HEALTH CARE INNOVATION MANAGEMENT INDEX

Report on the responses of the participants in the innovation management sessions held at IHI's 27th Annual National Forum in 2015

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Executive summary

The Institute for Healthcare Improvement (IHI) and Organizing for Innovation developed the Health Care Innovation Management Index to help healthcare organizations assess their current innovative capabilities and infrastructure and identify priority areas for future development of their innovation management systems.

Innovation management refers to the system that governs and manages all types of innovation activity within an organization. The purpose of innovation management is to ensure productivity, effectiveness, and efficiency of the innovation processes. Quality and process improvement, clinical and translational research, drug or device development, information technology, mHealth and other technology innovation projects are all part of a health care organization's innovation portfolio.

Our hope is that this index provokes useful ideas for improving the innovation function in your organization. The goal is to help organizations like yours to become more efficient and effective at creating the future of health care.

The index is divided in the following sections:

- **Strategic intent** and **performance**: understand your organization's strategic intent and the perceived impact of your innovation efforts on healthcare related outcomes.
- **Process capabilities**: assess your ability to address the strategic challenges, generate new ideas, develop the best solutions, and get the most value from your innovation processes.
- **Organizational capabilities**: assess your organization's capability to execute innovation projects.
- **Infrastructure**: understand the support structures in place to manage innovation in your organization.

In this report, you will find the aggregated data from 121 respondents who participated in the innovation management sessions held at IHI's 27th Annual National Forum on Quality Improvement in Health Care. As a reminder, you can find the survey at: https://organizing4innovation.formstack.com/forms/himi. If you have taken the survey, your organization's scores will be sent in a separate document.

Not surprisingly, strategy is highly correlated with performance, and those with clear innovative strategies score higher on all process and organizational capabilities aspects, as well as on infrastructure.

So, how can organizations improve their innovation capabilities?

First, provide structure to innovation activities. Innovation requires deliberate effort, dedicated resources, and a tolerance for trial and error. These are not are easy to do in health care settings – there is often no time, no resources, and, of course, legitimate concerns about the

potential outcomes of failed experiments. We know, though, that it is possible to manage these challenges, to positive effect.

Second, use the index to find the process and organizational capabilities and infrastructure items where you score lowest. Those are the areas where improving your capabilities will pay off most.

Third, process capabilities are like a value chain, with the weakest link determining your overall productivity. You should therefore aim to be equally proficient in idea generation, development and implementation to ensure a consistent transition from ideas to practice.

Fourth, look for inspiration by looking at the key differentiators between those with and without a clear innovation strategy and top and bottom performers in our sample. At the end of each section we provided an overview of the top key differentiators in each area.

The remainder of the report shows details of each process capability, organizational capability and infrastructure items and the aggregate scores for innovation strategy and performance.

If you have questions on any of the findings, or about the scores for your own organization, please feel free to reach out.

Kind regards,

Floortje Blindenbach-Driessen, PhD

Kedar Mate, MD

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The Sample

The report shows the aggregated data of 121 responses from participants of the 27th IHI annual forum session on Innovation Management in Healthcare.

All analyses show results for the group as a whole. Although the group is widely diverse, and contains a significant amount of hospitals (83 in total), the differences between groups are insignificant. We therefore chose to only report the overall results in this report, which are relevant for all.

The survey asked which four types of strategies described each respondent's organization best. Out of the total, 12 self-identified their organizations as having no clear innovation strategy, 20 as having a cost-focused strategy, 25 a moderate innovation strategy and 61 as having a clear innovation strategy. Our sample is thus biased towards more innovative healthcare organizations.

Innovation performance is another self-reported measure, evaluating four different aspects of innovation's impact on organizational performance. We grouped these answers and ranked the composite scores in quartiles, placing 27 organizations in the bottom and 31 organizations in the top quartile.

In line with the index, the report first discusses the findings for innovation strategy and performance, followed by the results for process capabilities, organizational capabilities and infrastructure.

In the innovation strategy and performance section, you will find the data aggregated for the composite scores of each of the capabilities, whereas in the separate sections, data are presented at the item level.

Innovation strategy and performance

Innovation strategy

Innovation strategy is based on each respondent's response to the following question regarding innovation in their organization:

Strategy:	
No clear innovation strategy	Has no clear innovation strategy, reacts to changes in the environment, drifts with events
Innovation strategy	Is innovative and growth oriented, searches for new markets and new growth opportunities, encourages risk taking
Cost-focus strategy	Protects current services, maintains stable growth, serves current patient groups through cost reductions
Moderate innovation strategy	Maintains current market share and current patient satisfaction with moderate emphasis on innovation

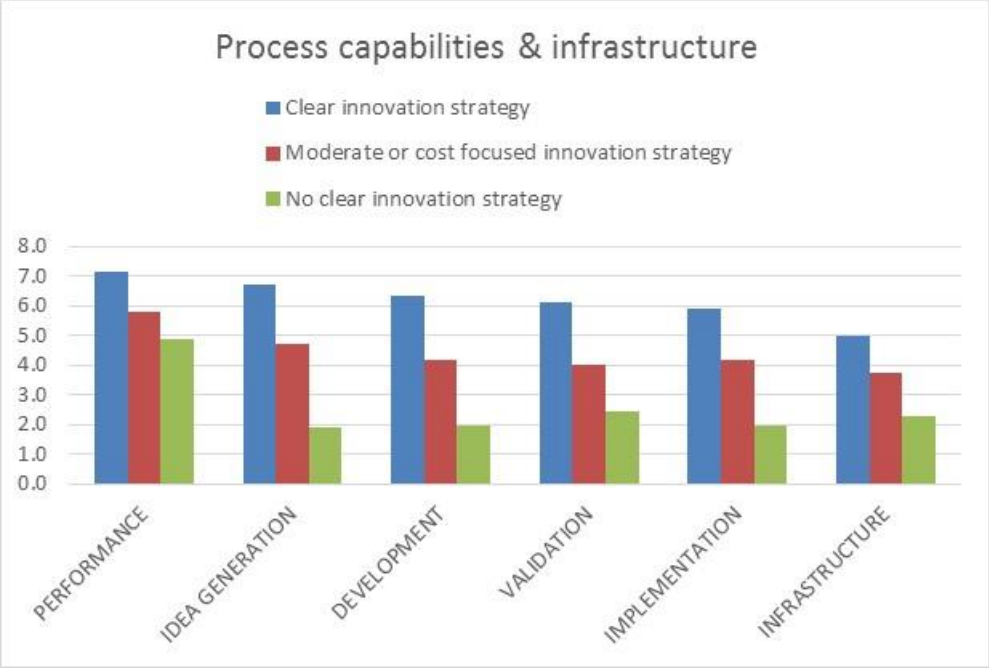
The results for the cost-focus strategy and moderate innovation strategy were nearly identical, we therefore grouped these together to simplify the reporting. Below is a table that shows the results for the composite scores of each of the capabilities for the three strategy groups.

		PROCESS CAPABILITIES			INFRASTRUCTURE
	Per-formance	**Idea generation**	**Development**	**Validation**	**Implementation**	**Infrastructure**
Clear innovation strategy	7.2	6.7	6.3	6.1	5.9	5.0
Moderate or cost focused innovation strategy	5.8	4.7	4.2	4.0	4.2	3.7
No clear innovation strategy	4.9	1.9	2.0	2.4	2.0	2.3

	ORGANIZATIONAL CAPABILTIES					
	Per-formance	**People**	**Learning organization**	**Risk manage-ment**	**Portfolio management**	**Measurement of innovation**
Clear innovation strategy	7.2	6.5	8.2	6.3	5.7	5.5
Moderate or cost focused innovation strategy	5.8	5.0	6.2	4.3	3.4	3.8
No clear innovation strategy	4.9	2.4	3.5	2.3	2.2	0.9

Unsurprisingly, the graphs below show that organizations with a clear innovation strategy score higher compared to those without a clear strategy on the composite scores for performance, process and organizational capabilities. The results for each of the specific capabilities are reported in the respective section.

The graphs also illustrate that idea generation for the process capabilities, and learning organization and measurement of innovation for the organizational capabilities are the biggest differentiators between organizations with a clear innovation strategy and those without.



