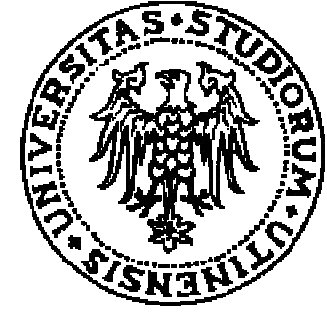




# The Economics, Finance and International Business Research Conference 2010



## Best Practices for DFSS in the Development of New Services: Evidence from a Multiple Case Study

### AGENDA

- Introduction and theoretical background
- Purpose of the research
- Methods
- Results
  - Classification of service processes
  - Best practices
  - Models for the application  
of DFSS to different service processes
- Conclusion and further research

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# New Service Development (NSD)



## TRUTH BE TOLD...

- ❑ The word “Innovation” is normally associated to products rather than services;
- ❑ Business Schools usually teach “New Product Development” and “Service Management”;
- ❑ Google shows a great dominance of products over services:
  - “New Product Development” returns more than 1.000.000 results;
  - “New Service Development” returns only 6.230 results.

## MEANWHILE IN ACADEMIA...

- The literature dealing with NSD is quite limited if compared to NPD (Menor *et al.*, 2002);
- Recently the interest on the topic has definitely grown (Carbonell *et al.*, 2009; Droege *et al.*, 2009).



# Six Sigma and Design For Six Sigma (DFSS)



**Six Sigma** is an organized and systematic method for strategic process improvement and new product and service development that relies on statistical methods and the scientific method to make dramatic reductions in customer defined defect rates (Linderman *et al.*, 2003)

**DFSS** is a systematic approach that can enable organizations to design products or services that meet or exceed customer expectations, employing well-established tools and techniques (Kwak and Anbari, 2006)

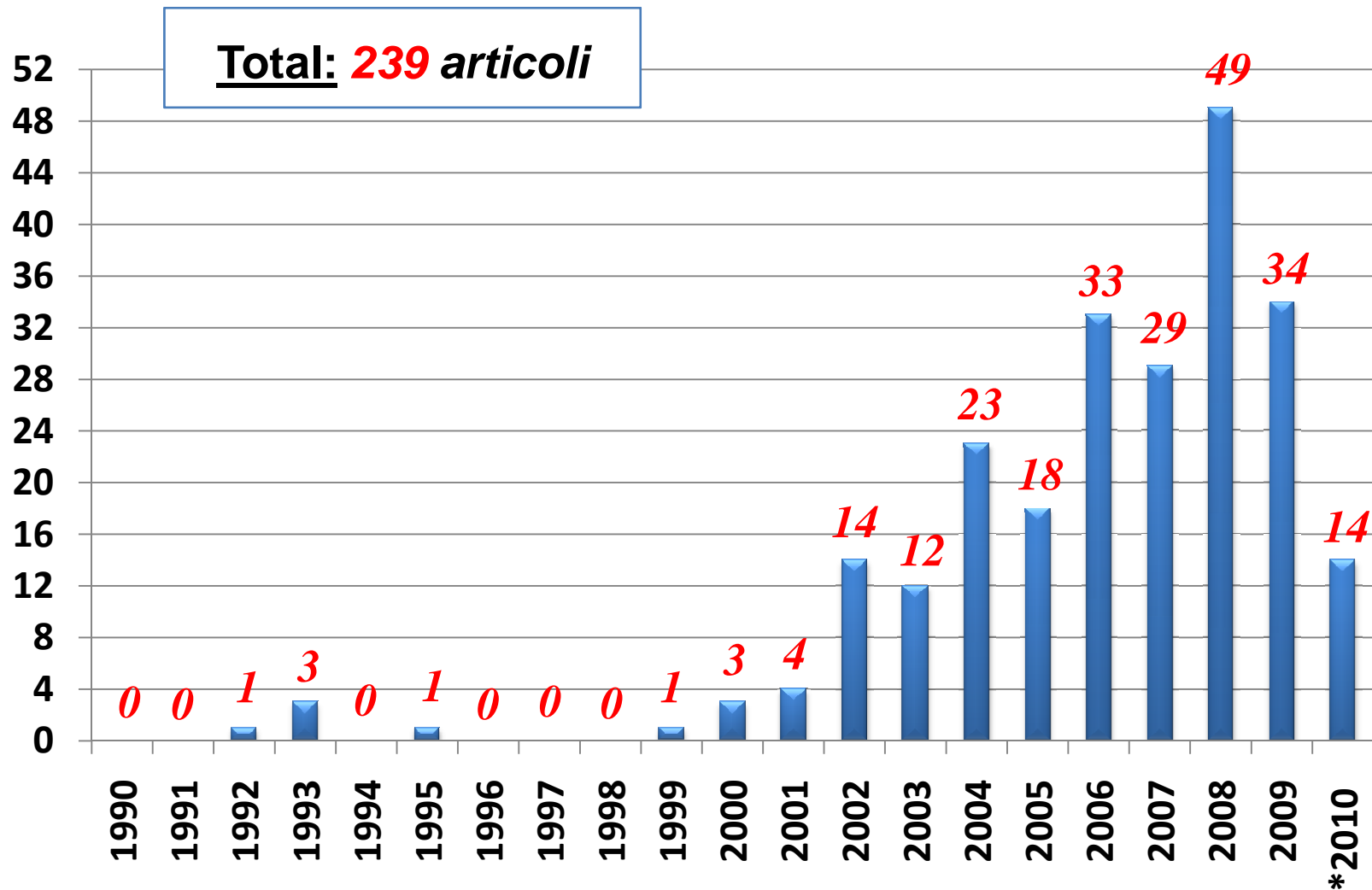
**Different** definitions for the **same** methodology:

