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IT value: a multi-dimentional measurement approach

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Three crucial questions

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 «<u>contribution</u>» is not often well defined and identifiable separately from other factors
- There are no «public & <u>adequate</u>» models and data to benchmark with
- The available models are mainly based on <u>technological drivers and expenditure</u>!
- Investments may have a very unpredictable life duration due to business and technology turbulence

BAD NEWS!

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**





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 differenciate 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. I DPO



Unfortunately a fearsome threat is around the market ...



© Stranger thing by Netflix

Evolution of Software Architectures



The new production paradigms are opening flaws in functional measurement methods



A granularity issue



Monolite 1 BFC

- 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

Microservices 6 BFC

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 exceede 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 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

Goal Question Metrics

Based on Basili, V. R., Caldiera, G., and Rombach, H. D. (1990) The Goal Question Metric Approach

- 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 organizazion.
- 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:

- $\,\circ\,$ 1 for daily use,
- $\,\circ\,$ 0,5 for use every two days
- \circ 1/365 = 0,003 for annual usage

Eventual scores

Category	Score		
Mission critical	5	Average # users	Score
Product/Service innovation	4	1-100	1
Legal rules compliance	3	101-1000	2
Customer care	2	>1000	3
Internal process efficiency	1		

An example of classification

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, maintenability, scalability

- It is important to «demonstrate» the IT value
- IT value is not directly correlated to technology
- IT value is not necessarly 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