Perceived innovation performance

Perceived innovation performance is a composite measure based on the following 4 questions:

In thinking about your organization's innovation performance, to what extent do you agree with the following statements?	Strongly disagree (=1)	Disagree (=3)	Neither agree or disagree (=5)	Agree (=7)	Strongly agree (=9)	Not applicable
1. The innovation efforts provide our organization with a significant reputational advantage.	☐	☐	☐	☐	☐	☐
2. The innovation efforts fulfil the needs of our patients	☐	☐	☐	☐	☐	☐
3. Our organization gains significantly more profits as a result of our innovation activities	☐	☐	☐	☐	☐	☐
4. The innovation efforts have led to better health outcomes for our patients and families.	☐	☐	☐	☐	☐	☐

Note: the composite score contains all performance items (Chronbach's α = .85)

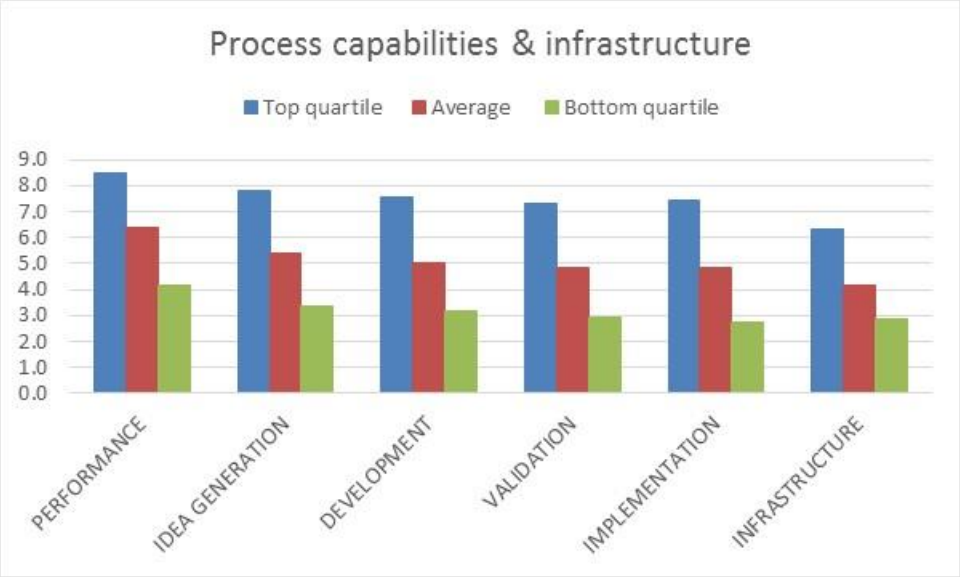
		PROCESS CAPABILITIES				INFRASTRUCTURE
	Per-formance	**Idea generation**	**Development**	**Validation**	**Implementation**	**Infrastructure**
Top quartile performance	8.5	7.8	7.5	7.3	7.5	6.3
Average performance	6.4	5.4	5.0	4.9	4.8	4.2
Bottom quartile performance	4.1	3.4	3.2	2.9	2.7	2.9

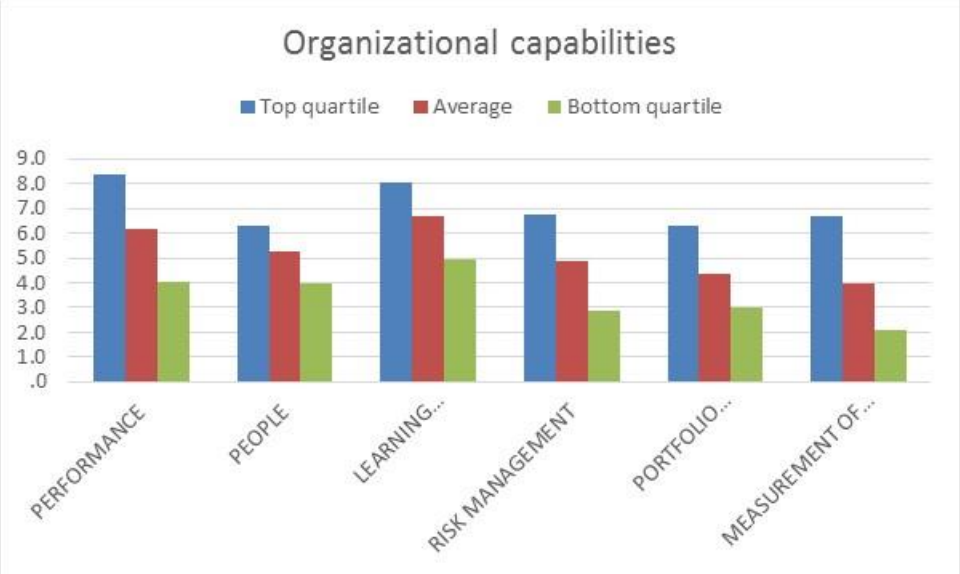
	ORGANIZATIONAL CAPABILTIES					
	Per-formance	**People**	**Learning organization**	**Risk manage-ment**	**Portfolio management**	**Measurement of innovation**
Top quartile performance	8.3	6.3	8.0	6.8	6.3	6.7
Average performance	6.2	5.3	6.7	4.9	4.3	4.0
Bottom quartile performance	4.0	3.9	4.9	2.9	3.0	2.1

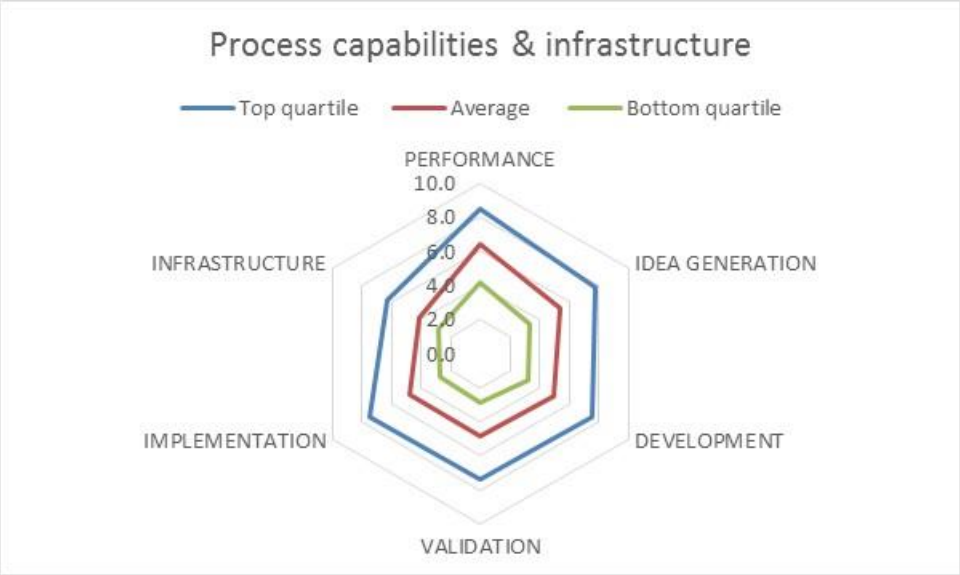
If we compare the top quartile, the average, and the bottom quartile on perceived performance, the top performers score higher in each of the process capabilities, organizational capabilities areas, and on infrastructure, while noting that infrastructure, people and portfolio management have low scores overall.

The biggest differences between top and bottom performers are in the measurement of innovation, implementation and risk management variables.

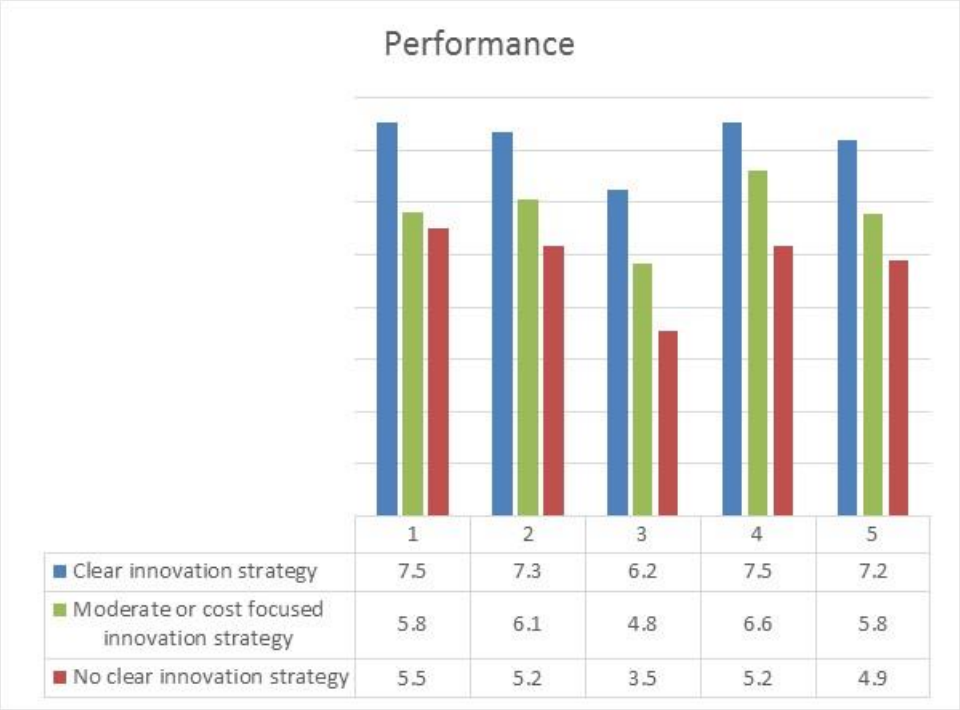
The group, as a whole, scores relatively high on organizational learning, which is not surprising given that the respondents all participated in a quality improvement conference.


Process capabilities & infrastructure
Top quartile
Average
Bottom quartile
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
PERFORMANCE
IDEA GENERATION
DEVELOPMENT
VALIDATION
IMPLEMENTATION
INFRASTRUCTURE


Organizational capabilities
Top quartile
Average
Bottom quartile
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
.0
PERFORMANCE
PEOPLE
LEARNING...
RISK MANAGEMENT
PORTFOLIO...
MEASUREMENT OF...



The table and the graph below show the average score on each of the specific performance items for the groups with different innovation strategies. The last column (5) shows the composite score for performance.



	1	2	3	4	5
Clear innovation strategy	7.5	7.3	6.2	7.5	7.2
Moderate or cost focused innovation strategy	5.8	6.1	4.8	6.6	5.8
No clear innovation strategy	5.5	5.2	3.5	5.2	4.9

5 = composite score for Performance

The remainder of the document discussed each of the process capabilities, organizational capabilities and infrastructure, at the individual item level.

