. Besides, none of the above mentioned studies explored incubator based technology intensive entrepreneurial teams, which by itself offers a unique context within entrepreneurship research. Furthermore, this research gains more significance as it also explores LOC diversity and affective trust in addition to the team level of analysis and an under-researched cultural context (*vis-à-vis* LOC).

Methodology

Participants and Procedures

The sample of the study was drawn from a population of 155 venture teams founded in nine academic incubators in Austria. The incubators support all kinds of highly innovative start-ups, where the selected ventures were primarily technology driven.

The data was collected by means of a standardized questionnaire. To maximize the response rate each participant was contacted personally by telephone. After making an appointment, the researchers visited the team members of 98 teams to collect the data. Ten teams were no longer team-ventures because some members had left the team. It was possible to interview 153 team members belonging to 88 teams (56.8%). However, in 44 teams it was only possible to interview part of the team. It is seen that correlations between group diversity scores and group outcomes based on partial rather than complete sets of group member attitudes are substantially attenuated (Allen et al., 2007). Hence, the study sample is specifically composed of only full teams. Thus, the final sample consisted of 44 teams, comprising 92 team members.

The average size of the entrepreneurial teams analysed was 2.09 (median= 2, SD= 0.29, 40 two person teams and 4 three person teams) at the time of data collection. The firms of the analysed teams were at different development stages. At the time of data collection a few firms were at the pre start-up phase; others had started their business or had been in the market for some years. The average firm age in the sample was 2.12 years (median= 2.260, SD= 1.922). The start-ups had between 0 and 20 employees, where the mean number of employees was 4.02 (median= 2, SD= 4.54) at the time of the survey. The entrepreneurs were 36.7 years old on average (median= 35, SD= 8.78), where the age varied from 25 to 61 years. Only 10 team members (10.9%) of the sample were women, thus the entrepreneurial teams were dominated by men. This under-representation of women was not surprising, as it is acknowledged as a typical attribute of high-tech start-ups (Robb and Coleman, 2009). Because at least one of the entrepreneurs in the leadership team had to possess a university degree to gain acceptance for the incubator program, the educational level of the persons in the sample was higher than in other entrepreneurial studies. 78.3% of the entrepreneurs in the sample held a master's degree or higher university certificate.

Missing data analysis on the individual level of observation showed that missing values were missing at random (Little's MCAR test: Chi-Square= 126.94, DF= 115, Sig. = 0.21). Because of the minor number of missing values (n=18; 1.03%), mean imputation was used to complete the data set. Inter-rater agreement $r_{wg(j)}$ was calculated to test for team internal agreement concerning all measured scales before aggregating the data to team level (James et al., 1993). The median of inter-rater agreement indices over teams was over 0.90 for all measurement constructs, indicating a strong within-group agreement. The items were then aggregated to the team level by calculating the team mean.

The measurements were mostly carried out using adapted scales from the literature (see *Table 1*). English-language scales were translated into German and adapted to the context of young entrepreneurial teams. The scales were first tested in a pre-study. All scale items

were measured by a 6-point Likert-type scale ranging from 1="completely disagree" to 6="completely agree".

--Insert "Table 1" here--

Measures

Endogenous variables. A four item scale (Cronbach Alpha= 0.828) to measure the effectiveness of the entrepreneurial team was developed in order to capture the implementation quality of the founding project (see *Table 1*). For team efficiency, an adapted four item scale from Högl (1998) was used (Cronbach Alpha= 0.879).

