

PERSONALITY PROFILES, CULTURAL PRACTICES AND INNOVATION

A STUDY OF 33 COUNTRIES

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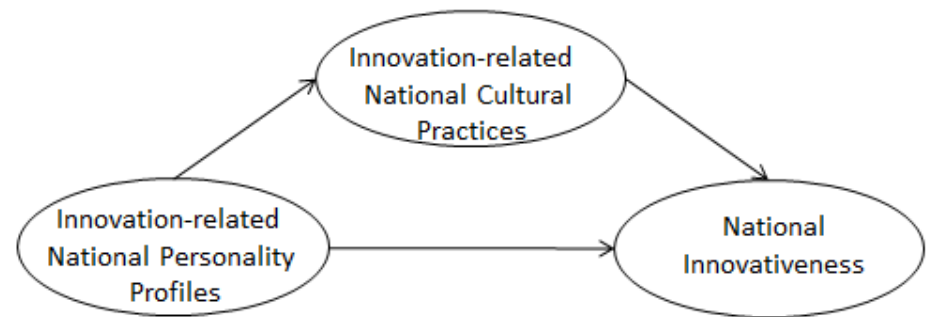
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OBJECTIVE AND RQ

- Relationship between country specific personality profiles, cultural practices and the national level of innovation
- Integration of those factors in **one** model

- Contributions

- Integration of two approaches
- Country specific personality profiles as antecedents of national cultural practices
- Consideration of mediation effects



BACKGROUND

Personality Profiles of Cultures Project

- **Agreeableness**
- **Openness to experience**

- Conscientiousness
- Neuroticism
- Extraversion

- Country specific personality profiles exist
- Countries differ in this profiles

McCrae et al., 2005

GLOBE Cultural Practice Dimensions

- **Uncertainty avoidance**
- **In-group collectivism**
- **Institutional collectivism**
- **Future orientation**
- **Performance orientation**

- Power distance
- Gender egalitarianism
- Assertiveness
- Human orientation

- Country specific cultural practices exist
- Countries differ regarding the “way things are done”

House et al., 2005; Stephan et al., 2010

BACKGROUND

PERSONALITY PROFILES & NATIONAL INNOVATIVENESS

Openness to experience

- Imagination
- Intellectual curiosity
- Challenging traditional values
- Creativity
- Adaption to change
- Greater access to feelings, thoughts, perspectives, ideas

George et al., 2001; Shalley et al., 2004; Miron et al., 2004; Steel et al., 2012



Important for creation & invention

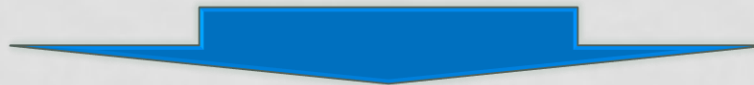
Agreeableness

- Trust
- Safety
- Collaboration in risky situations
- Altruism
- Compliance
- Supports social interaction

McCrae et al., 2005; Huelshager et al., 2009; Steel et al., 2012



Important for implementation



H1. The nationally aggregated personality factors of openness to experience and agreeableness are positively linked to national innovativeness.

BACKGROUND

PERSONALITY PROFILES & NATIONAL CULTURAL PRACTICES

Innovation supportive national personality profiles

High openness to experience & agreeableness

Steel et al., 2012



Characteristic adaptations

McCrae et al. 2001



Reverse causation hypothesis

Hofstede et al. 2004



Innovation supportive configuration of cultural practices

Low in-group collectivism

High institutional collectivism, future orientation, performance orientation, uncertainty avoidance

Gelfand et al., 2004; Shane, 1993; Taylor et al., 2012; Trompenaars et al., 2010; Javidan, 2004; Schwartz et al. 1987; Venaik et al., 2008



H2. Innovation-related national personality profiles are linked to innovation-related national cultural practices.

BACKGROUND

NATIONAL CULTURAL PRACTICES & NATIONAL INNOVATIVENESS

Influence of national aggregated personality profiles on national cultural practices

&

Influence of national cultural practices on the relationship between national aggregated personality profiles on national cultural practices



Person environment fit theory

Edwards, 1996; Kristof, 1996; Muchinsky et al., 1987, Schneider, 1987



Moderator – Mediator distinction

Baron, 1986



H3. Innovation-related national cultural practices mediate the relationship between national personality profiles and national innovativeness.