Process Capabilities

Idea generation

Idea generation is the ability to identify opportunities that help the organization achieve its short- and long-term strategic and operational objectives.

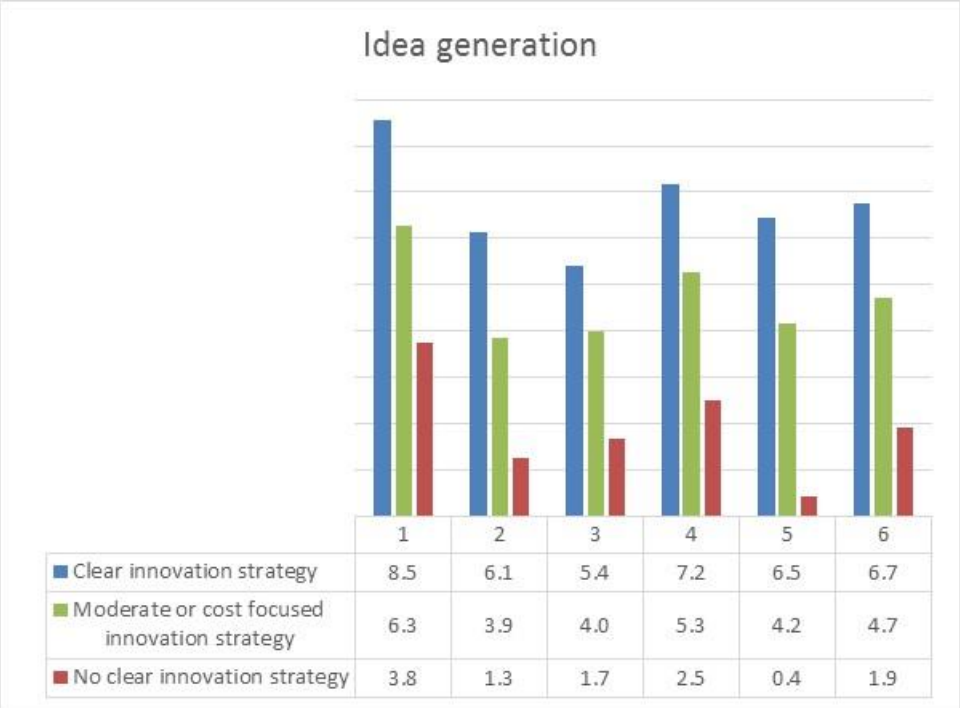
The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)
1. Senior management strongly promotes and actively seeks input from inside and outside the organization for improvement and new procedures, products or processes ideas.	☐	☐	☐
2. There is a clear mechanism in place for regular scanning and harvesting of ideas from existing staff.	☐	☐	☐
3. An idea generation system allows external parties, such as patients and suppliers, to make suggestions.	☐	☐	☐
4. Opportunities are scouted for proactively. Trends and health care regulations, as well as identified	☐	☐	☐

organizational challenges and bottlenecks, are used to scan for future opportunities to serve patients better.			
5. There is a systematic process in place to screen and evaluate promising ideas.	☐	☐	☐

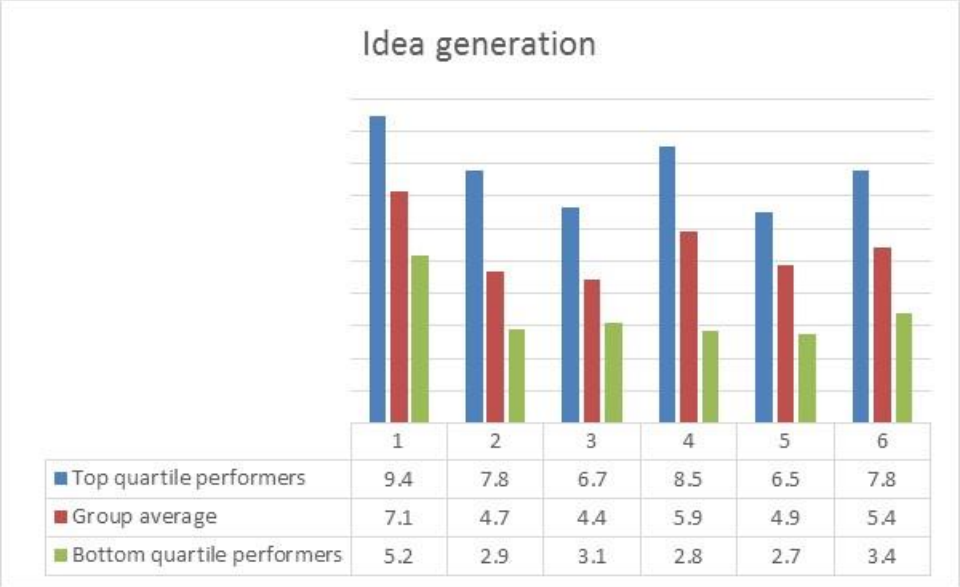
Note: the composite score contains all idea generation items (Chronbach's α = .83)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for idea generation.



	1	2	3	4	5	6
Clear innovation strategy	8.5	6.1	5.4	7.2	6.5	6.7
Moderate or cost focused innovation strategy	6.3	3.9	4.0	5.3	4.2	4.7
No clear innovation strategy	3.8	1.3	1.7	2.5	0.4	1.9

6 = composite score for Idea generation



	1	2	3	4	5	6
Top quartile performers	9.4	7.8	6.7	8.5	6.5	7.8
Group average	7.1	4.7	4.4	5.9	4.9	5.4
Bottom quartile performers	5.2	2.9	3.1	2.8	2.7	3.4

6 = composite score for Idea generation

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- There is a systematic process in place to screen and evaluate promising ideas
- There is a clear mechanism in place for regular scanning and harvesting of ideas from existing staff

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Opportunities are scouted for proactively. Trends and health care regulations, as well as identified organizational challenges and bottlenecks, are used to scan for future opportunities to serve patients better
- There is a clear mechanism in place for regular scanning and harvesting of ideas from existing staff

Development

Development refers to the ability of your innovation team to effectively and efficiently transform ideas into practical applications or processes, through research and experimentation.

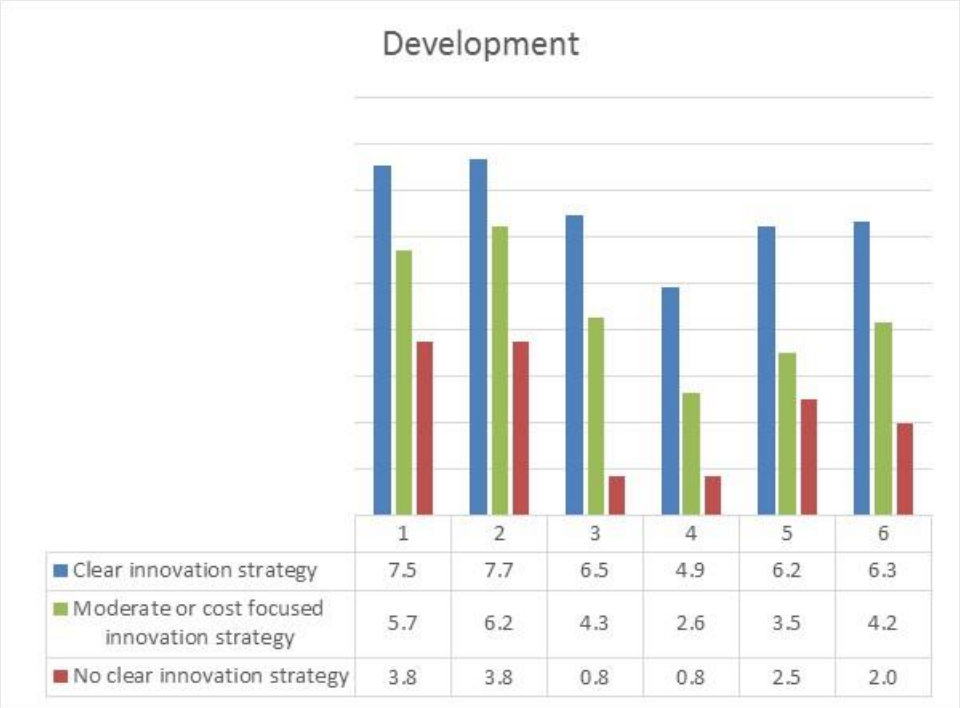
The questions asked:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)

1. Multi-disciplinary development teams are built and resourced according to the particular type of innovation activity.	☐	☐	☐
2. Testing ideas and obtaining feedback from potential users is an essential part of our innovation process.	☐	☐	☐
3. A structured approach to testing assumptions is used.	☐	☐	☐
4. A milestone review process exists with a fast-kill or rapid exit system in place to halt failing innovation efforts before they waste resources.	☐	☐	☐
5. At each milestone review, the team considers where collaborating with others might progress the work more effectively and efficiently.	☐	☐	☐

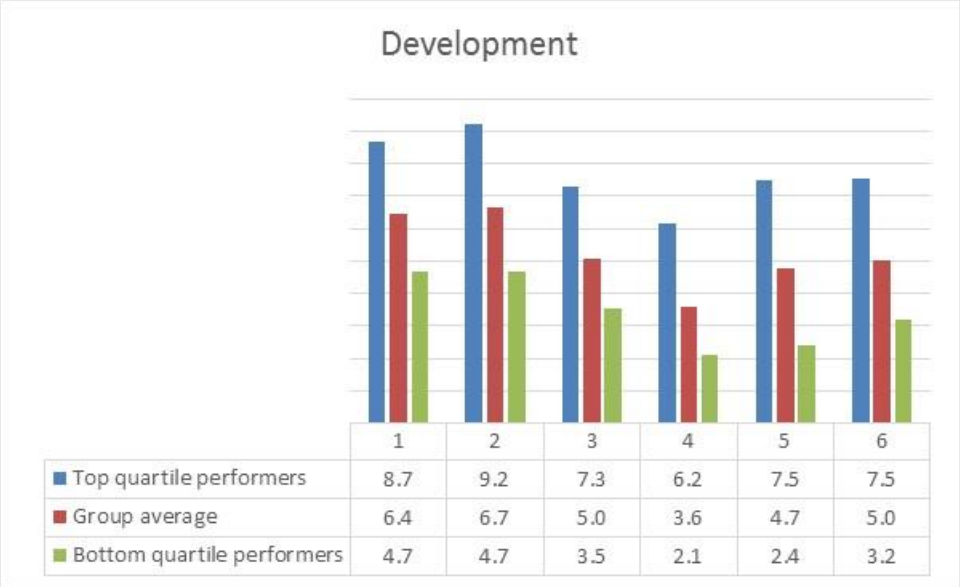
Note: the composite score contains development questions 2-5 (Chronbach's α = .85)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for development.