Exogenous variables. Affective trust was measured using a four item scale (Cronbach Alpha= 0.879) from McAllister (1995). LOC was measured using a three item scale from Mueller and Thomas (2001) with a Cronbach Alpha of 0.651, that exceeds the lower limits of acceptability (Nunnally, 1978) and concurs with Cronbach Alpha reported in other studies on LOC (Boone and Hendriks, 2009, Boone et al., 2005, Rotter, 1966, Robinson and Shaver, 1973). In addition, as suggested by Biemann and Kearney (2010), a calculation of LOC diversity as separation was performed, using a bias corrected formula of standard deviation to cater for varying team sizes. The calculation of LOC diversity was based on the individual LOC scale values which were calculated from the non-aggregated individual Locus of Control items. The bias corrected formula of standard deviation from Biemann and Kearney (2010) is as follows:

$$SD_N = \sqrt{\frac{\sum (S_i - \bar{S})^2}{q_N}},$$

where S_i is the value of the team member i ($i= 1, \dots, N$) and \bar{S} is the mean value of the interest variable with all N team members within the team. The value q depends on the number of team members and is calculated using the formulas provided in Biemann and Kearney (2010), or alternatively can be found in the table provided in Cureton (1968).

Controls. Past knowledge from observations, reported reputation and frequency of personal interactions can create perceptions about individuals, which could impact affective trust (Johnson and Grayson, 2005, Lewis and Weigert, 1985). Because past interaction of team members can impact affective trust, two control variables forming one formative construct were included in the model (variance inflation factor, VIF= 1.112). They measure how long the team members have known each other from former employment and how long they have been friends. These two items were measured by a 6-point ordinal scale¹.

Method. The software package SmartPLS 2.0 M3 (Ringle et al., 2005) was used to estimate the PLS model. PLS, as compared to covariance based structural equation models (e.g. LISREL, AMOS), is suitable for the smaller sample size and is a method with mild distributional assumptions (Reinartz et al., 2009), making it an appropriate method when the data is skewed or does not follow a multivariate normal distribution. The 2-way interactions between LOC, LOC-diversity and affective trust were tested including one interaction at a time rather than including all at once, maintaining the interpretability of the

¹ 1= not, 2= less than 1 year, 3= 1-3 years, 4= 4-6 years, 5=7-10 years, more than 10 years.

results (Hair Jr et al., 2013). By doing so, the procedure described in Henseler and Chin (2010) was followed.

Results

Evaluation of the Measurement Model

Content validity was fulfilled by visual inspection of all items and by use of established and tested scales. *Indicator reliability* of the reflective measurement model was given because item loadings were greater than the threshold of 0.7. *Construct reliability* of the reflective measurement model was tested by calculating composite reliability and Cronbach Alpha. Acceptable construct reliability is given when the values of both reliability measurements are above 0.6. All reflective constructs show high composite reliability with values equal to and above 0.811. In addition, Cronbach Alpha values were above 0.8, with the exception of LOC (Cronbach Alpha = 0.651). The average variance extracted (AVE) was above the appropriate threshold of 0.5 for all constructs. This indicated that the latent variables reflected the variance of the manifest variables quite well. To test *discriminant validity*, the square root of AVE of each construct was compared with the latent variable correlations with respect to other latent variables (Fornell and Larcker, 1981). The AVE square root of every construct is greater than the correlations with all other latent variables in the model, thereby upholding discriminant validity. All four local quality criteria were fulfilled or were close to the appropriate thresholds, thereby confirming the validity and reliability of the measurement models (Götz et al., 2010). (See *Table 2* and *Table 3*.)

The formative latent variable common history showed significant weights for the two items. The evaluation for multicollinearity showed that it was not a concern (VIF= 1.112). Due to the low correlation with other constructs, discriminant validity of the common history construct was also fulfilled.

--Insert "Table 2" here--

--Insert "Table 3" here--

Evaluation of the Structural Model

The R²-values of the endogenous latent variables were 0.402 for effectiveness and 0.224 for efficiency. The significance of path coefficients was determined using the bootstrapping procedure (2000 runs, N=44). The model statistics for effectiveness in *Table 4* show a significant coefficient for affective trust (5% level) and locus of control (1% level). For efficiency, two significant effects were detected with locus of control (5% level) and common history as a control (10% level).

--Insert "Table 4" here--

Effect sizes above 0.35, 0.15, and 0.02 indicate substantial, moderate, and weak effects (Cohen, 1992). The effect sizes of the endogenous variables in this model range from 0.006 to 0.184. (See *Table 5*.)