EMPIRICAL DATA

OUR SAMPLE

Criteria to be included into our sample

- Data about national culture available from the GLOBE study
- Data about country specific personality profiles available from the Personality Profiles of Cultures Project
- Data about innovation available from the Global Innovation Index

Countries Included in the Analysis

Argentina	Indonesia	Poland
Australia	Ireland	Portugal
Austria	Italy	Russia
Brazil	Japan	Slovenia
Canada	Kuwait	South Korea
China	Malaysia	Spain
Denmark	Mexico	Switzerland
France	Morocco	Thailand
Germany	New Zealand	Turkey
Hong Kong	Nigeria	U.K.
India	Philippines	USA

Benefits of our approach

No common source &
common method bias

No culture
specific bias

No ecological or reversed
ecological fallacy

Resulting sample

n = 33 countries; based on more than 8,000 observations

EMPIRICAL DATA

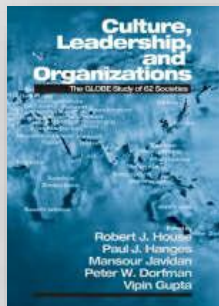
GLOBE STUDY

Most up-to date and elaborate research project on national culture

Data for:

- 62 Countries
- 17.300 Observations (middle management)
- 951 Organizations (no multi nationals)

(House et al., 2004)



Aim:
Overcome the weaknesses of the Hofstede study

EMPIRICAL DATA

Most up-to date and elaborate research project on national personality profiles

Data for:

- 51 Countries
- 12,000 Observations

(McCrae et al., 2005)

Aim:

Measurement and differentiation of country specific personality profiles

EMPIRICAL DATA

GLOBAL INNOVATION INDEX (1)

Most elaborate and comprehensive innovation index

- Integration of innovation relevant data
- +60 variables
 - Every variable is based on multiple indicators
 - Economical indicators (UN, World Bank, UNESCO)
 - Survey data indicators
 - Conceptual and statistical coherence approved by European Joint Commission Research Center

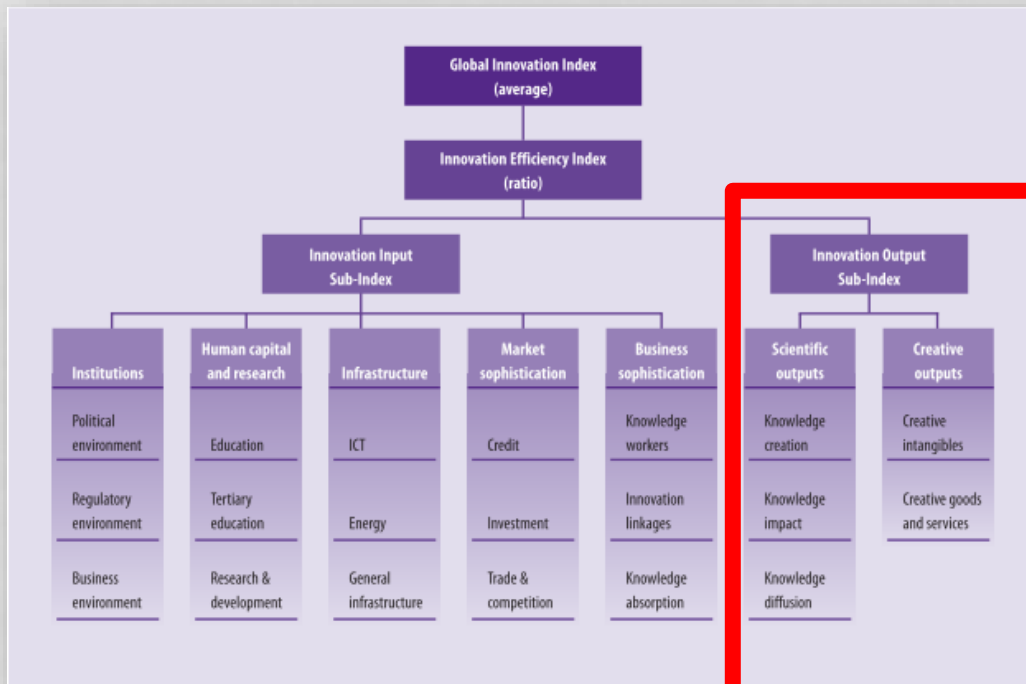
(Insead, 2009-2011)