	1	2	3	4	5	6
Clear innovation strategy	7.5	7.7	6.5	4.9	6.2	6.3
Moderate or cost focused innovation strategy	5.7	6.2	4.3	2.6	3.5	4.2
No clear innovation strategy	3.8	3.8	0.8	0.8	2.5	2.0

6 = composite score for Development



	1	2	3	4	5	6
Top quartile performers	8.7	9.2	7.3	6.2	7.5	7.5
Group average	6.4	6.7	5.0	3.6	4.7	5.0
Bottom quartile performers	4.7	4.7	3.5	2.1	2.4	3.2

6 = composite score for Development

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- A structured approach to testing assumptions is used
- A milestone review process exists with a fast-kill or rapid exit system in place to halt failing innovation efforts before they waste resources

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- At each milestone review, the team considers where collaborating with others might progress the work more effectively and efficiently
- Testing ideas and obtaining feedback from potential users is an essential part of our innovation process

Validation

Validation for innovation is the ability of the organization to evaluate which projects to move forward on and which should be shut down throughout the innovation process.

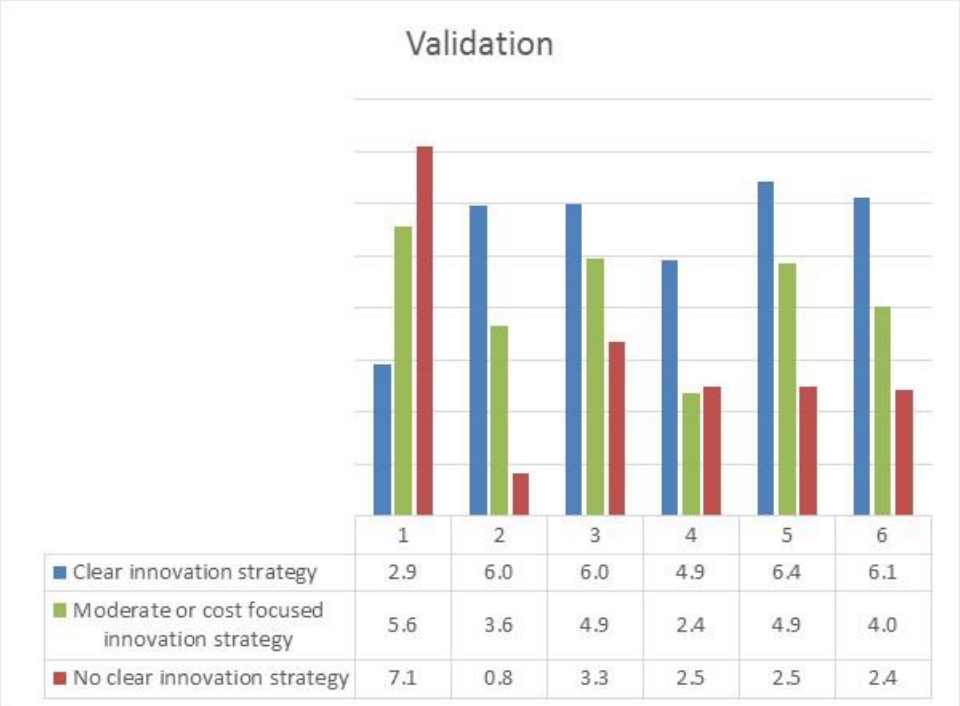
The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)

1. Project selection and funding is often political rather than data-driven.	☐	☐	☐
2. There is a consistent process for determining which ideas move forward and which ideas are dropped.	☐	☐	☐
3. Lead users such as patient organizations are important resources to validate needs, and to obtain feedback or input regarding the value and usability of proposed solutions.	☐	☐	☐
4. Project funding is milestone-based. At each milestone, assessments are made to proceed as planned, pivot, collect more data, or stop.	☐	☐	☐
5. There are clear goals that have to be met before an innovation is implemented	☐	☐	☐

Note: the composite score contains all validation items, with question 1 reverse coded (Chronbach's α = .76)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for validation.



	1	2	3	4	5	6
Clear innovation strategy	2.9	6.0	6.0	4.9	6.4	6.1
Moderate or cost focused innovation strategy	5.6	3.6	4.9	2.4	4.9	4.0
No clear innovation strategy	7.1	0.8	3.3	2.5	2.5	2.4

6 = composite score for Validation

	1	2	3	4	5	6
Top quartile performers	1.7	6.9	7.2	6.5	7.9	7.3
Group average	4.4	4.5	5.3	3.6	5.4	4.9
Bottom quartile performers	6.3	2.8	3.7	1.3	3.2	2.9

6 = composite score for Validation

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- There is a consistent process for determining which ideas move forward and which ideas are dropped
- [reverse] Project selection and funding is often political rather than data-driven

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Project funding is milestone-based. At each milestone, assessments are made to proceed as planned, pivot, collect more data, or stop
- There are clear goals that have to be met before an innovation is implemented

Implementation

Implementation is the ability of the organization to adopt developed ideas within the organization or, if applicable, to commercialize ideas.

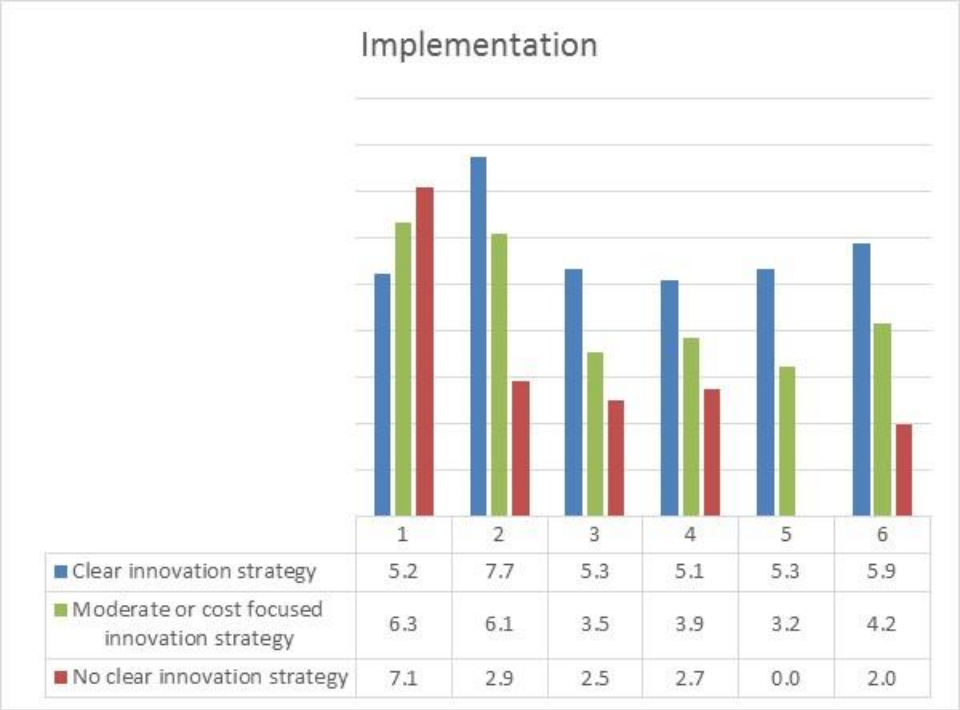
The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)
1. Implementation of a new idea within the organization is left to the team that created it.	☐	☐	☐

2. Successful ideas are championed by senior leadership and shared and celebrated, so they can be picked up by others.	☐	☐	☐
3. Idea owners are incentivized to create materials and educational session(s) that facilitate adaptation and adoption of successful innovations by others.	☐	☐	☐
4. Every implemented and subsequently adopted innovations gets tracked and traced to ensure goals and objectives are met, and to enable further improvements.	☐	☐	☐
5. There is a vibrant and active marketplace in the organization to exchange successful ideas and initiatives.	☐	☐	☐