- Six Sigma as a strategy (Harry and Schroeder, 2000);
- Six Sigma as a systematic improvement program (Magnusson *et al.*, 2004);
- Six Sigma as a philosophy (Bañuelas and Antony, 2002);
- Six Sigma as a simple set of quality tools and techniques (Breyfogle *et al.*, 2001).

# Yearly number of Six Sigma related articles



**NUMBER OF ARTICLES PER YEAR**



**YEAR**

\* Updated in September 2010

# Purpose of the research



## RQ 1

**What are the best practices that firms must own to successfully implement DFSS to services?**

## RQ 2

**What are the models to effectively apply DFSS to different service processes?**



# Methodology steps: Eisenhardt (1989), Voss *et al.* (2002), Yin (2003)



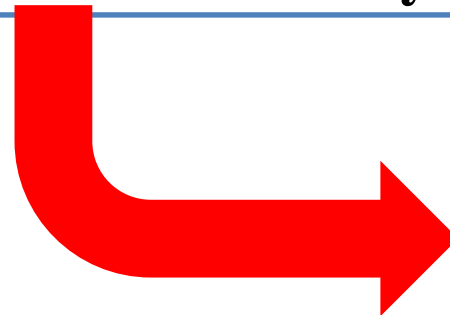
Systematic literature review



Exploratory case study in  
Motorola



Multiple case studies (Motorola, GE  
Oil&Gas, GE Capital, UniCredit  
Group) and cross case analysis



5 aspects which organizations should focus on in order to implement DSS to services (Campanerut and De Toni, 2010):

- *Strategic project selection;*
- *Culture and intangible assets;*
- *Actors and organizational structure;*
- *Methodology implementation;*
- *Methodology tools.*

Confirmatory  
literature review

CLASSIFICATION OF SERVICE PROCESSES

BEST PRACTICES

MODELS FOR THE DIFFERENT SERVICE PROCESSES

# Classification of service processes



***Example: an airline***

		INTERFACE	
		People	Technology
CONTACT TIME	High	<i>e.g. On board services</i>	<i>e.g. Flight activity</i>
	Low	<i>e.g. Call center</i>	<i>e.g. Online booking</i>

The proposed classification raises a number of aspects:

- There is a continuum rather than a pigeonhole of organization into any one of the four classes;
- The specific organizations involved in service deployment can offer services classifiable in different typologies.



