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# Are CEOs Interested in the Same Benchmarks as CIOs?

An Analysis Based on Data from Capers Jones (2013)



# The Data Set

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- ▶ The data set consists of 60 benchmarks and 10 audiences
- ▶ For each benchmark (e.g. ROI) and each audience type (e.g. CIOs), a level of interest in the benchmark is recorded
- ▶ The interest level scale goes from 1 (no interest) to 10 (extremely interested)
- ▶ There are 10 audiences in the data set: Shareholders, CEOs, CFOs, CIOs, CTOs, Business Managers, Project Managers, Technical Staff, SQA Staff, and Clients

# The Analysis

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## ▶ Key Questions:

- ▶ Which audiences are similar or dissimilar in their interests and to what extent?
- ▶ Which benchmarks are particular audiences interested or not interested in?

## ▶ The Approach

- ▶ Correlation tables to quantify the extent to which different audiences are similar (or different)
- ▶ Grouping of benchmarks into categories such as Delivery, Risk, etc. to zoom in on similarities or differences in interest within each category
- ▶ Understanding patterns of interest and disinterest between audiences (see below)

# Grouping Benchmarks into Categories

## Business Benchmarks

Competitive practices within industry
Attrition by role & size & industry
Compensation by Role
Roles by industry & size
Return on investment (ROI)
Skills inventories by role
Total cost of ownership (TCO)
Customer satisfaction
Employee morale
Industry productivity

## Process Maturity Benchmarks

CMMI assessments
Customer support benchmarks
ISO standards certification
Best Practices - maintenance
Best Practices - test efficiency
Best Practices - defect prevention
Best Practices - pre-test defects
Best Practices - design
CMMI levels within industries
Standards benchmarks
Metrics used

## Risk Benchmarks

Project Risks
Security attacks (number & type)
Technical debt
Litigation - patent infringements
Litigation - intellectual property
Litigation - breach of contract
Litigation - employment contracts

## Quality Benchmarks

Data quality
Cost of Quality (COQ)/technical debt
Code quality (only code - nothing else)
Cost per defect (caution: unreliable)
Test coverage benchmarks
Serviceability benchmarks
Certification benchmarks
Cyclomatic complexity benchmarks

## Delivery Benchmarks

Project failure rates (size, methods)
Development Schedules
Outsource contract success/failure
Best Practices - requirements
Development costs
Team attrition rates
Productivity - project
Coding speed
Application sizes by type
Team morale
Earned value (EVA)
Methodology comparisons
Productivity - activity
Application types
Tool suites used
Country productivity
Data base size
Programming Languages
Application class by taxonomy
SNAP non functional size metrics

## Cost Benchmarks

Enhancement costs
Maintenance costs (annual)
Portfolio maintenance costs
Team compensation level

## Similarity and Dissimilarity Across All Benchmarks

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	1.	0.9	0.9	0.7	0.5	0.62	0.27	0.038	0.048	0.38
CEO	0.9	1.	0.91	0.68	0.43	0.62	0.21	0.014	0.065	0.34
CFO	0.9	0.91	1.	0.8	0.51	0.69	0.3	0.12	0.17	0.49
CIO	0.7	0.68	0.8	1.	0.66	0.58	0.34	0.37	0.36	0.51
CTO	0.5	0.43	0.51	0.66	1.	0.45	0.38	0.24	0.31	0.42
BizMan	0.62	0.62	0.69	0.58	0.45	1.	0.28	0.01	0.16	0.48
ProjMan	0.27	0.21	0.3	0.34	0.38	0.28	1.	0.67	0.49	0.23
TechStaff	0.038	0.014	0.12	0.37	0.24	0.01	0.67	1.	0.55	0.21
SQA	0.048	0.065	0.17	0.36	0.31	0.16	0.49	0.55	1.	0.53
Client	0.38	0.34	0.49	0.51	0.42	0.48	0.23	0.21	0.53	1.

- The table on the left shows the correlation in interest scores for each audience pair.
- The oranges and dark yellows indicate high levels of similarity in interest. For example, CFOs and Shareholders (row 3, column 1) are highly similar in the benchmarks they are and are not interested in (correlation = 0.9).
- In contrast, Business Managers and Tech Staff are highly dissimilar in their interests.