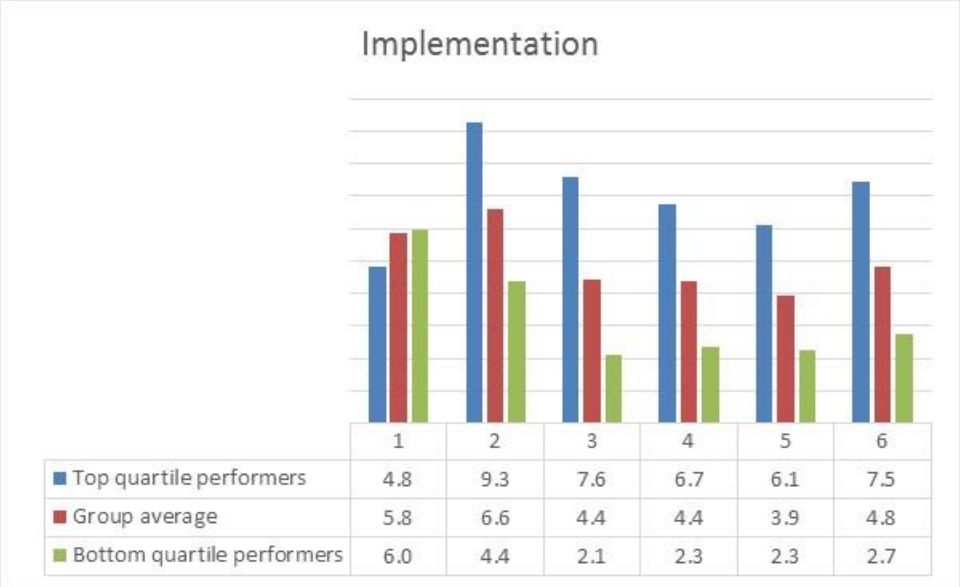
Note: the composite score contains implementation questions 2-5 (Chronbach's α = .77)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for implementation.



	1	2	3	4	5	6
Clear innovation strategy	5.2	7.7	5.3	5.1	5.3	5.9
Moderate or cost focused innovation strategy	6.3	6.1	3.5	3.9	3.2	4.2
No clear innovation strategy	7.1	2.9	2.5	2.7	0.0	2.0

6 = composite score for Implementation



	1	2	3	4	5	6
Top quartile performers	4.8	9.3	7.6	6.7	6.1	7.5
Group average	5.8	6.6	4.4	4.4	3.9	4.8
Bottom quartile performers	6.0	4.4	2.1	2.3	2.3	2.7

6 = composite score for Implementation

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- There is a vibrant and active marketplace in the organization to exchange successful ideas and initiatives
- Successful ideas are championed by senior leadership and shared and celebrated, so they can be picked up by others

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Idea owners are incentivized to create materials and educational session(s) that facilitate adaptation and adoption of successful innovations by others.
- Successful ideas are championed by senior leadership and shared and celebrated, so they can be picked up by others

-

Organizational capabilities

People

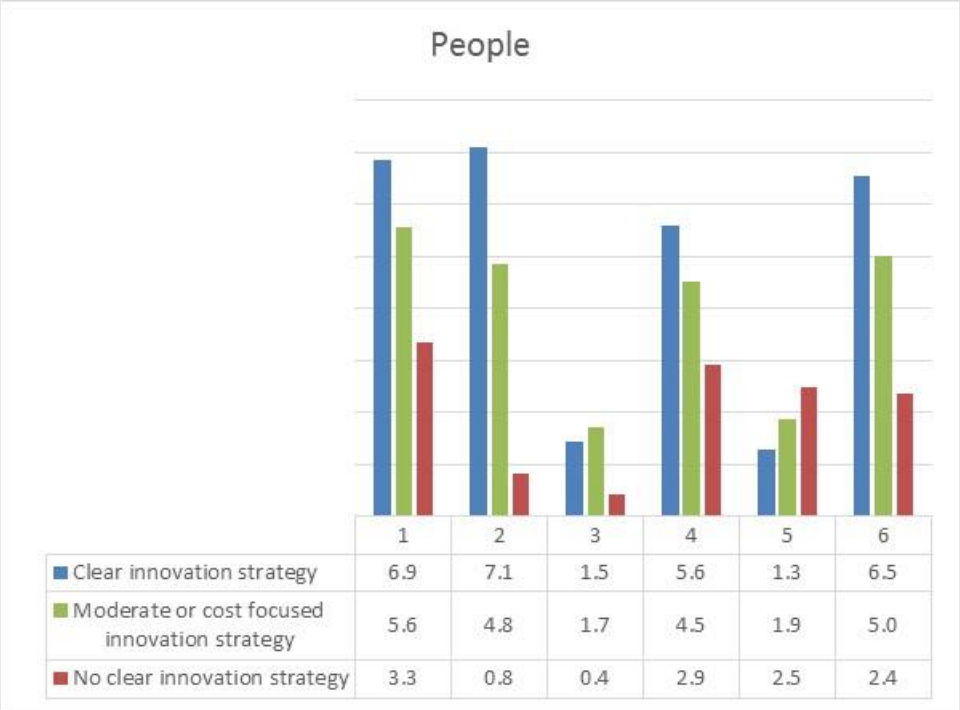
People are central to innovation efforts—having the right team engaged and creating opportunities for innovators to thrive is critical.

The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)
1. Employees are encouraged to participate in improvement and innovation. There is a dedicated person/center, where teams can go for advice on how to proceed.	☐	☐	☐
2. Improvement and innovation are part of everyone's job, goals and objectives. Employees participate in roles and levels that suit their interests and capabilities.	☐	☐	☐
3. Employees are financially incentivized to take action or join others in their innovation activities endeavors.	☐	☐	☐
4. Employees are non-financially incentivized to take action or join others in their innovation activities endeavors.	☐	☐	☐
5. There is the possibility of getting a temporary leave of absence or to work on an innovation project for a defined period of time.	☐	☐	☐

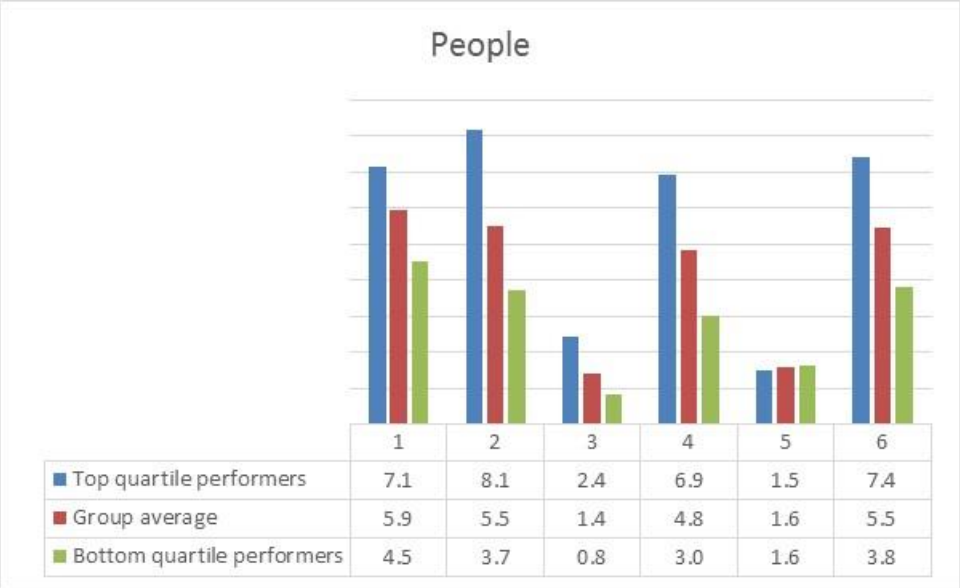
Note: the composite score contains people questions 1, 2, and 4 (Chronbach's $\alpha = .66$)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for people.



	1	2	3	4	5	6
Clear innovation strategy	6.9	7.1	1.5	5.6	1.3	6.5
Moderate or cost focused innovation strategy	5.6	4.8	1.7	4.5	1.9	5.0
No clear innovation strategy	3.3	0.8	0.4	2.9	2.5	2.4

6 = composite score for People



	1	2	3	4	5	6
Top quartile performers	7.1	8.1	2.4	6.9	1.5	7.4
Group average	5.9	5.5	1.4	4.8	1.6	5.5
Bottom quartile performers	4.5	3.7	0.8	3.0	1.6	3.8

6 = composite score for People

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- Improvement and innovation are part of everyone's job, goals and objectives. Employees participate in roles and levels that suit their interests and capabilities
- Employees are encouraged to participate in improvement and innovation. There is a dedicated person/center, where teams can go for advice on how to proceed

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Improvement and innovation are part of everyone's job, goals and objectives. Employees participate in roles and levels that suit their interests and capabilities
- Employees are non-financially incentivized to take action or join others in their innovation activities endeavors