--Insert "Table 5" here--

Evaluation of the Overall Model

Considering the quality measures of the outer measurement models and the inner structural model the validity of the overall PLS model is shown (Götz et al., 2010). The model indicates a significant positive relationship of locus of control with team effectiveness (Hypothesis 1). Thus, Hypothesis 1 is supported. Concerning efficiency, the coefficient of locus of control is also positive and significant at the 5% level. Thus, Hypothesis 2 is also supported. (See *Table 4* and *Figure 2*.)

The tested interaction effects resulted in one significant interaction for effectiveness and one significant interaction for efficiency (see *Table 6*). One negative significant interaction (10% level) was detected between *LOC diversity and LOC (mean)* in the efficiency model. Thus, Hypothesis 4 is also supported. In the effectiveness model, the interaction between *internal LOC and affective trust* was positive and significant to the 10% level and so renders support for Hypothesis 5. All other tested interactions show no significant effect, thus Hypotheses 3 and 6 were rejected. *Figure 1* shows the interaction plots of the two interaction effects.

--Insert "Table 6" here--

--Insert "Figure 1" here--

Figure 2 shows a summary of the research model alongside the supported hypotheses.

--Insert "Figure 2" here--

Cross Sectional Data and Common Method Bias

The present study employs a cross-sectional design, which is noted as common practice in this kind of research (Boone and Hendriks, 2009), and is considered appropriate for addressing the existing research setting. All entrepreneurial teams being studied were technology oriented start-ups. Despite not belonging to a specific industry (IT, manufacturing, etc.) they all had a comparable, dynamic focus, which makes it a representative sample (supporting external validity) of high-tech start-ups in Austrian incubators. However, such data could also render it challenging to find empirical support for hypotheses. This could happen because a certain relationship would have to be strong enough so as to endure the effects of other parts of the sample and yet be detected as statistically significant. Therefore, great care was taken to ascribe team performance (and not firm performance) only to focal team members comprising full teams. As a result, all

team members' perceptions regarding LOC were utilized, because it was important to get the entire team's view in understanding team effectiveness and efficiency. Moreover, the statistical difficulties in finding interaction effects in a field setting have also been well documented, and argued that once detected is a "... best case scenario" (McClelland and Judd, 1993 p.386). In light of the above arguments and observed significant effects (main and interactions), the study findings of a cross sectional analysis are upheld.

The use of self-reported data to test hypotheses could also make the results vulnerable to common method bias. However, it should be noted that the problems typically associated with common method bias are deemed to be highly overstated (Conway and Lance, 2010, Spector, 2006). In fact, it is suggested that self-reported data can be the most accurate means of gauging LOC, given that individuals have a more accurate understanding of their own control beliefs than outside observers (Wang et al., 2010). Likewise, as entrepreneurs are quite often sceptical about revealing financial performance details (Chowdhury, 2005), self-reported performance measures for team performance that correlate highly with objective data on performance (Venkatraman and Ramanujam, 1986) are amply justified.

Nevertheless, to test the concerns regarding cross sectional data and common method bias, two statistical tests were performed. Firstly, the Harman's single-factor test (Podsakoff et al., 2003) indicated that no general factor existed. The unrotated solution of explorative factor analysis (EFA, principal component analysis) showed the presence of more than one factor with eigenvalues greater than one. The first factor explained only about 32.01% of the variance.

The second test was performed as follows: Following Podsakoff et al. (2003) a common method factor was included in the PLS model as described in Liang et al. (2007) to test the effects of an unmeasured latent method factor, which measures the "indicator's variances substantively explained by the principal construct and by the method" (Liang et al., 2007 p. 71). The results demonstrate that the average substantively explained variance of the indicators is 0.709, while the average method-based variance is 0.041. The ratio of substantive variance to method variance is approximately 17:1. Given the Harman's one-factor test and the small magnitude and insignificance of the method variance, common method bias was not considered to be of concern for the study.

