

Service Orientation of Manufacturing Firms

Dear Sir or Madam:

Please find in this document the findings of our study on service orientation of manufacturing firms.

If you have any question or would like me to make further analysis of the data, please do not hesitate to contact me at the following email address: M.D.J.Antioco@tm.tue.nl

Again, thank you very much for your collaboration.

Kind regards,

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Our second project – carried in 121 US manufacturing companies – studied the impact of service feedback integration into the design of new products. The study answers questions such as:

- *Does it pay off to integrate field feedback from support employees/engineers into product design? Will it have an impact on the relative perceived quality of your products and services?*
- *What is the added value of integrating service and design engineers for the competitive advantage of your firm?*
- *What influences the attitude of design engineers towards field service information and field service engineers?*
- *What is the most preferred medium of communication of design engineers? What is the most preferred content of information?*

If you are interested in the results, we will be glad to share them with you.

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I. INTRODUCTION

The general purpose of this research is to study the "Service Orientation" (SO) of manufacturing firms. In other words – and in broad – how are services influencing the manufacturing world? This question arose with the increasing appearance of total solution providers. For instance, one of the biggest manufacturers in the world told us the following:

«We don't make much profit anymore on the majority of our products. People still perceive [name of the company] as one of the biggest manufacturers in the world but we are a service business now. We sell our products at very low profit but want to sell service contracts. That's where we make our profit. We now have kind of an "agreement" with our largest competitor, in all legality of course, that we won't service each other's products, but it will happen one day and we need to make sure that we can at least get long-term service contracts for our own products.»

Other examples of manufacturing firms becoming important service providers come to mind such as Volvo and its "Service Solutions", Olympus and its " Worldwide Service Support", Canon's self-service and telephone support, services offered by the Airbus Customer Satisfaction Improvement Program, etc.

In this study, we tackle service orientation at the business/strategic level. Our research question can be summarized as follows:

"What are the Antecedents, Dimensions and Consequences of Service Orientation in Manufacturing Firms?"

II. WHAT IS SERVICE ORIENTATION?

To be service oriented does not simply imply offering support or field services around your tangible products. It requires from manufacturers a change of structure – one could even say a change of culture. By consulting academic literature and by carrying out 8 in-depth interviews in manufacturing firms located in Brussels (7) and Eindhoven (1), we identify two domains that form the overall SO of a manufacturing firm:

<i>SERVICE ORIENTATION</i>	
1. Service Orientation of Corporate Arrangements	2. Service Orientation of the Business Strategy
Service Recruitment, Training, and Rewards Service Cross-functional Communication Service Information and Communication Technologies Customer Treatment	Services Supporting the Products Services Supporting the Clients

II. 1. Service Orientation of Corporate Arrangements (SOCA)

To be service oriented, your organization must simultaneously:

1. Hire, Train and Reward Service People.

"We have to start getting used to hiring different people. When you deliver a service you need people with soft skills. [...] Most of our engineers would not know how to deal with clients. Actually, we tried to put engineers behind our help desk but it simply didn't work. They didn't feel valued for that work and, on top of that, customers were not really getting the right attention."

"If you want people to start acting differently you have to explain to them what you want. People also need to feel that their efforts will be rewarded, especially contact employees because they deal with all the customers' problems, basically. They [contact employees] are the first people in the escalation procedure if our products go wrong and they need to do their job well."

2. Install Communication between the (Customer) Service Department and the rest of the firm.

"The service department is finally considered during decision making to do with product development because we possess a lot of market information even if we still feel that it is a bit too late [in the process]. Top management is currently working on this."

"I think engineers are starting to value our opinion [...]. They see that we know those products as well as they do. We also work on them [...]. More and more, we can participate in meetings about new products and don't just send out information about product defect rates or mean time to repair for example."

3. Invest in Service Information and Communication Technologies. That is investing in database management tools and technologies that can support frontline employees in their efforts to serve the clients. It has been demonstrated that service providers who introduce new service products more rapidly than others have a significantly better control over their information technology infrastructure.

4. Treat the Customer right. Customer treatment has been shown to be a necessary and practically sufficient condition for customers to reach satisfaction with service delivery.

We have taken a strict approach to measuring each company's service orientation of its corporate arrangements as you will see in section IV.1. We argue that being service oriented requires support for all 4 practices simultaneously. Therefore, we do not measure Service Orientation as an overall mean of the support for these four practices. Instead, we introduced a multiplicative effect. This means that low support for one of the practices will more strongly negatively affect our measurement of your service orientation than if we had simply considered the overall mean.

Being service oriented starts as early as in the recruitment process and finishes only when the service is well delivered to the customer. If cross-departmental communication is low and support technologies not adequate, you are not optimizing your service potential.