Learning organization

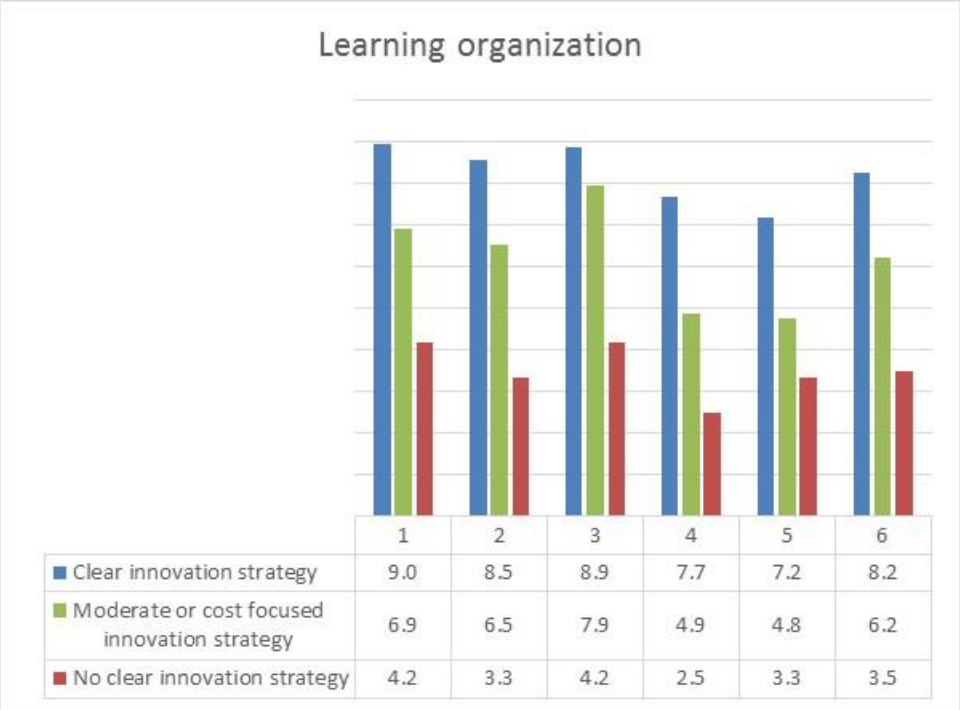
Organizational learning is the process by which an organization gains new knowledge about its environment, goals, and processes.

The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)
1. Data collection, analyses and reflection are all part of our learning process.	☐	☐	☐
2. Unexpected and undesirable outcomes are considered important opportunities to learn. Reporting adverse effects has no or limited negative consequences.	☐	☐	☐
3. The organization values new ideas and leadership is interested in finding better ways of doing things.	☐	☐	☐
4. Leadership provides time and resources to reflect on challenges and identify opportunities for improvement.	☐	☐	☐
5. Innovation, improvement activities and education opportunities, including Continuing Medical Education and Maintenance of Certification requirements, are aligned.	☐	☐	☐

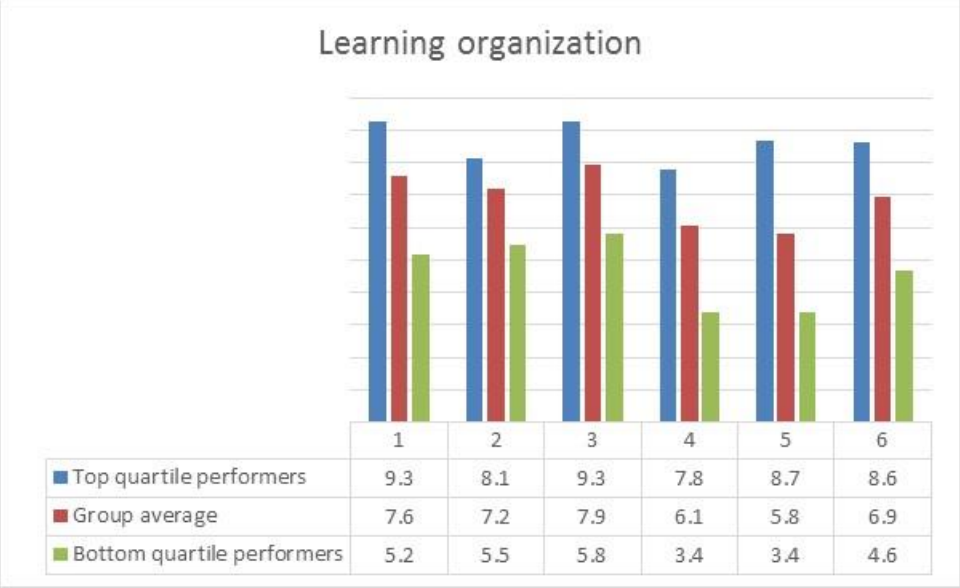
Note: the composite score contains all learning organization items (Chronbach's $\alpha = .85$)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for learning organization.



	1	2	3	4	5	6
Clear innovation strategy	9.0	8.5	8.9	7.7	7.2	8.2
Moderate or cost focused innovation strategy	6.9	6.5	7.9	4.9	4.8	6.2
No clear innovation strategy	4.2	3.3	4.2	2.5	3.3	3.5

6 = composite score for Learning organization



	1	2	3	4	5	6
Top quartile performers	9.3	8.1	9.3	7.8	8.7	8.6
Group average	7.6	7.2	7.9	6.1	5.8	6.9
Bottom quartile performers	5.2	5.5	5.8	3.4	3.4	4.6

6 = composite score for Learning organization

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- Unexpected and undesirable outcomes are considered important opportunities to learn. Reporting adverse effects has no or limited negative consequences
- Leadership provides time and resources to reflect on challenges and identify opportunities for improvement

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Innovation, improvement activities and education opportunities, including Continuing Medical Education and Maintenance of Certification requirements, are aligned
- Leadership provides time and resources to reflect on challenges and identify opportunities for improvement

Risk management

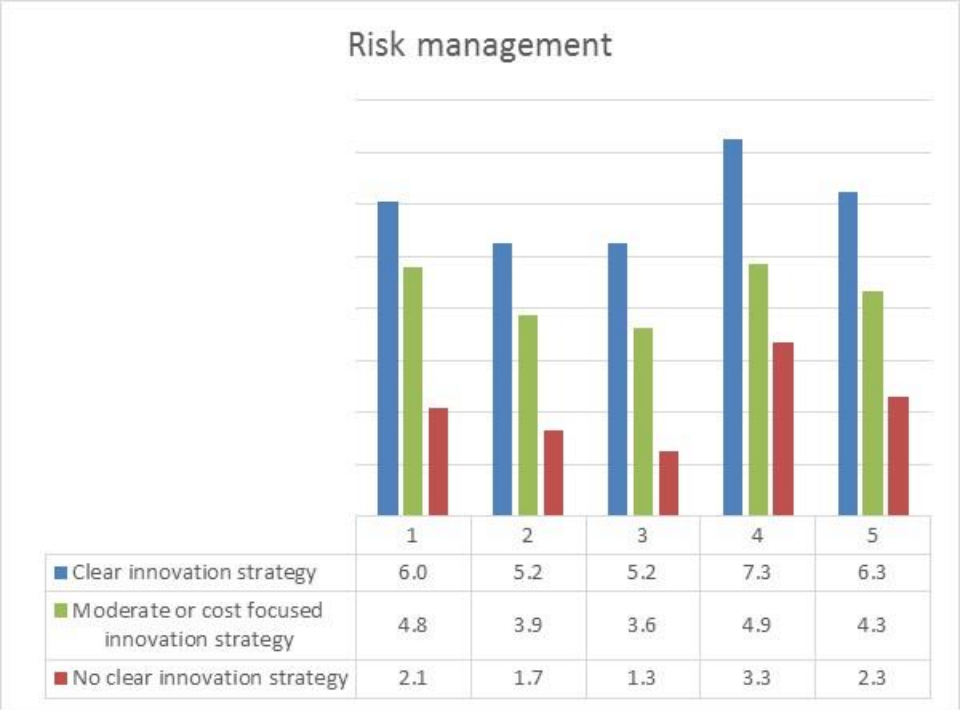
Risk Management for innovation, facilitates calculated risk-taking and learning from successes and failures.

The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)
1. There is a review committee that is in charge of determining the type of review that is needed and the appropriate actions that need to be taken to minimize risks when innovation projects involve patients.	☐	☐	☐
2. The review committee's approach is tailored to the needs of innovation projects. .	☐	☐	☐
3. The review committee provides quick and useful feedback without significantly impeding progress of innovation efforts.	☐	☐	☐
4. Calculated risk taking is supported by the leadership of our organization.	☐	☐	☐

Note: the composite score contains risk management questions 3 and 4 (Chronbach's $\alpha = .63$)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (5) shows the composite score for risk management.



	1	2	3	4	5
Clear innovation strategy	6.0	5.2	5.2	7.3	6.3
Moderate or cost focused innovation strategy	4.8	3.9	3.6	4.9	4.3
No clear innovation strategy	2.1	1.7	1.3	3.3	2.3

5 = composite score for Risk management

	1	2	3	4	5
Top quartile performers	7.0	6.5	6.5	8.3	7.4
Group average	5.1	4.3	4.2	5.9	5.1
Bottom quartile performers	3.0	2.1	2.1	3.3	2.8

5 = composite score for Risk management

The data shows:

That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- There is a review committee that is in charge of determining the type of review that is needed and the appropriate actions that need to be taken to minimize risks when innovation projects involve patients
- The review committee provides quick and useful feedback without significantly impeding progress of innovation efforts

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Calculated risk taking is supported by the leadership of our organization
- The review committee provides quick and useful feedback without significantly impeding progress of innovation efforts

