

Jewelry Development Impact Index: Standardization and Analysis

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Agenda

- Introduction and Components of JDI Index
- Goal of the Analysis
- Standardizing Questionnaire
- JDI Index comparison
- Correlation Analysis
- Regression Analysis
- Recommendations



Components Of JDI index and sub-indicators

JDI Index



Governance Impact

- Accountability Mechanism
- Transparency
- Corruption prevention
- Industry regulation
- Criminal organization/ non-state actors.

Economic Impact

- Industry employment
- Fiscal sustainability
- Beneficiation
- Smuggling and the informal economy
- Criminal non-state actors
- Terrorist funding, supply chain.

Environmental Impact

- Environmental regulatory stringency and enforcement
- Existence and extent of pollution
- Risk to biodiversity, post-production planning and remediation.

Health Impact

- Human health
- Food security
- Water security

Human Rights Impact

- Workers' rights
- Indigenous/ ethnic group rights
- Women's rights
- Children's rights
- Freedom from violence.

Goal of the Analysis

- **Check the validity of the JDI Index**
 - Standardize questions
 - Use various analysis techniques, such as correlation analysis and multiple regression analysis
- **Can scores be predicted?**
 - To predict JDI Index scores from the model

Standardizing Questionnaire

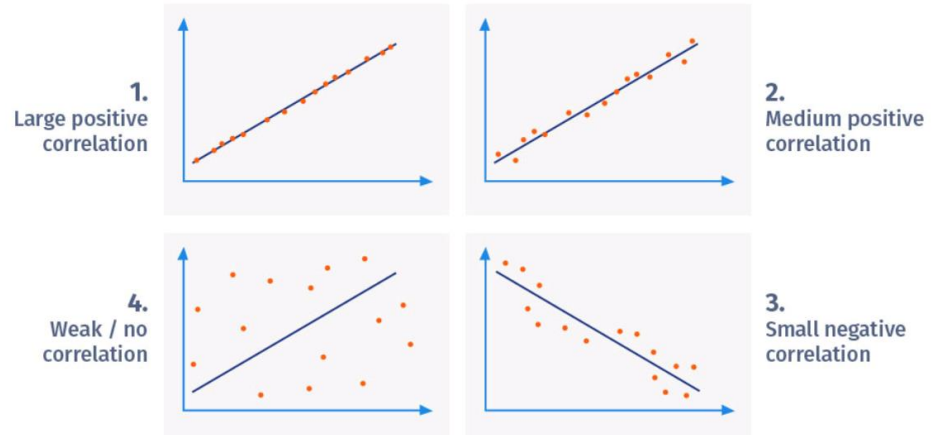
- Examines the gap between ten countries' questionnaires
- Added 7 questions
- Converted scoring scale from 0-5 to 1-7

0	Always or Yes	No Risk
1	Almost Always	Very Low Risk
2	Usually	Low Risk
3	Sometimes	Moderate Risk
4	Almost Never	High Risk
5	Never or No	Very High Risk

0	Not Applicable	Not Applicable
1	Never	Constant Risk
2	Rarely	Very High Risk
3	Occasionally	High Risk
4	Average	Moderate Risk
5	Frequently	Low Risk
6	Very Frequently	Very Low Risk
7	Always	Little to No Risk

Correlation Analysis

- A statistical method used to evaluate the strength of relationship between two quantitative variables.
- correlation coefficient (R) and coefficient of determination (R-squared).
- R takes values ranging between -1 and +1.
- R-squared represented as a value between 0.0 and 1.0,



JDII Indexes comparison

JDII Index Component	Index(es) for Comparison			
Governance	Resources Governance Index (RGI)	World Governance Indicators (WGI)	Human Development Index (HDI)	GDP per capita
Economy	The percentage GDP from mining	GDP per capita		
Environment	Environmental Performance Index (EPI)	Human Development Index (HDI)		
Human Health	Sustainable Development Goals (SDG)	Life Expectancy Index from HDI		
Human Rights	Education Index from HDI	Human Development Index (HDI)		