## Similarity and Dissimilarity Across Business Benchmarks

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	1.	0.48	0.78	0.67	0.67	0.78	0.34	0.3	0.61	0.85
CEO	0.48	1.	-0.12	-0.22	-0.22	0.12	-0.25	-0.44	-0.12	0.011
CFO	0.78	-0.12	1.	0.9	0.9	0.88	0.55	0.65	0.77	0.98
CIO	0.67	-0.22	0.9	1.	1.	0.9	0.65	0.79	0.76	0.93
CTO	0.67	-0.22	0.9	1.	1.	0.9	0.65	0.79	0.76	0.93
BizMan	0.78	0.12	0.88	0.9	0.9	1.	0.55	0.65	0.7	0.93
ProjMan	0.34	-0.25	0.55	0.65	0.65	0.55	1.	0.93	0.55	0.55
TechStaff	0.3	-0.44	0.65	0.79	0.79	0.65	0.93	1.	0.67	0.64
SQA	0.61	-0.12	0.77	0.76	0.76	0.7	0.55	0.67	1.	0.79
Client	0.85	0.011	0.98	0.93	0.93	0.93	0.55	0.64	0.79	1.

- The table on the left shows the correlation in interest scores for the business benchmarks for each audience pair.
- The oranges and dark yellows indicate high levels of similarity in interest or disinterest. In contrast, the blue shades indicate *dissimilarity* – *CEOs are quite different from all other stakeholders as seen in row 2* (the same information is also in column 2)..
- CFOs, CIOs, and CTOs are quite similar in their interests (or lack thereof) in the business benchmarks.

## Similarity and Dissimilarity Across Delivery Benchmarks

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	1.	0.8	0.79	0.68	0.49	0.64	0.17	-0.029	0.24	0.7
CEO	0.8	1.	0.86	0.78	0.33	0.62	0.082	0.044	0.33	0.64
CFO	0.79	0.86	1.	0.83	0.47	0.78	0.3	0.16	0.57	0.86
CIO	0.68	0.78	0.83	1.	0.7	0.59	0.45	0.44	0.58	0.61
CTO	0.49	0.33	0.47	0.7	1.	0.27	0.48	0.29	0.31	0.48
BizMan	0.64	0.62	0.78	0.59	0.27	1.	0.077	-0.11	0.26	0.78
ProjMan	0.17	0.082	0.3	0.45	0.48	0.077	1.	0.79	0.73	0.24
TechStaff	-0.029	0.044	0.16	0.44	0.29	-0.11	0.79	1.	0.77	-0.005
SQA	0.24	0.33	0.57	0.58	0.31	0.26	0.73	0.77	1.	0.41
Client	0.7	0.64	0.86	0.61	0.48	0.78	0.24	-0.005	0.41	1.

- The table on the left shows the correlation in interest scores for the delivery benchmarks for each audience pair.
- Looking for rectangular patches of orange and dark yellow, we see that CEOs, CFOs, and CIOs are quite aligned in their interests; so are Project Managers, Tech Staff, and SQA staff.

## Similarity and Dissimilarity Across Risk Benchmarks

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	1.	0.99	0.99	0.97	0.97	-0.075	-0.0063	0.37	-0.14	0.24
CEO	0.99	1.	0.97	0.99	0.99	-0.13	0.011	0.36	-0.067	0.3
CFO	0.99	0.97	1.	0.93	0.93	0.	-0.028	0.37	-0.23	0.17
CIO	0.97	0.99	0.93	1.	1.	-0.21	0.035	0.35	0.036	0.37
CTO	0.97	0.99	0.93	1.	1.	-0.21	0.035	0.35	0.036	0.37
BizMan	-0.075	-0.13	0.	-0.21	-0.21	1.	0.48	0.53	-0.26	-0.46
ProjMan	-0.0063	0.011	-0.028	0.035	0.035	0.48	1.	0.83	0.67	0.36
TechStaff	0.37	0.36	0.37	0.35	0.35	0.53	0.83	1.	0.42	0.42
SQA	-0.14	-0.067	-0.23	0.036	0.036	-0.26	0.67	0.42	1.	0.68
Client	0.24	0.3	0.17	0.37	0.37	-0.46	0.36	0.42	0.68	1.