Discussion and Conclusion

The purpose of the study was to investigate the role of internal locus of control as a predictor of entrepreneurial team performance alongside its interaction with LOC diversity and affective trust within an Austrian context. Results indicate that internal locus of control at a team level has a strong positive impact on team performance expressed through effectiveness and efficiency. These findings reiterate that internal locus of control is indeed a vital ingredient that predicts success at team level, in addition to being an individual level success factor for entrepreneurs (Rauch and Frese, 2007a). This suggests that a high overall team belief in terms of having control, not only leads to optimal usage of resources but also helps in the achievement of goals. Perhaps, as individuals with an internal locus of control are considered to be superior strategy implementers (Boone and Olffen, 2002), a team with

high internal locus of control is likely to steer successfully through time and resource constraints, while staying focused on the end result.

Concerning diversity in internal LOC, it is seen that diversity with respect to internal locus of control serves as a double edged sword in the context of entrepreneurial teams. Internal LOC has a negative interaction with LOC diversity in relation to team efficiency (Figure 1a). It is observed that entrepreneurial teams high on internal LOC become less efficient in scenarios of increased diversity with respect to internal LOC. This finding coincides with Harrison and Klein (2007), who argue that deep-level diversity could be harmful for team functioning. Such a situation can lead to power struggles (Pfeffer, 1983), turnover (Wagner et al., 1984), and processes of separation (Boone and Hendriks, 2009) amongst team members. Thus, increasing diversity in a highly internal entrepreneurial team would lead to the lowering of operational efficiency due to wastage of time and energy in overcoming communication hurdles and power games. On the other hand, teams low on internal LOC benefit from increased LOC diversity. Conceivably, such diversification of entrepreneurial teams through the inclusion of highly internal members could improve the adaptive capacity (Boone et al., 1998) of such teams. In addition, there is a greater difference of efficiency in high and low diversity scenarios for teams with high LOC as compared to teams with low LOC. The above discussion further signifies the high degree of importance placed on internality of LOC for the improved functioning of innovative entrepreneurial teams operating in a dynamic and uncertain environment.

Contrary to expectations, a similar finding concerning effectiveness found no support (H3), suggesting that LOC differences amongst entrepreneurial team members do not impact team effectiveness. Perhaps, goal achievement consequences of LOC diversity could hinge on the nature of experiences and the intensity of interactions amongst team members (Boone and Hendriks, 2009), which were not within the scope of this paper. However, it would be thought-provoking to investigate these aspects of “teamness”, in order to reveal the conditions pertaining to LOC diversity and team effectiveness. Furthermore, it is plausible that this might be attributed to the short term orientation of Austrians (Hofstede et al., 2010), relative to other world cultures. Conceivably, with such an orientation, it is likely that daily operational decisions (efficiency) take precedence over long term strategies (Leach-Lopez, 2013), irrespective of control differences.

Affective trust positively interacts with internal LOC to impact team effectiveness (Figure 1b). Entrepreneurial teams are seen to be equally effective in scenarios of low internal LOC, regardless of the level of affective trust. Similarly, when low affective trust is prevalent within the team, teams are equally effective, irrespective of team internality. However, when teams high on internal LOC experience high affective trust, team effectiveness increases considerably. Positive affect is argued to enhance entrepreneurial capacity by responding effectively through the expansion of individual skills and social networks (Baron, 2008). It is quite likely that trust based on reasons such as these could encourage and engage highly internal team members to further develop their functional skills and expand the range of their social networks. There is a substantially larger gain in team effectiveness for highly internal teams while experiencing high affective trust as compared to low internal teams. Perhaps, highly internal entrepreneurial teams become more effective as higher internality is characterized by greater emotional stability (Boone and Hendriks, 2009),

emotional attachment and affective commitment (Meyer et al., 2002). These results clearly underscore the importance held by affective trust for small innovative entrepreneurial teams, maintaining greater control over their activities (Delgado-García et al., 2012) and operating in a highly emotional context (Cardon et al., 2012). Acknowledging the uncertain and volatile entrepreneurial process and lack of clearly defined rules it is stated that “... it is precisely in such situations that affect tends to exert its strongest and most far-reaching effects” (Foo et al., 2009 p. 1093).