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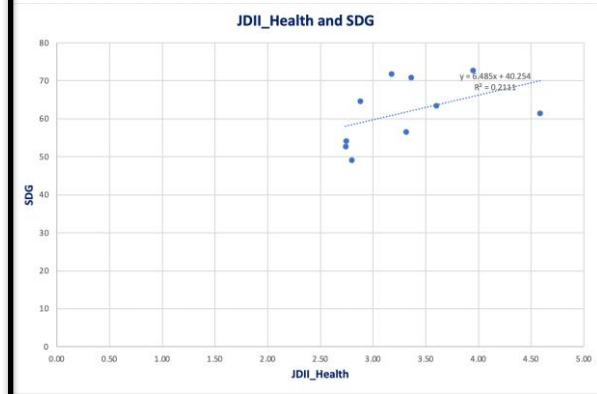
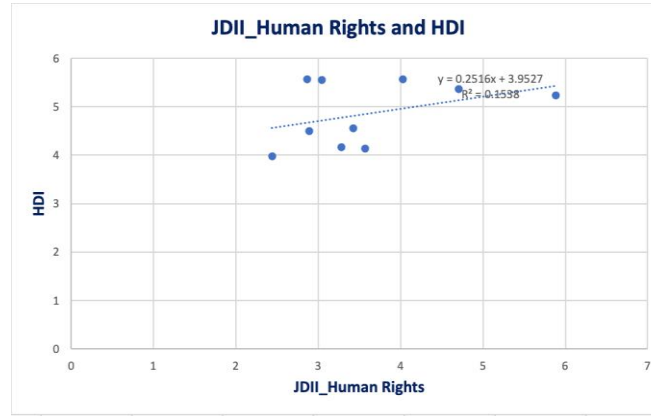
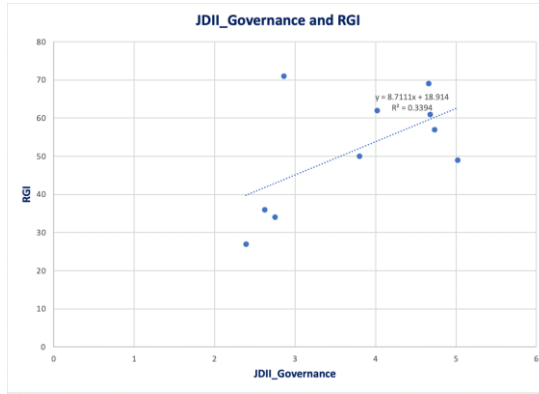
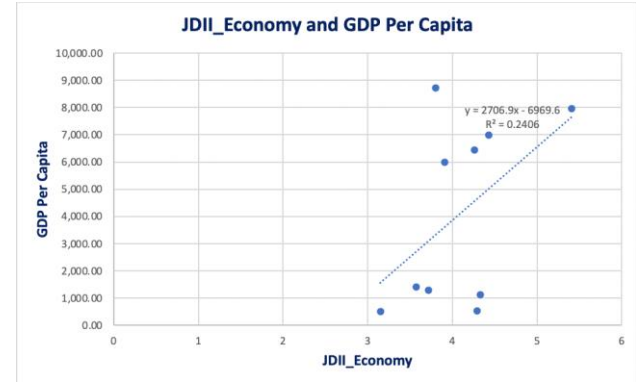
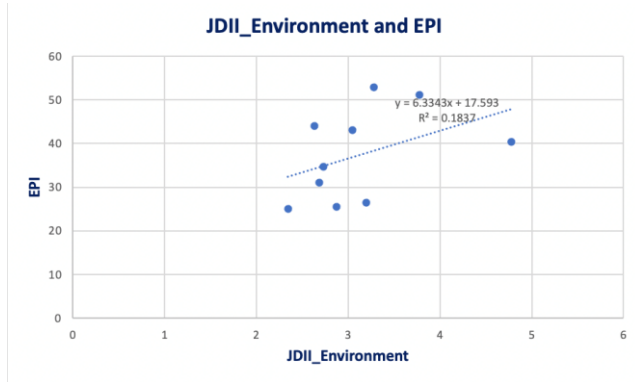
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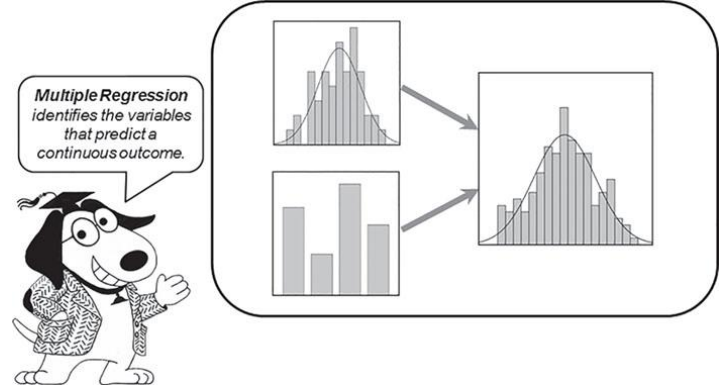
Correlation Analysis Results

- Governance component of JDII versus WGI has a strong correlation ($R \geq 0.7$)
- Governance component of JDII versus RGI and Economy component versus GDP from mining have a moderate correlation ($0.5 \leq R < 0.7$)

JDII Component	Index(es) for comparison	R	R-squared
Governance	RGI	0.582	0.339
	WGI	0.802	0.644
	HDI	0.389	0.152
	GDP Per Capita	0.375	0.141
Economy	% of GDP from Mining	0.552	0.305
	GDP Per Capita	0.491	0.241
Environment	EPI	0.429	0.184
	HDI	0.459	0.211
Human Health	SDG	0.461	0.212
	HDI (Life expectancy index)	0.308	0.124
Human Rights	Education Index	0.052	0.323
	HDI	0.395	0.154

Regression Analysis

- Relationship between dependent and one or more independent variables
- Multiple regression analysis was performed on the five components of Jewelry Development Impact Index with the group of equivalent indices
- Focus on r-squared and significance F



Questions before our Analysis

- Is JDI representing what it says it is?
- How much variability in the response data (JDI components) is explained by the model?
- Can scores be predicted?



Results of Regression Analysis

Component of JDII	Index(es) for Comparison	R-squared	Significance F
Governance (Option 1)	RGI & WGI & HDI & GDP per capita	0.853	0.026
Governance (Option 2)	RGI & WGI	0.648	0.026
Economy	% GDP from mining & GDP per capita	0.538	0.067
Environment	EPI & HDI	0.211	0.437
Human Health	SDG & Life Expectancy Index from HDI	0.213	0.432
Human Rights	HDI & Education Index from HDI	0.514	0.080



Summary

- Governance, Economy and Human Right components of JDI Index are statistically significant
- Environment and Human Health components of JDI Index are statistically insignificant
- JDI Index is an **all-inclusive** index



Recommendations

1. Collect data on more countries to carry out predictive analysis in the future
2. Consider differences in mining based on products (since answers may differ within a country for different products).
3. Explore additional indices for comparison with the Environment and Human Rights component of JDI Index.
4. When doing further analysis, standardize the questionnaire again



THANK YOU!



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Questions?