Aim:
Most elaborate measure of innovation on the national level

EMPIRICAL DATA

GLOBAL INNOVATION INDEX (2)



(Insead, 2009-2011)

Austria			127
<i>Key indicators</i>			
Population (millions)	8.4		
GDP per capita, PPP (current international \$)	38,363.1		
GDP (US\$ billions)	381.1		
Global Innovation Index			50.7
Innovation Input Sub-Index	42.2	23	
Innovation Output Sub-Index	59.3	19	
Innovation Efficiency Index	67	60	
Global Innovation Index 2010	21		
Global Innovation Index 2009	15		
1 Institutions			85.7
1.1 Political environment	94.1	8	
1.1.1 Political stability*	89.2	8	
1.1.2 Government effectiveness*	93.8	13	
1.1.3 Press freedom*	99.5	7	
1.2 Regulatory environment	88.4	11	
1.2.1 Regulatory quality*	92.9	15	
1.2.2 Rule of law*	96.2	9	
1.2.3 Rigidity of employment*	76.0	56	
1.3 Business environment	74.5	82	
1.3.1 Time to start a business, days	74.0	88	
1.3.2 Cost to start a business, % income/cap.	95.9	43	
1.3.3 Total tax rate, % profits	53.4	107	
2 Human capital & research			58.7
2.1 Education	69.9	19	
2.1.1 Education expenditure, % GNI	69.2	30	
2.1.2 Public expenditure/pupil, % GDP/cap	49.0	11	
2.1.3 School life expectancy, years	66.6	32	
2.1.4 PISA scales in reading, maths, & science	64.3	29	
2.1.5 Pupil-teacher ratio, secondary	91.8	32	
2.2 Tertiary education	48.9	14	
2.2.1 Tertiary enrolment, % gross	55.6	36	
2.2.2 Graduates in science, %	43.0	24	
2.2.3 Graduates in engineering, %	57.3	13	
2.2.4 Tertiary inbound mobility, %	77.3	8	
2.2.5 Tertiary outbound mobility, %	26.2	56	
2.3 Research & development (R&D)	57.4	15	
2.3.1 Research & development, % GDP pop	46.9	9	
2.3.2 Gross expenditure on R&D, % GDP	54.5	10	
2.3.3 Quality research institutions*	54.7	19	
3 Infrastructure			44.0
3.1 Info & comm. technologies (ICT)	58.4	9	
3.1.1 ICT access*	76.9	12	
3.1.2 ICT use*	49.4	15	
3.1.3 Government's Online Service*	47.6	33	
3.1.4 E-Participation*	50.0	22	
3.2 Energy	32.6	9	
3.2.1 Electricity output, kWh/cap	40.8	24	
3.2.2 Electricity consumption, kWh/capita	33.4	18	
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.	43.5	25	
3.2.4 Share of renewables in energy use, %	17.2	37	
3.3 General infrastructure	41.0	32	
3.3.1 Quality of trade & transport infrastructure*	67.0	21	
3.3.2 Gross capital formation, % GDP	25.8	65	
3.3.3 Ecological footprint & biocapacity, ha/cap	30.1	89	
4 Market sophistication			56.5
4.1 Credit	85.0	5	
4.1.1 Strength of legal rights for credit*	70.0	37	
4.1.2 Depth of credit information*	100.0	1	
4.1.3 Domestic credit to private sector, % GDP	n/a	n/a	
4.1.4 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	22.2	89	
4.2.1 Strength of investor protection*	40.0	103	
4.2.2 Market capitalization, % GDP	5.4	81	
4.2.3 Total value of stocks traded, % GDP	3.7	54	
4.2.4 Venture capital deals/r GDP PPP\$	57.5	36	
4.3 Trade & competition	62.2	20	
4.3.1 Applied tariff rate weighted mean, %	94.3	12	
4.3.2 Market access trade restrictiveness*, %	n/a	n/a	
4.3.3 Imports of goods & services, % GDP	27.8	45	
4.3.4 Exports of goods & services, % GDP	45.9	33	
4.3.5 Intensity local competition*	80.9	5	
5 Business sophistication			51.6
5.1 Knowledge workers	69.3	21	
5.1.1 Knowledge-intensive employment, %	70.7	26	
5.1.2 Firms offering formal training, % firms	79.2	19	
5.1.3 R&D performed by business, %	83.1	11	
5.1.4 R&D financed by business, %	52.9	33	
5.2 Innovation linkages	46.2	25	
5.2.1 University/industry collaboration*	65.3	17	
5.2.2 State of cluster development*	59.5	18	
5.2.3 R&D financed by abroad, %	52.0	14	
5.2.4 N/strategic alliance deals/r GDP PPP\$	4.0	67	
5.2.5 PCT patent filings with foreign inventor, %	32.2	29	
5.3 Knowledge absorption	39.1	41	
5.3.1 Royalty & license fees payments, % GDP	33.6	28	
5.3.2 High-tech imports less re-exports, %	28.0	40	
5.3.3 FDI net inflows, % GDP	45.8	59	
Scientific outputs			35.4
1 Knowledge creation	40.8	16	
1.1 Domestic resident patent ap/bn GDP PPP\$	43.1	20	
1.2 PCT resident patent ap/bn GDP PPP\$	46.3	12	
1.3 Domestic res utility model ap/bn GDP PPP\$	17.9	16	
1.4 Scientific & technical articles/bn GDP PPP\$	44.3	20	
2 Knowledge impact	26.6	76	
2.1 Growth rate of GDP PPP\$/worker, %	35.0	80	
2.2 New businesses/1,000 pop. 15-64 yrs	45.7	72	
2.3 Computer software spending, % GDP	53.8	12	
3 Knowledge diffusion	39.0	36	
3.1 Royalty & license fees receipts, % GDP	26.4	19	
3.2 High-tech exports less re-exports, %	28.9	23	
3.3 Computer & comm service exports, %	49.3	40	
3.4 FDI net outflows, % GDP	51.3	33	
Creative outputs			49.0
1 Creative intangibles	58.0	16	
1.1 Domestic res trademark ap/bn GDP PPP\$	18.2	57	
1.2 Madrid resident trademark ap/bn GDP PPP\$	100.0	3	
1.3 ICT & business models*	73.2	20	
1.4 ICT & organizational models*	61.6	37	
2 Creative goods & services	40.0	15	
2.1 Recreation & culture consumption, %	87.4	2	
2.2 National feature films/mn pop.	54.7	14	
2.3 Daily newspaper/1,000 literate pop.	56.8	8	
2.4 Creative goods exports, %	38.1	15	
2.5 Creative services exports, %	23.1	73	