While team internality was seen to be positively reinforced by affective trust and appeared to influence team effectiveness, the same was not the case for team efficiency. Apparently, as Austria enjoys a culture of participative communication and informal attitudes in the work place (Hofstede et al., 2010), it could be speculated that high affective trust amongst team members could lead to a gratification of each other through excessive accommodation and mutual care (Bidault and Castello, 2010). Such a scenario could lead to prolonged discussions on task unrelated topics, requiring more time and resources to reach completion, resulting in a non-significant interaction for team efficiency.

To conclude, the findings reveal that higher internal LOC at team level promotes entrepreneurial team effectiveness and efficiency in an Austrian context. In addition, diversity with respect to internal LOC has its benefits and drawbacks, depending on the team LOC. However, team efficiency is increased when such teams have a high internal LOC and low diversity. Affective trust is identified as a crucial component in enhancing entrepreneurial team effectiveness, especially when the team has a high internal LOC.

Implications for Theory and Practice

The study contributes to the entrepreneurship literature in several ways, pointing towards interesting future directions. Firstly, this study presents one of the first empirical tests in an entrepreneurial field setting on the performance implications of internal LOC at team level. It makes a context-specific contribution to the relationships between internal LOC, LOC diversity, affective trust and team performance for small innovative entrepreneurial teams. Through the inclusion of a personality variable (LOC), this analysis enriches team research within entrepreneurship that has frequently focused on demographic characteristics in the past. The well-documented trait of internal LOC as an entrepreneurial success factor at individual level also appears to be true at the team level of analysis. This shows that research focusing on entrepreneurial teams should certainly take the entrepreneur's locus of control into account. In addition, a clear need to go beyond the study of simple main effects (internal LOC) is highlighted, while studying deep-level team composition variables (e.g. LOC). From a practical standpoint it is important that control beliefs within entrepreneurial teams could be identified through daily interactions and personality surveys. Likewise, special sessions could be conducted to analyse and discuss the combined value profiles (like LOC) prevalent in teams, highlighting the important implications for their team-level outcomes. Looking at the benefits of high internal locus of control it would be valuable to pay special attention to team members displaying low internal LOC.

Secondly, the findings on LOC diversity imply that entrepreneurial teams would be better off having greater homogeneity in terms of internal LOC. Theoretically, this corroborates the work of Harrison and Klein (2007), who argue that homogeneity is favourable when it comes to diversity as separation whether all members are high or low on a certain belief, attitude or value. Thus, based on this diversity conceptualization, an entrepreneurial team would be most efficient when there is low variance amongst its members concerning internal LOC (homogenous). With a dearth of studies on entrepreneurial teams in an Austrian context, the findings reveal that team efficiency in a dynamic environment is especially vulnerable to differences in this (LOC) personality trait. Moreover, the study contributes by advocating responsiveness towards the prevailing “team LOC” when examining LOC diversity. Such an approach would not only unveil the true effects of LOC diversity, but might even help in devising appropriate intervention strategies (e.g. centralized decision-making (Boone and Hendriks, 2009)).

Thirdly, the paper makes a methodological contribution by including the mean, dispersion and its interaction in studying diversity. In doing so, the research explicitly addresses a systematic bias in measuring team diversity by employing the biased corrected formula suggested by Biemann and Kearney (2010) to cater for underestimation of diversity in small teams.

Finally, the findings highlight the importance of affect-based trust by suggesting a combination of locus of control and affective trust as predictors of entrepreneurial team effectiveness. It puts forth the idea that internal locus of control is perhaps not only a personal belief but also an emotional state that further strengthens its impact on team performance with affect-based trust. This evidence adds to the larger line of research and previous theoretical arguments on the role of affect in the entrepreneurial process (Baron, 2008). It complements recent empirical work on the issue of affect (Baron and Tang, 2011, Foo, 2011, Foo et al., 2009), by emphasizing not only the importance of affect in general, but also the trust based on affect for entrepreneurial team dynamics.