Portfolio management

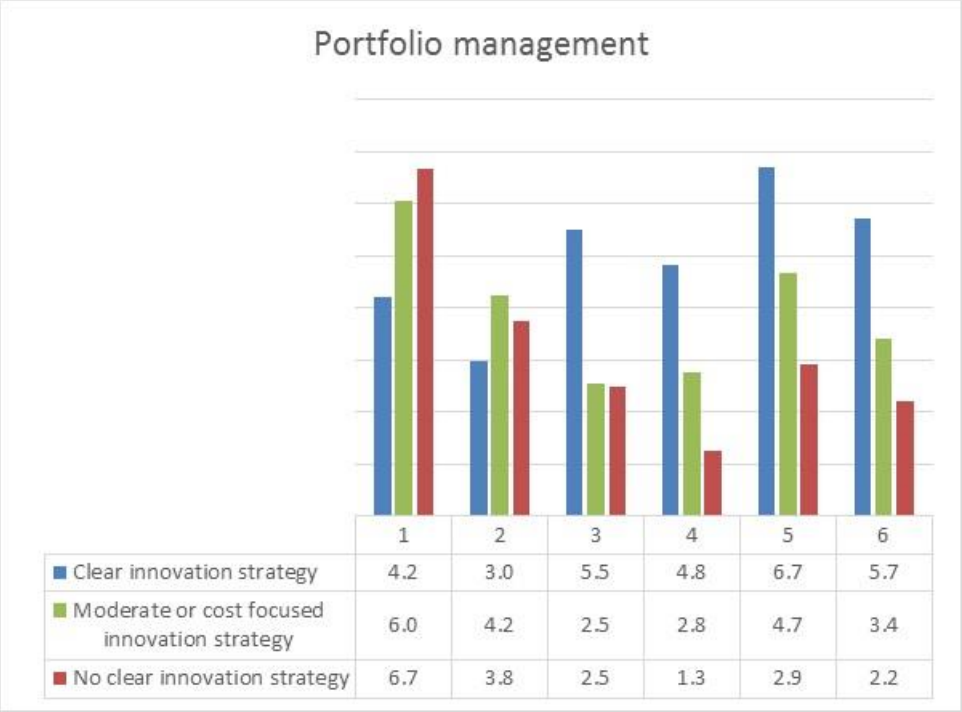
Portfolio management refers to the ability of the innovation team to define and manage a portfolio of initiatives that make strategically important contributions to an organization.

The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)
1. There is no general oversight that includes all ongoing initiatives, each project is rewarded on its own merits.	☐	☐	☐
2. Portfolio management is a once-a-year event, done within the budget cycle and with loose connection to the organization's strategic objectives.	☐	☐	☐
3. There is a standard portfolio management system in use by the innovation team. Each project in the portfolio has a milestone review process.	☐	☐	☐
4. Periodic portfolio reviews are held to assess progress made and alignment with strategic objectives. These are data-driven and there is a rapid-exit system in place to ensure that weak projects are put on hold or terminated.	☐	☐	☐
5. The portfolio is aligned with the organization's strategic objectives, including short- and long-term hiring and capital expenditure investment decisions.	☐	☐	☐

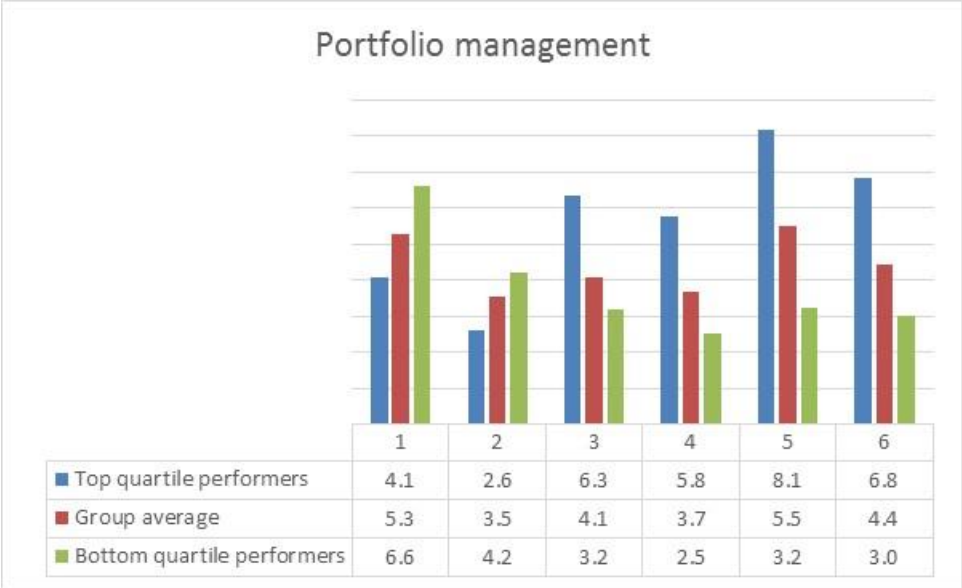
Note: the composite score contains portfolio questions 3, 4, and 5 (Chronbach's $\alpha = .83$)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for portfolio management.



	1	2	3	4	5	6
Clear innovation strategy	4.2	3.0	5.5	4.8	6.7	5.7
Moderate or cost focused innovation strategy	6.0	4.2	2.5	2.8	4.7	3.4
No clear innovation strategy	6.7	3.8	2.5	1.3	2.9	2.2

6 = composite score for Portfolio management



	1	2	3	4	5	6
Top quartile performers	4.1	2.6	6.3	5.8	8.1	6.8
Group average	5.3	3.5	4.1	3.7	5.5	4.4
Bottom quartile performers	6.6	4.2	3.2	2.5	3.2	3.0

6 = composite score for Portfolio management

What the data shows:
That between organizations with a clearer innovation strategy and those without and in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- The portfolio is aligned with the organization's strategic objectives, including short- and long-term hiring and capital expenditure investment decisions
- Periodic portfolio reviews are held to assess progress made and alignment with strategic objectives. These are data-driven and there is a rapid-exit system in place to ensure that weak projects are put on hold or terminated.

Measurement of innovation

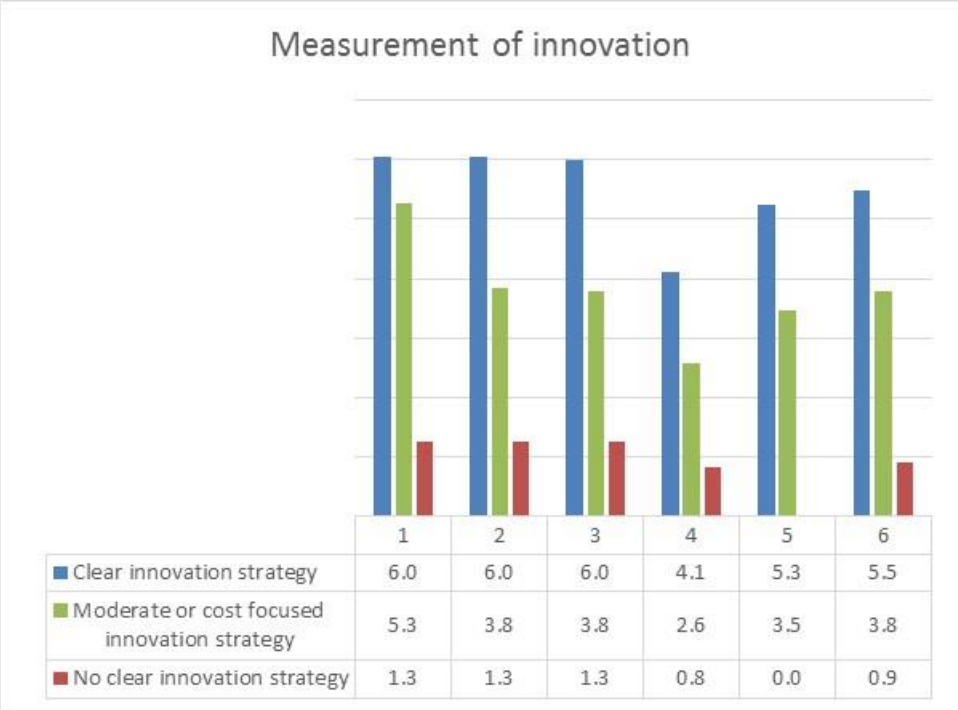
Measurement regarding innovation provide the organization with the ability to track the progress made, and to assess the effectiveness and efficiency of the improvement and innovation process.

The questions we asked were:

Please indicate the applicability of each question to your organization:	Yes (=10)	Somewhat (=5)	No (=0)
1. Innovation efforts are routinely measured based on costs of the project and expect value of the innovation (ROI).	☐	☐	☐
2. There are process measures in place to measure an innovation project's efficiency on an ongoing basis.	☐	☐	☐
3. There are measurements in place to assess the contribution of innovation to the organization's strategic goals and objectives.	☐	☐	☐
4. There are measurements in place to assess the contribution of innovation to employee satisfaction and retention rates.			
5. The innovation measurements used allow benchmarking against best improvement or innovation management practices and the performance of comparable organizations.	☐	☐	☐

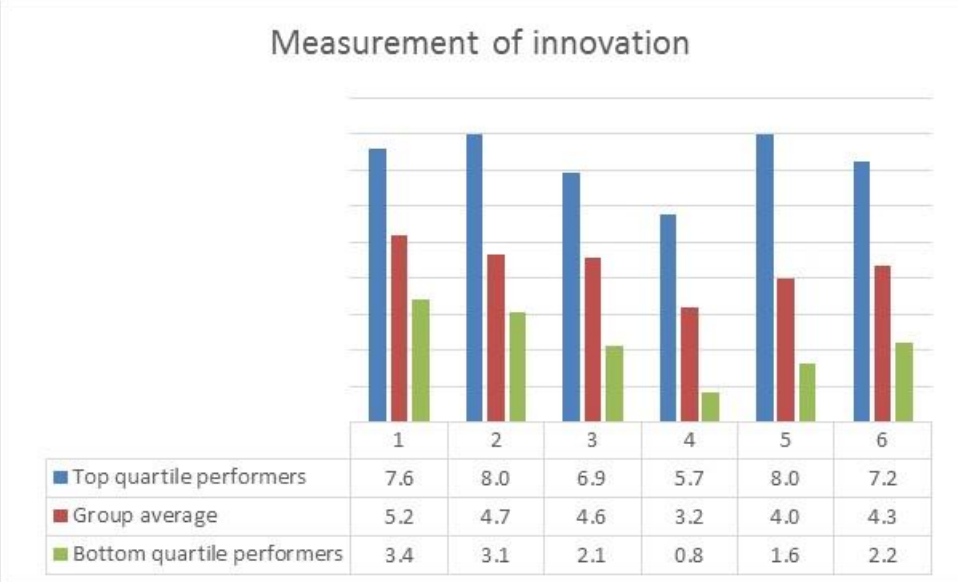
Note: the composite score contains all measure of innovation items (Chronbach's $\alpha = .87$)

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (6) shows the composite score for measurement of innovation.