**Need to adapt DFSS to the different service processes**

# Identification of the Best Practices



- ❑ **METHODOLOGY IMPLEMENTATION BEST PRACTICES:**
  - Problem setting and clear formulation of project purposes;
  - Project results are consolidated over the years;
  - Trade-off between results and project duration;
  - Performance metrics and measurements based on project purposes;
  - Project post-evaluation according on financial impact.
- ❑ **METHODOLOGY TOOLS BEST PRACTICES:**
  - Greater use of qualitative tools rather than statistical and quantitative tools;
  - Great importance of Change Management tools (e.g. CAP);
  - Great importance of VOC analysis tools;
  - Joint use of Six Sigma and Lean Management tools;
  - Great importance of digitization.
- ❑ **CULTURE AND INTANGIBLE ASSETS BEST PRACTICES:**
  - High compliance ed integrity as organizational milestone;
  - Company-wide quality culture;
  - Customer-focused vision;
  - Boosting innovation and creativity of employees;
  - Widen Six Sigma awareness to all human resources.
- ❑ **ACTORS AND ORGANIZATIONAL STRUCTURE BEST PRACTICES:**
  - Internal training for Six Sigma certification of human resources;
  - The firm involves customers within the project team;
  - Widespread presence of Master and Black Belts in the organizational functions;
  - Six Sigma awareness for all human resources in the company;
  - Project teams are composed by HR from different functional areas in order to broaden the skills.
- ❑ **STRATEGIC PROJECT SELECTION BEST PRACTICES:**
  - Structured projects scoring system;
  - Great importance of indicators such as financial impact, financial risk and ROI for project selection;
  - Strong customer-focused project selection;
  - Projects selection is clearly linked to the corporate strategy;
  - Projects must be approved and supported by senior management.



# Models for DFSS



ASPECT		SERVICE PROCESS			
		People / High contact	People / Low contact	Technology / High contact	Technology / Low contact
1	<b>METHODOLOGY TOOLS</b>	<i>Strong use of qualitative tools</i>	<i>Use of qualitative tools</i>	<i>Use of statistical tools</i>	<i>Strong use of statistical tools</i>
2	<b>METHODOLOGY IMPLEMENTATION</b>	<b>DMADV</b>	<b>DMADV</b>	<b>DMADV</b>	<b>DMADV</b>
3	<b>ACTORS AND ORGANIZATIONAL STRUCTURE</b>	<i>Front office HR involvement</i>	<i>Back office HR involvement</i>	<b>ICT</b>	<b>ICT</b>
4	<b>CULTURE AND INTANGIBLE ASSETS</b>	<i>Behavioral aspects</i>	<i>Standardization</i>	<i>Strong brand</i>	<i>Very strong brand</i>
5	<b>STRATEGIC PROJECT SELECTION</b>	<i>On the front office processes. Normally DMAIC</i>	<i>On the back office processes. Normally DMAIC</i>	<i>On the technology of contact. Normally DMADV</i>	<i>On the technology of remote connection. Normally DMADV</i>

# Conclusions and further research



## CONCLUSIONS

- ❑ From an academic point of view, a gap in the Six Sigma literature has been filled, since there was no empirical study on the application of DFSS to services (Campanerut and De Toni, 2010);
- ❑ From a managerial point of view:
  - Some Best Practices for DFSS applications have been identified;
  - Five models have been created in order to successfully adapt the methodology to different service processes and manage all the aspects of DFSS.



## FURTHER RESEARCH

- ❑ Testing results in new service environments;
- ❑ Testing results with quantitative methods (survey);
- ❑ Extending the study at inter-organizational level.