Limitations and Future Directions

The interpretation of the results should take the following limitations into consideration. Social desirability bias is acknowledged as an important concern, bearing in mind the sensitivity of discussing a deep-level personality variable (LOC) and trust. However, confidentiality and anonymity for the analysis of responses is expected to reduce the social desirability bias (Konrad and Linnehan, 1995). Moreover, great attention was given to the systematic examination of the construction of items to ensure the removal of ambiguous, vague and unfamiliar items to formulate concise items within the overall questionnaire.

In addition, the study sample dominated by men raises questions about the generalisability of results to female entrepreneurs within high-tech start-ups. Recognizing the scarcity of women within a high-tech entrepreneurial scenario (Cohoon, 2011) and the scant research explicitly examining female experiences in this context (Robb and Coleman, 2009), the study opens an interesting avenue for future enquiry. More specifically, it could be a promising

area for future research to study samples of all-male, all-female and mixed teams in a high-tech environment and investigate the inter and intra team dynamics.

As the aspect of cultural influences cannot be ruled out completely (Kaufmann et al., 1995), transferability of these findings and broad generalizations to other entrepreneurial (e.g. solo entrepreneurs, non-technology scenarios etc.) and national contexts necessitates caution. As trust could also vary over time, a longitudinal study would complement the knowledge towards building claims of causality as well as development of variables over time. Quite interestingly, it is encouraged to incorporate the upcoming and highly under-researched role of emotional dynamics (Biniari, 2012) within the context of innovative entrepreneurial teams. Although research on emotions and affect in entrepreneurship is gaining increased attention (Delgado-García et al., 2012), it remains rather unexplored within entrepreneurial teams.

Given the paucity of context-specific research on the focal variables, it was decided to focus on moderators (LOC diversity and affective trust) and uncover the conditions under which internal LOC at team level makes a difference. In doing so, explicit attention was not given to underlying mediating variables in the present study. The promising findings in terms of team moderators would encourage future researchers to concentrate on understanding core mechanisms (e.g. information acquisition behaviour).

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Table 1: Applied and adapted measurement scales

Scales	Items
Team Effectiveness median of team $r_{wg}(j)= 0.951$	
Effectiveness1	If we select projects we are able to choose the right ones.
Effectiveness2	Our management team is working effectively overall.
Effectiveness3	With our leadership team we achieve the desired performance.
Effectiveness4	In our projects we focus on the essentials.
Team Efficiency adapted from Högl (1998), $r_{wg}(j)= 0.944$	
Efficiency1	Our projects are carried out expeditiously.
Efficiency2	If we carry out projects we comply with the schedule.
Efficiency3	If we carry out projects we comply with the cost targets.
Efficiency4	Our leadership team is working efficiently.
Affective Trust adapted from McAllister (1995), $r_{wg}(j)= 0.977$	
ABtrust1	In our leadership team we can freely share our ideas, feelings, and hopes.
ABtrust2	I can talk freely to my partners in the leadership team about difficulties I am having at work and know that they will want to listen.
ABtrust3	If I shared my problems with my team members, I know they would respond constructively and caringly.
ABtrust4	I would have to say that we have made considerable emotional investments in our working relationship.
Locus of Control from Mueller and Thomas (2000) $r_{wg}(j)= 0.951$	
LoC1*	It is not wise for me to plan too far ahead, because things turn out to be a matter of bad fortune.
LoC2	Whether or not I am successful in life depends mostly on my ability.
LoC3	I feel in control of my life.
Common History, formative construct , $r_{wg}(j)= 1$	
CommonHist1	With at least one of my founding partner, I've already worked together before founding the company.
CommonHist2	With at least one of my founding partner I had a friendly relationship before founding the company.
Median of team $r_{wg}(j)$ is reported	
* reverse coded item	