	1	2	3	4	5	6
Clear innovation strategy	6.0	6.0	6.0	4.1	5.3	5.5
Moderate or cost focused innovation strategy	5.3	3.8	3.8	2.6	3.5	3.8
No clear innovation strategy	1.3	1.3	1.3	0.8	0.0	0.9

6 = composite score for Measurement of innovation



	1	2	3	4	5	6
Top quartile performers	7.6	8.0	6.9	5.7	8.0	7.2
Group average	5.2	4.7	4.6	3.2	4.0	4.3
Bottom quartile performers	3.4	3.1	2.1	0.8	1.6	2.2

6 = composite score for Measurement of innovation

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- Have measurements in place to assess the contribution of innovation to the organization's strategic goals and objectives.
- Have process measures in place to measure an innovation project's efficiency on an ongoing basis.

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Use innovation measurements that allow benchmarking against best improvement or innovation management practices and the performance of comparable organizations.
- Have process measures in place to measure an innovation project's efficiency on an ongoing basis.

Innovation Infrastructure

Innovation structures refer to the presence of essential structural elements within your innovation system—personnel, space, time, data and skills.

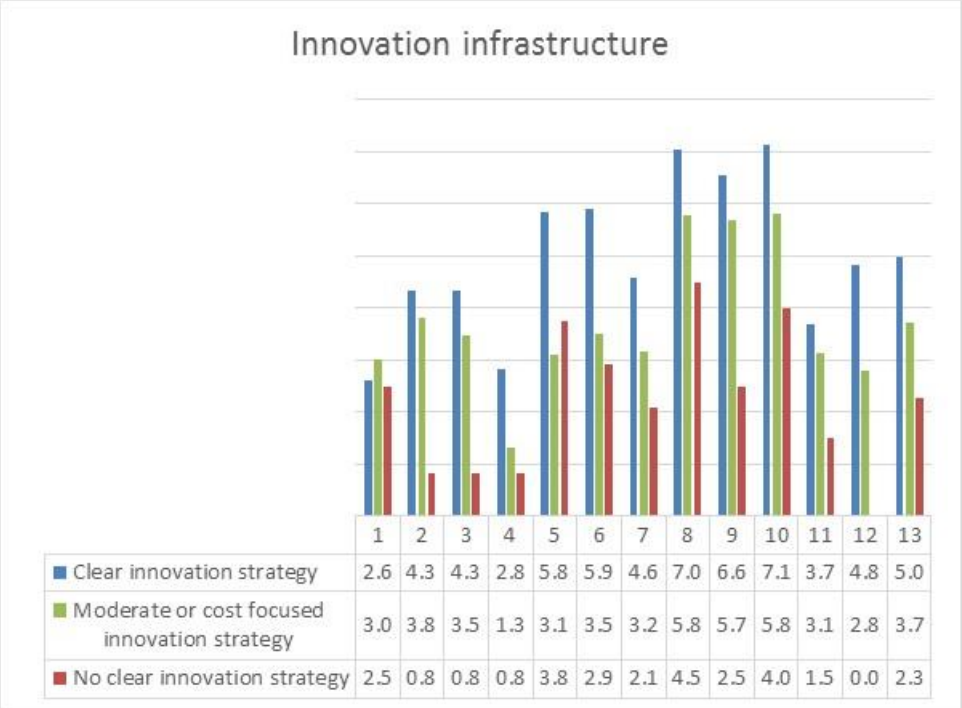
The questions we asked were:

Our innovation infrastructure	Yes (=10)	Somewhat (=5)	No (=0)
1. Enables some clinicians and some dedicated staff to, at times, spend 100% of their effort on innovation for a specified duration.	☐	☐	☐
2. Includes an education program that provides teaching on all relevant innovation methodologies.	☐	☐	☐
3. Offers a mentoring program that guides clinicians and teams through the innovation process.	☐	☐	☐
4. Includes a dedicated innovation lab to test ideas and future technologies in practice	☐	☐	☐
5. Provides dedicated innovation resources within the organization that offer assistance and support to innovators throughout the organization.	☐	☐	☐
6. Connects innovators with specialists (for example in project management, finance, statistics, regulatory, reimbursement, IP protection).	☐	☐	☐
7. Connects innovators with other disciplines (for example designers, engineers, ethnographers).	☐	☐	☐

8. Includes expertise in various innovation methodologies (lean, PDSA, design etc etc)	☐	☐	☐
9. Ensures clinical involvement on every innovation project	☐	☐	☐
10. Provides access to relevant hospital data, such as treatment costs, adverse events, and patient complaints.	☐	☐	☐
11. Incentivizes departments and units to participate in real life innovation experiments.	☐	☐	☐
12. Has a mechanism to efficiently abandon unrealistic or unfeasible innovation initiatives	☐	☐	☐

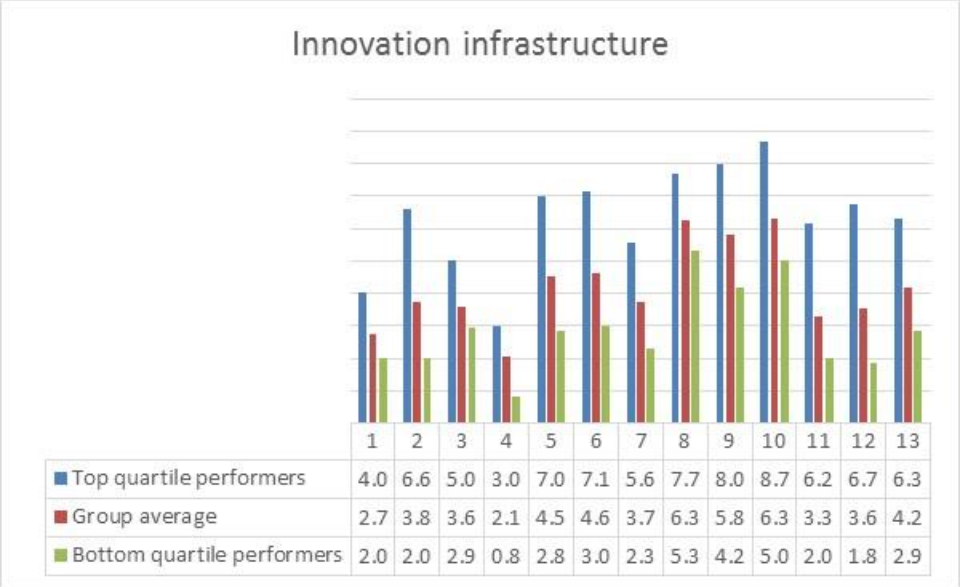
Note: the composite score contains all infrastructure items (Chronbach's α = .89), all items load to one factor

The graphs and tables below illustrate the average score on each of the items above, for the groups with different innovation strategies and in the different performance categories. The last column (13) shows the composite score for innovation infrastructure.



	1	2	3	4	5	6	7	8	9	10	11	12	13
Clear innovation strategy	2.6	4.3	4.3	2.8	5.8	5.9	4.6	7.0	6.6	7.1	3.7	4.8	5.0
Moderate or cost focused innovation strategy	3.0	3.8	3.5	1.3	3.1	3.5	3.2	5.8	5.7	5.8	3.1	2.8	3.7
No clear innovation strategy	2.5	0.8	0.8	0.8	3.8	2.9	2.1	4.5	2.5	4.0	1.5	0.0	2.3

13 = composite score for Innovation infrastructure



	1	2	3	4	5	6	7	8	9	10	11	12	13
Top quartile performers	4.0	6.6	5.0	3.0	7.0	7.1	5.6	7.7	8.0	8.7	6.2	6.7	6.3
Group average	2.7	3.8	3.6	2.1	4.5	4.6	3.7	6.3	5.8	6.3	3.3	3.6	4.2
Bottom quartile performers	2.0	2.0	2.9	0.8	2.8	3.0	2.3	5.3	4.2	5.0	2.0	1.8	2.9

13 = composite score for Innovation infrastructure

What the data shows:
That between organizations with a clearer innovation strategy and those without, the top two differentiators are:

- Have a mechanism to efficiently abandon unrealistic or unfeasible innovation initiatives
- Ensure clinical involvement on every project

That in organizations with a higher perception of their innovation performance compared to those in the bottom quartile, the top two differentiators are:

- Have a mechanism to efficiently abandon unrealistic or unfeasible innovation initiatives
- Have an education program that provides teaching on all relevant innovation methodologies

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