IT value: a multi-dimensional measurement approach

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Is it important to "demonstrate" the value of IT to the business?

Is it important to understand which costs are instead investments?

Is it important to benchmark the contribution of IT to the value creation process with respect to the competitors?
Does the perspective change?

If IT is a cost not clearly linked to value generation, it is fated to be cut progressively and endlessly in order to increase the global efficiency, if it is an investment associated to desired benefits, it should be managed.
• The IT value creation «contribution» is not often well defined and identifiable separately from other factors
• There are no «public & adequate» models and data to benchmark with
• The available models are mainly based on technological drivers and expenditure!
• Investments may have a very unpredictable life duration due to business and technology turbulence
Is the value of IT correlated to IT expenditure?

• Not necessarily.
• I can spend a lot but inefficiently.
• I can spend much less but very effectively.
IT value creation contribution

• IT is often an «abilitator» of other value creation processes
• It’s difficult to understand and establish exactly what part of the value is directly and exclusively achieved by IT
• An IT cost-benefit analysis is usually subjective and questionable
Value is generated by processes not by technology.
The role of IT

Infrastructures
(hardware-middleware-logistic-organization)

abilitate

Business Functionalities
(application software)

abilitate

Business Processes
The easiest case

An IT service is «sold to/used by» customers and directly generate revenues/benefits.
The worst case

IT is «embedded» into physical devices and/or support human processes to generate revenues/benefits.
The cost-benefit analysis is questionable

• OK, system development costs are easy to be determined (at the end of a project... often...)
• Even maintenance & operational costs are easy to be determined (after they have occurred... often...)
• There are RISKS of course, YEAH ! But we know how to manage them, right ?... (maybe)
• But what about the benefits ? The revenues ? The cost savings ? Which part of them is adequate to be attributed to IT ?
In a «market» environment, value is strongly correlated to competitive advantage and this is correlated to «external innovation» and «internal efficiency».

Consequence:

The standardization of software functionalities «kills» the innovation! If you act like all the other competitors you may only compete on internal efficiency (low costs-low prices). COTS are not the way to achieve external innovation (when most player use it). AD HOC software is!
In order to be successful in the market you MUST differentiate yourself from the others.

- COTS may be a pre-requisite but they are not crucial to the value generation of IT. The COTS functionalities become «commodities» like the other IT infrastructures.
- AD HOC functionalities (custom software) can make the difference!
- More custom functionalities may mean more competitive advantage and more value generated for the stakeholder.
What is the best way to size custom software applications?

Function Points were born to put the "business" and its needs at the center of the solar system, displacing technical choices. The focus is on the measurement of information services delivered not on the technical implementation methods.
Unfortunately a fearsome threat is around the market ...

Evolution of Software Architectures

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<table>
<thead>
<tr>
<th>UI</th>
<th>Access Control</th>
<th>Business Logic</th>
<th>Data Layer</th>
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<tbody>
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Monolithic → Service-oriented → Microservices

The new production paradigms are opening flaws in functional measurement methods
A granularity issue

1. Cook the pasta
2. Cook the bacon
3. Prepare the egg sauce
4. Mix the components
5. Arrange on the plate
6. Serve in the dining room

Monolite
1 BFC

Microservices
6 BFC

1

2

3

4

5

6
Should functional size depend on architecture?

No! The different ways of constructing business applications must give rise to the same functional measure at the application level.

For the purpose of estimating production costs or allocating costs to different suppliers, it is possible to specify measures on layers other than the application layer. But the total cost shouldn’t exceed too much the monolithic value as a benchmark.
• Software functionalities are not the same in terms of value to the business. Some of them are crucial some are are marginal.

• If we use a flat model to value a software asset we may risk to «pump» applications with «useless» features.
Our goal was

To identify a way to size software assets in a way which may be more compliant with the value creation model of the organization.
Most known frameworks to set value for the organizations

- Porter’s value chain
- Balanced Scorecards
- Strategy Maps
- GQM
Porter’s Value Chain
Balanced Scorecard

Goals
Measures
Targets
Initiatives

Software contribution
Strategy Maps

**FINANCIAL**
- Reduce Costs → Increase Profits ← Increase Revenue in Targeted Markets

**CUSTOMER**
- Improve Customized Customer Experience → Increase Awareness as Industry Leader

**INTERNAL BUSINESS PROCESSES**
- Improve Internal Efficiency → Increase Acquisitions
- Increase Consulting Knowledge
- Improve Product / Service Offerings

**LEARNING & GROWTH**
- Increase Expertise
- Optimize Technology → Optimize Human Capital
- Improve Thought Leadership
Goal Question Metrics

**Conceptual Level**
Measurement Goals involve products, processes, and/or resources.

**Operations Level**
Question try to characterize the object of measurement in the context of a qualified issue from a particular viewpoint.

**Quantitative Level**
Associated with every question is a set of data, either subjective of objective, that helps provide a quantitative answer.


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Diagram describes the relationship between goals and questions, structured into conceptual, operations, and quantitative levels.
PROs & CONs

• Porter’s value chain gives a shared model of business processes to be used in classifying and weighting FPs.
• Balanced scorecard & Strategy Maps do not standardize processes but they define areas of results needed by the organization.
• GQM gives a method to define results and actions in details.
How to merge all these things?

• Absolute way
  – Score each application in terms of value creation contribution and use a different coefficient to multiply FP

• Relative way
  – Establish a target expected FP Value for each «dimension» or «goal» and track progress over the target.
Some useful derived indicators

- **Usage FP** = FP * average # of Active Users
- **Running FP (RFP)** = Usage FP * average Standardized Frequency of use

Standardized Frequency of use is 1/(usage interval in days) for example:
- 1 for daily use,
- 0.5 for use every two days
- 1/365 = 0.003 for annual usage
# Eventual scores

<table>
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<tr>
<th>Category</th>
<th>Score</th>
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<tbody>
<tr>
<td>Mission critical</td>
<td>5</td>
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<tr>
<td>Product/Service innovation</td>
<td>4</td>
</tr>
<tr>
<td>Legal rules compliance</td>
<td>3</td>
</tr>
<tr>
<td>Customer care</td>
<td>2</td>
</tr>
<tr>
<td>Internal process efficiency</td>
<td>1</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Average # users</th>
<th>Score</th>
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<tbody>
<tr>
<td>1-100</td>
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</tr>
<tr>
<td>101-1000</td>
<td>2</td>
</tr>
<tr>
<td>&gt;1000</td>
<td>3</td>
</tr>
</tbody>
</table>
An example of classification

Source: Gartner 2017 Sample ITBudget Report
Does software quality participate to value creation?

Any software application should achieve the expected quality so in this case it is something «due». Quality shouldn’t be lower or higher than the required level.

In this context quality is not a variable involved in the creation of value.

Some quality factors / attributes are directly related to the «protection» of the investment so they could be explicited in a value generation model for IT. For example: portability, maintainability, scalability.
• It is important to «demonstrate» the IT value
• IT value is not directly correlated to technology
• IT value is not necessarily correlated to IT expenditure
• IT value is mainly generated by software application
• COTS software is a pre-requisite but not the protagonist
• Custom software may be the differentiating mean
• Function Points are a smart way to size custom software
• Not all FPs have the same importance to the business
• Some derived indicators may be useful
• It is possible and suggested to integrate sw asset size into models for representation of the business value.
• Models may be locally managed
• Practices and research may drive standardization in the future to allow external benchmarking
That's all Folks!