Table 2: Indicator loadings and reliability statistics

Construct	Indicator	Loading	t-value ^b	AVE	Composite Reliability	Cronbach Alpha
Effectiveness	Effectiveness 1	0.730	5.833 ***	0.725	0.913	0.874
	Effectiveness 2	0.910	30.044 ***			
	Effectiveness 3	0.922	48.992 ***			
	Effectiveness 4	0.830	15.637 ***			
Efficiency	Efficiency 1	0.875	22.120 ***	0.734	0.917	0.879
	Efficiency 2	0.899	24.196 ***			
	Efficiency 3	0.784	9.135 ***			
	Efficiency 4	0.865	17.155 ***			
LOC	LocusControl1	0.749	6.183 ***	0.589	0.811	0.651
	LocusControl2	0.787	6.261 ***			
	LocusControl3	0.767	6.202 ***			
Affective Trust	Trust1	0.796	6.899 ***	0.738	0.918	0.889
	Trust2	0.910	14.111 ***			
	Trust4	0.876	14.050 ***			
	Trust5	0.850	11.306 ***			
LOC Diversity		1.000		1.000	1.000	1.000
Common History	CommonHist1	1.019 ^a	3.124 **	formative	formative	formative
	CommonHist2	-0.581 ^a	1.713 #			

level of significance: * p < 0.05; ** p < 0.01; *** p < 0.001

^a weight instead of loading

^b Test-statistic based on 2000 Bootstrap runs

Table 3: Latent variable descriptives and correlations with square root of AVE in the diagonal

	Min	MW	Max	SD	(1)	(2)	(3)	(4)	(5)	(6)
(1) Effectiveness	3.660	4.973	6.000	0.653	0.851					
(2) Efficiency	3.063	4.501	5.860	0.783	0.769	0.857				
(3) Affective trust	3.505	5.375	6.000	0.606	0.448	0.244	0.859			
(4) LOC	4.056	5.345	6.000	0.384	0.520	0.379	0.331	0.768		
(5) LOC Diversity	0.000	4.528	11.655	2.995	-0.373	-0.273	-0.294	-0.521	1.000	
(6) Common History	-4.578	0.324	6.000	2.874	-0.096	-0.151	-0.035	0.212	-0.262	formative

Table 4: Estimation Results of PLS-model

	Sample Estimate	Bootstrap Mean	Std. Err	t-value	p-value (two-sided) ^b	Hypotheses
LOC->Effectiveness (H1)	0.404	0.397	0.140	2.895	0.004 **	✓
Affective Trust->Effectiveness	0.267	0.276	0.130	2.046	0.041 *	
LOC Diversity->Effectiveness	-0.139	-0.155	0.114	1.221	0.222	
Common History->Effectiveness	-0.209	-0.212	0.134	1.561	0.119	
LOC*LOC Diversity->Effectiveness ^a (H3)	0.163	0.210	0.117	1.400	0.162	✗
LOC*Affective trust->Effectiveness ^a (H5)	0.289	0.279	0.149	1.936	0.053 #	✓
LOC->Efficiency (H2)	0.331	0.351	0.149	2.221	0.026 *	✓
Affective Trust->Efficiency	0.083	0.143	0.100	0.833	0.405	
LOC Diversity->Efficiency	-0.143	-0.175	0.126	1.137	0.256	
Common History->Efficiency	-0.256	-0.257	0.141	1.814	0.070 #	
LOC*LOC Diversity->Efficiency ^a (H4)	-0.244	-0.273	0.126	1.929	0.054 #	✓
LOC*Affective trust->Efficiency ^a (H6)	0.213	0.285	0.134	1.592	0.112	✗

Significance level: # p< 0.1; * p< 0.05; ** p< 0.01; *** p< 0.001

^a Main effects constitute the baseline model. Interaction effects included stepwise and only one interaction at time.

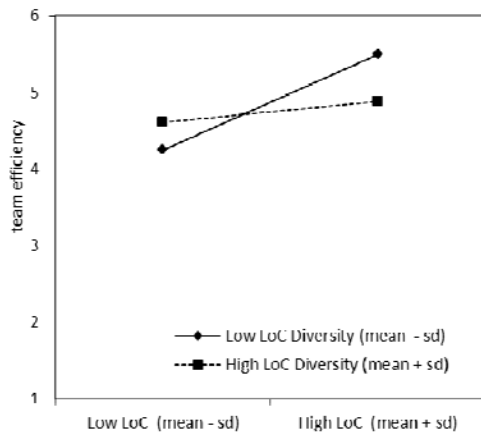
^b Test-statistic based on 2000 Bootstrap runs