- The table on the left shows the correlation in interest scores for the Risk benchmarks for each audience pair.
- It is very clear from the swath of red on the top left of the correlation table that Shareholders, CEOs, CFOs, CIOs, and CTOs are united in their interest (or lack thereof) in the Risk benchmarks.
- Tech Staff and Clients share some similarity with all other stakeholders.



## Similarity and Dissimilarity Across Process Maturity Benchmarks

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	1.	0.89	0.96	0.75	0.54	0.48	0.68	0.56	0.4	0.61
CEO	0.89	1.	0.95	0.6	0.37	0.37	0.44	0.51	0.33	0.62
CFO	0.96	0.95	1.	0.71	0.43	0.36	0.58	0.59	0.29	0.72
CIO	0.75	0.6	0.71	1.	0.75	0.6	0.52	0.69	0.46	0.62
CTO	0.54	0.37	0.43	0.75	1.	0.42	0.48	0.69	0.81	0.33
BizMan	0.48	0.37	0.36	0.6	0.42	1.	0.31	0.36	0.34	0.37
ProjMan	0.68	0.44	0.58	0.52	0.48	0.31	1.	0.51	0.5	0.31
TechStaff	0.56	0.51	0.59	0.69	0.69	0.36	0.51	1.	0.67	0.76
SQA	0.4	0.33	0.29	0.46	0.81	0.34	0.5	0.67	1.	0.1
Client	0.61	0.62	0.72	0.62	0.33	0.37	0.31	0.76	0.1	1.

- The table on the left shows the correlation in interest scores for the Process Maturity benchmarks for each audience pair.
- It is very clear from the swath of red on the top left of the correlation table that Shareholders, CEOs, CFOs, and to a large extent, CIOs, are united in their interest (or lack thereof) in the Process Maturity benchmarks.

## Similarity and Dissimilarity Across Quality Benchmarks

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	1.	0.99	0.96	0.72	0.72	0.78	0.65	-0.29	0.52	0.52
CEO	0.99	1.	0.95	0.67	0.65	0.75	0.62	-0.32	0.4	0.57
CFO	0.96	0.95	1.	0.85	0.81	0.76	0.52	-0.079	0.45	0.7
CIO	0.72	0.67	0.85	1.	0.93	0.58	0.38	0.37	0.51	0.74
CTO	0.72	0.65	0.81	0.93	1.	0.58	0.41	0.19	0.51	0.69
BizMan	0.78	0.75	0.76	0.58	0.58	1.	0.73	-0.01	0.21	0.39
ProjMan	0.65	0.62	0.52	0.38	0.41	0.73	1.	-0.091	0.23	0.18
TechStaff	-0.29	-0.32	-0.079	0.37	0.19	-0.01	-0.091	1.	-0.095	0.28
SQA	0.52	0.4	0.45	0.51	0.51	0.21	0.23	-0.095	1.	-0.092
Client	0.52	0.57	0.7	0.74	0.69	0.39	0.18	0.28	-0.092	1.

- The table on the left shows the correlation in interest scores for the Quality benchmarks for each audience pair.
- It is very clear from the swath of red on the top left of the correlation table that Shareholders, CEOs, CFOs, and to some extent, CIOs, and CTOs are united in their interest (or lack thereof) in the Quality benchmarks.
- Tech Staff are quite different from all other stakeholders in their interest levels to Quality benchmarks.