METHOD & RESULTS

CORRELATIONS BETWEEN INDICATORS AND LATENT VARIABLES

Indicator variables	1	2	3	4	5	6	7	8	9	10	11
1. Agreeableness	--										
2. Openness to experience	.31	--									
3. Future orientation	.33	.49**	--								
4. In group collectivism	.41*	-.58***	-.56**	--							
5. Institutional collectivism	.11	.16	.31	-.25***	--						
6. Performance orientation	.23	.34	-.65***	-.59***	.47**	--					
7. Uncertainty avoidance	-.40*	.56**	.70***	-.71***	.19	.68***	--				
8. Scientific outputs	.42*	.51**	.51**	-.70***	.54***	.71***	.58***	--			
9. Creative outputs	.28*	.34	-.46**	-.60***	.13	.61***	.62***	.70***	--		
Latent variables											
10. Innovation related national personality profiles	.74***	-.87***	.52**	-.62***	.17	.36*	.61***	.58***	.39*	--	
11. Innovation related national cultural practices	.40*	-.57**	.83***	-.83***	.46*	.86***	.88***	.77***	.64***	.61***	--
12. National innovativeness	.38*	-.47**	.52**	-.71***	.38**	.72***	.65***	.94***	.91***	.53***	.77***

Notes. Pearson correlations. Two-tailed significance. Sample Size is $N = 33$ countries.
Correlations between second order factors based on PLS latent variable scores
* $p < .05$. ** $p < .01$. *** $p < .001$.