✓ Hypotheses supported ✗ Hypotheses not supported

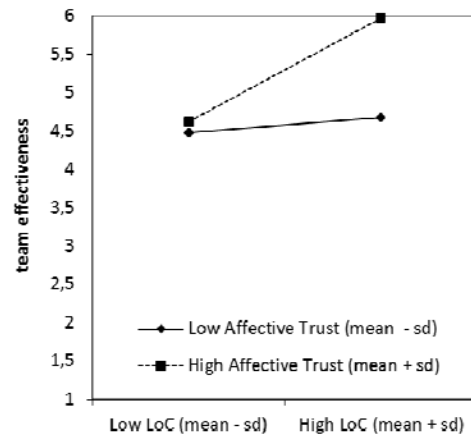
Table 5: Effect size of exogenous constructs and interaction effects

Effect size	Effectiveness			Efficiency		
	R2incl	R2excl	f2	R2incl	R2excl	f2
Locus of control	0.402	0.292	0.184	0.224	0.147	0.099
Affective trust	0.402	0.338	0.107	0.224	0.219	0.006
LOC diversity	0.402	0.390	0.020	0.224	0.210	0.018
Common history	0.402	0.361	0.069	0.224	0.165	0.076
LOC*LOC diversity	0.422	0.402	0.035	0.281	0.224	0.079
LOC*affective trust	0.473	0.402	0.135	0.260	0.224	0.049

Figure 1: Interaction Effects

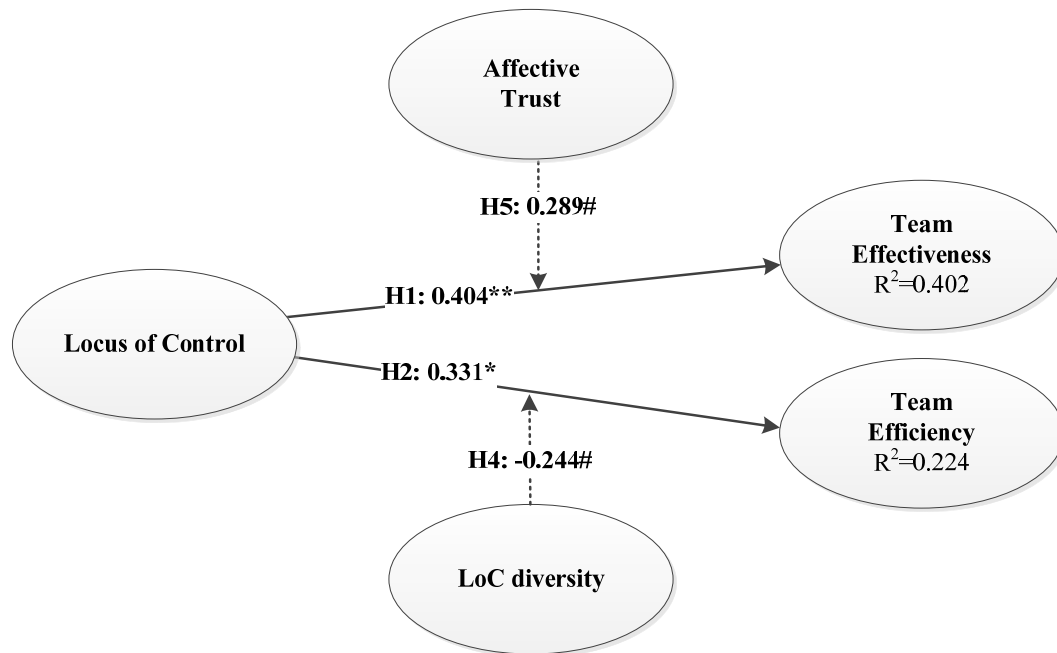


(a)



(b)

Figure 2: PLS-Model indicating supported hypotheses in bold



Significance level: # p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001

—— Main Effects

----- Interaction Effects