## Similarity and Dissimilarity Across Cost Benchmarks

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	1.	0.9	-0.3	-0.3	0.13	-0.13	0.35	0.52	-0.48	-0.83
CEO	0.9	1.	0.	0.	0.	0.	0.69	0.58	-0.8	-0.98
CFO	-0.3	0.	1.	1.	0.45	0.89	0.23	-0.58	-0.53	-0.2
CIO	-0.3	0.	1.	1.	0.45	0.89	0.23	-0.58	-0.53	-0.2
CTO	0.13	0.	0.45	0.45	1.	0.8	-0.51	-0.77	$2.8 \times 10^{-17}$	-0.088
BizMan	-0.13	0.	0.89	0.89	0.8	1.	-0.1	-0.77	-0.36	-0.18
ProjMan	0.35	0.69	0.23	0.23	-0.51	-0.1	1.	0.66	-0.86	-0.72
TechStaff	0.52	0.58	-0.58	-0.58	-0.77	-0.77	0.66	1.	-0.31	-0.45
SQA	-0.48	-0.8	-0.53	-0.53	$-2.8 \times 10^{-17}$	-0.36	-0.86	-0.31	1.	0.89
Client	-0.83	-0.98	-0.2	-0.2	-0.088	-0.18	-0.72	-0.45	0.89	1.

- The table on the left shows the correlation in interest scores for the Cost benchmarks for each audience pair.
- There are a number of patches of similarity (Shareholders & CEOs; CFOs & CIOs; SQA & Client) and dissimilarity (dark and light blue patches).
- Notice in particular that Shareholders and CEOs are quite different from CFOs, CIOs, CTOs, and Business Managers.

# Comparing CEOs with CIOs

Interesting: Score is 8 or higher  
 Somewhat Interesting: Score is between 5 and 7  
 Not Interesting: Score is 4 or lower

		CIOs		
		Not Interesting	Somewhat Interesting	Interesting
CEOs	Interesting	X	<b>Delivery:</b> Industry productivity	<b>Business:</b> Competitive practices within industry, Roles by industry & size, Attrition by role & industry & size, Compensation by role, ROI, Skill inventories by role, TCO, Customer satisfaction, Employee morale. <b>Delivery:</b> Project failure rates, Development schedules, Outsource contract success/failure, Project productivity, Application sizes by type, team morale, Country productivity, Team compensation level, database size. <b>Risk:</b> Project risks, Security attacks, Technical debt, Litigation – breach of contract. <b>Process Maturity:</b> CMMI assessments, customer support benchmarks, ISO standards certification, Maintenance best practices, Test efficiency best practices. <b>Quality:</b> Data quality, Cost of quality/technical debt. <b>Cost:</b> Development costs, Enhancement costs, Maintenance costs.
	Somewhat Interesting	X	<b>Delivery:</b> Earned value (EVA) <b>Delivery:</b> Application types <b>Process Maturity:</b> CMMI levels within industries, Standards benchmarks	<b>Delivery:</b> Best practices – requirements, Team attrition rates, Coding speed, Delivery methodology comparisons <b>Process Maturity:</b> Best practices – design, <b>Quality:</b> Best practices – defect prevention, Code quality, Cost per defect, Test coverage benchmarks <b>Risk:</b> Employment contracts
	Not Interesting	X	X	<b>Delivery:</b> Productivity – activity based <b>Quality:</b> Serviceability benchmarks

# Comparing CEOs with CIOs: Summary

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- ▶ CIOs are sometimes said to *not* think like CEOs – indeed, this is cited as a reason for why IT has not fulfilled its potential to deliver business value in many organizations. How do the interests of CIOs and CEOs align across our benchmarks?
- ▶ Quite nicely! There are lots of benchmarks deep into the IT space that both CEOs and CIOs find interesting. They are also nicely aligned on what they both find somewhat interesting. These metrics like EVA are quite specific to project and delivery management – they're reliable early warning indicators and both CIOs and CEOs should have them on their dashboards.
- ▶ CIOs can readily get CEOs metrics on application delivery productivity by industry. When stated in terms of function points, this information is available in many of the books written by Capers Jones.