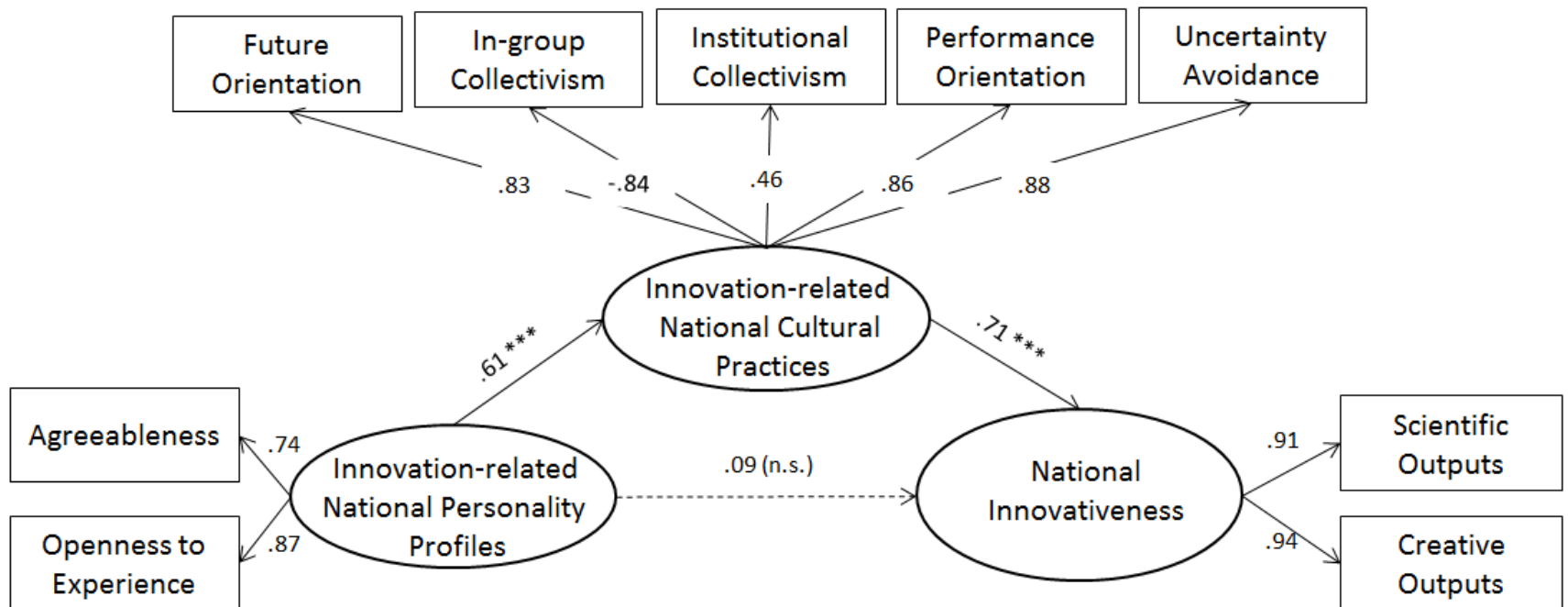
METHOD & RESULTS

MEASUREMENT MODELL

Composite	Components	Factor loadings	t-values	AVE	CR	R ²
Innovation-related national personality profiles	1.Openness to experience	.87	9.84	.65	.79	
	2.Agreeableness	.74	4.54			
Innovation-related national cultural practices	1.In-group collectivism	-.84	15.95	.62	.72	.37
	2.Institutional collectivism	.46	2.66			
	3.Future orientation	.83	8.48			
	4.Performance orientation	.86	17.96			
	5.Uncertainty avoidance	.88	17.79			
National innovativeness	2.Scientific outputs	.94	60.00	.85	.92	.60
	3.Creative outputs	.91	29.30			
Notes. AVE: Average Variance Extracted; CR: Composite Reliability						

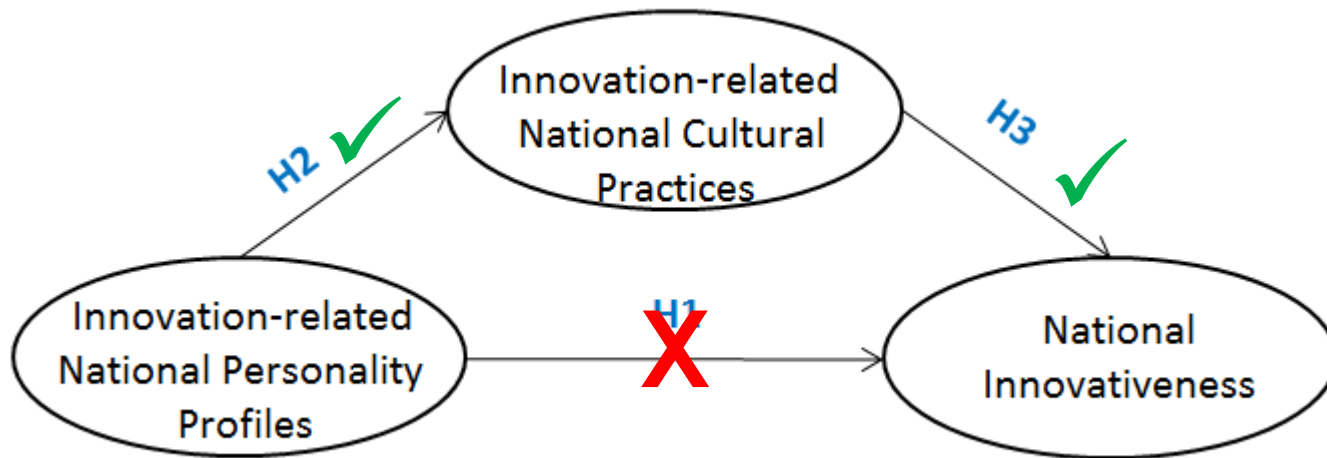
METHOD & RESULTS

STRUCTURAL MODELL



RESULTS

HYPOTHESES



H1. The nationally aggregated personality factors of openness to experience and agreeableness are positively linked to national innovativeness.

✗

H2. *Innovation-related national personality profiles are linked to innovation-related national cultural practices.*

✓

H3. *Innovation-related national cultural practices mediate the relationship between national personality profiles and national innovativeness.*

✓

DISCUSSION & CONCLUSION

FINDINGS

- Relationship between national personality profiles and national cultural practices
 - Countries with innovation supportive personality profiles also tend to have innovation supportive cultural practices
- National cultural practices mediate the relationship between national personality profiles and national innovativeness
 - The proposed direct relationship (Steel et al., 2012) between national traits and national cultural practices vanishes when national cultural practices are included in the model

National cultural practices change from moderator to mediator when changing the level of analysis

DISCUSSION & CONCLUSION

IMPLICATIONS

Intervention on the National level:

- Difficult and long term
- Education and regulations

Interventions on the organizational level:

Personnel selection

Innovation relevant KSAO's
Innovation focused personal selection

Especially for innovative organizations in low innovative countries

- High importance
- Possible competitive advantage

Leadership

(Cultural adopted) leadership

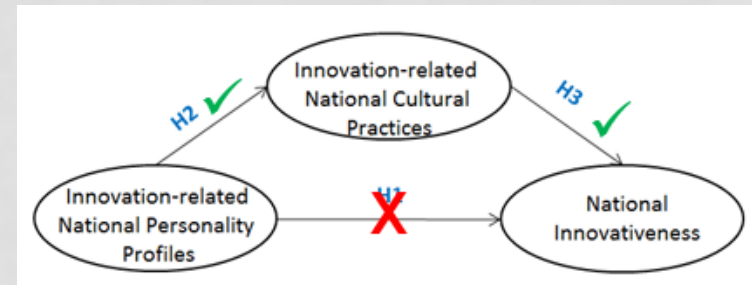
- Autonomy, tolerance, openness

- Possibility to intervene in manifestation of traits
- Possibility to influence organizational culture

DISCUSSION & CONCLUSION

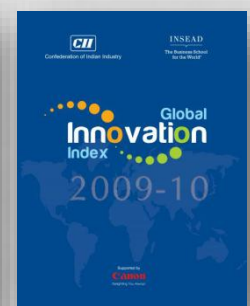
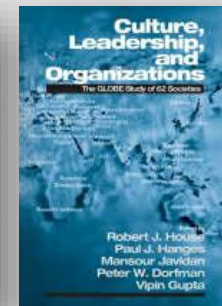
LIMITATIONS

- Model is always a abstraction of reality
- Contingency variables
- Sample Size
- Level of data aggregation



Data Sources

- Globe Study
- Personality profiles of cultures Project
- Global Innovation Index



Thank you