# Comparing CFOs with CIOs

Interesting: Score is 8 or higher  
 Somewhat Interesting: Score is between 5 and 7  
 Not Interesting: Score is 4 or lower

		CIOs		
		Not Interesting	Somewhat Interesting	Interesting
CFOs	Interesting	X	X	<p><b>Business:</b> Competitive practices within industry, Attrition by role &amp; size &amp; industry, Compensation by Role, Roles by industry &amp; size, Return on investment (ROI), Skills inventories by role, Total cost of ownership (TCO), Customer satisfaction, Employee morale</p> <p><b>Delivery:</b> Project failure rates (size, methods), Development Schedules, Outsource contract success/failure, Best Practices – requirements, Team attrition rates, Productivity – project, Coding speed, Application sizes by type, Team morale, Team compensation level, Database size</p> <p><b>Risk:</b> Project Risks, Security attacks (number &amp; type), Technical debt, Litigation - patent infringements, Litigation - intellectual property, Litigation - breach of contract, Litigation - employment contracts</p> <p><b>Process Maturity:</b> CMMI assessments, Customer support benchmarks, ISO standards certification, Best Practices - maintenance</p> <p><b>Quality:</b> Data quality, Cost of Quality (COQ)/technical debt</p> <p><b>Cost:</b> Development costs, Enhancement costs, Maintenance costs (annual), Portfolio maintenance costs</p>
	Somewhat Interesting	X	<p><b>Business:</b> Industry productivity</p> <p><b>Delivery:</b> Earned value (EVA), Application types, Application class by taxonomy</p> <p><b>Process Maturity:</b> CMMI levels within industries, Standards benchmarks</p>	<p><b>Delivery:</b> Delivery methodology comparisons, Productivity - activity based, Country productivity</p> <p><b>Process Maturity:</b> Best Practices - test efficiency, Best Practices - defect prevention, Best Practices - pre-test defects, Best Practices – design</p> <p><b>Quality:</b> Code quality (only code - nothing else), Cost per defect (caution: unreliable), Test coverage benchmarks, Serviceability benchmarks</p>
	Not Interesting	X	X	X

# Comparing CFOs with CIOs

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- ▶ Not surprisingly, CIOs and CFOs are even more aligned than CEOs and CIOs. They share a number of interests; and as the prevalence of “X”s show, their interests don’t diverge for the most part.
- ▶ There are three main questions that prompt further action:
  - 1) Do some benchmarks that are somewhat interesting merit promotion to “Interesting” or demotion to “Not Interesting” status?
  - 2) Do some benchmarks that are interesting merit demotion to “Somewhat Interesting” or “Not Interesting”?
  - 3) Do some benchmarks that are not interesting merit promotion to “Somewhat Interesting” or “Interesting”?

The answers to these questions will depend on the operational characteristics of your business, your current dashboard, and the way in which you prefer to manage your domain. Use the benchmarks here as a trigger to detect gaps and make improvements.

	Sholders	CEO	CFO	CIO	CTO	BizMan	ProjMan	TechStaff	SQA	Client
Sholders	0.	9.7	11.	20.	26.	20.	22.	26.	25.	22.
CEO	9.7	0.	8.1	17.	23.	17.	21.	26.	24.	22.
CFO	11.	8.1	0.	13.	20.	14.	19.	24.	22.	18.
CIO	20.	17.	13.	0.	10.	11.	16.	20.	20.	17.
CTO	26.	23.	20.	10.	0.	13.	18.	23.	23.	20.
BizMan	20.	17.	14.	11.	13.	0.	16.	23.	21.	17.
ProjMan	22.	21.	19.	16.	18.	16.	0.	13.	16.	20.
TechStaff	26.	26.	24.	20.	23.	23.	13.	0.	16.	22.
SQA	25.	24.	22.	20.	23.	21.	16.	16.	0.	17.
Client	22.	22.	18.	17.	20.	17.	20.	22.	17.	0.

## How similar are stakeholders to each other?

- The table on the left shows how “far apart” any two stakeholders are. The lower the number, the closer they are to each other in their interest in benchmarks.
- Shareholders, CEOs, and CFOs (the green path on the top left) are quite similar.
- CIOs are more similar to CTOs and Business Managers.
- The red patch on the top right shows that Project Managers, Tech Staff, SQAs and Clients are not similar to any of the other stakeholders.
- In particular, it’s surprising to see how much distance there is between Clients and the business.