II. 2. Service Orientation of Business Strategy

In literature, the Service Orientation of Business Strategy is measured as follows:

NUMBER OF SERVICES OFFERED
X
NUMBER OF CLIENTS WHO PURCHASE/ARE OFFERED THE SERVICES
X
PROACTIVENESS WITH WHICH YOUR FIRM OFFERS THE SERVICES

<i>TWO CATEGORIES OF SERVICES</i>	
Services Supporting the Products	Services Supporting the Clients' Actions
Documentation Transportation Installation Help Desk/Call Center Inspection/Diagnosis Repair/Spare Parts Product Upgrades Product Refurbishing Recycling/Brokering Preventive Maintenance Condition Monitoring Process Oriented Engineering (test, optimize, simulate)	Financing Services Spare Parts Management Process Oriented Training (quality driven including technology) Business Oriented Training (financially driven/management training) Process Oriented Consulting (quality driven including technology) Business Oriented Consulting (financially driven/management training) Managing the Maintenance Function Fully Managing product related Operations (complete ownership of the product by vendor)

Our reason for classifying field services in two categories is explained by the fact that managers and researchers are suggesting that services supporting the products do not help manufacturers in attracting, satisfying and keeping customers anymore. We will empirically test that.

We will then compute two measures for the Service Orientation of Business Strategy as follows.

(1) Number of SSP x Number of Customers offered SSP x Offer proactiveness of SSP

(2) Number of SSC x Number of Customers offered SSC x Offer proactiveness of SSC

This will enable us to evaluate the different effects of field services strategies on attracting, keeping and retaining your customers. Is it so that a high support for strategy (1) will not influence your relative performance in attracting, keeping and retaining customers?

Having introduced our main focus of Service Orientation, we continue by exposing the descriptive of the participating companies.

III. DESCRIPTIVE OF PARTICIPATING COMPANIES

III. 1. Number of Companies and Primary Industry Segments

The number of companies that responded: **151**.

IND 1. Machinery Manufacturing (43)	Printing/Graphic Industry: Machine Manufacturing (9) Machine Manufacturing (food and non food) (3) Medical Apparels/Manufacturing/Pharma (8) Machine Manufacturing/parts/container (7) Machine Manufacturing for the Industry (13) Machine Manufacturing/Packaging (2) Machine Manufacturing – Other (1)
IND 2. Automotive Manufacturers (4)	
IND 3. Construction/Manufacturing (16)	Manufacturing/Construction (8) Material Handling Manufacturing (8)
IND 4. Electrical/Manufacturing (13)	Cables/Connections Manufacturers (4) Electro/Manufacturing (6) Manufacturing Electricity (1) Security Systems Manufacturing (2)
IND 5. Electronics Manufacturing (26)	Electronics Manufacturing (heavy and precision) (26)
IND 6. IT and Telecom (19)	IT (15) Telecom (4)
IND 7. Mechanical/Manufacturing (25)	Engineering (5) Heater/Heating Manufacturing (7) Pipes/pipelines/Tubes Manufacturing (7) Pumps/Valves/Seals Manufacturing (6)
IND 8. Missing data (5)	

III. 2. Basic Descriptive per Primary Industry Segment

First, we asked whether you would refer to your whole company (WC) or to your business unit (BU). Since we are at the strategic/business level, this does not make a difference since both WC and BU are defined as "an entity that does its own strategic planning as to remain a profit center."

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
WC	55.8 %	75 %	43.8 %	69.2 %	57.7 %	42.1 %	44 %	80 %
BU	39.5 %	25 %	56.2 %	23.1 %	38.5 %	52.6 %	40 %	20 %
Missing	4.7 %			7.7 %	3.8 %	5.3 %	16 %	

Secondly, we inquired whether field services were (1) solely delivered by your firm, (2) delivered partly by partnership agreements, (3) completely outsourced, or (4) other. The results are the following:

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
1	65.1 %	25 %	56.3 %	23.2 %	26.9 %	21.1 %	28 %	20 %
2	27.9 %	75 %	37.5 %	46.2 %	50.1 %	68.4 %	48 %	80 %
3			6.2 %	23 %	11.5 %	10.5 %	16 %	
4	4.7 %			7.6 %	11.5%		8%	
Missing	2.3 %							

All industries follow the same trend except IND1 and IND3 where the majority of the firms surveyed were the sole deliverers of field services.

No significant link was found between the delivery mode of field services and the profitability of your firm or business unit.

Thirdly, we also asked you how old was your WC or BU (in years). The reason for doing so was to observe whether age has an impact on the extent of support for service strategies and the profitability of your firm. Age did have an impact on the support for service strategies (the older the firm, the higher the support) but not on profitability.

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
Average Age	26	20	25	22.5	23	17.5	24	37.5
Most recent	2 to 5	5 to 10	5 to 10	2 to 5	5 to 10	<2	2 to 5	30 to 40
Oldest	> 40	>40	>40	>40	>40	>40	>40	>40

Fourthly, we asked you information on the number of employees working in the business unit or company where you (the respondent) are located. In order to compute the mean, we have taken away the largest and smallest observations. The size of the firm in number of employees did not show a significant relationship with support for service strategies.

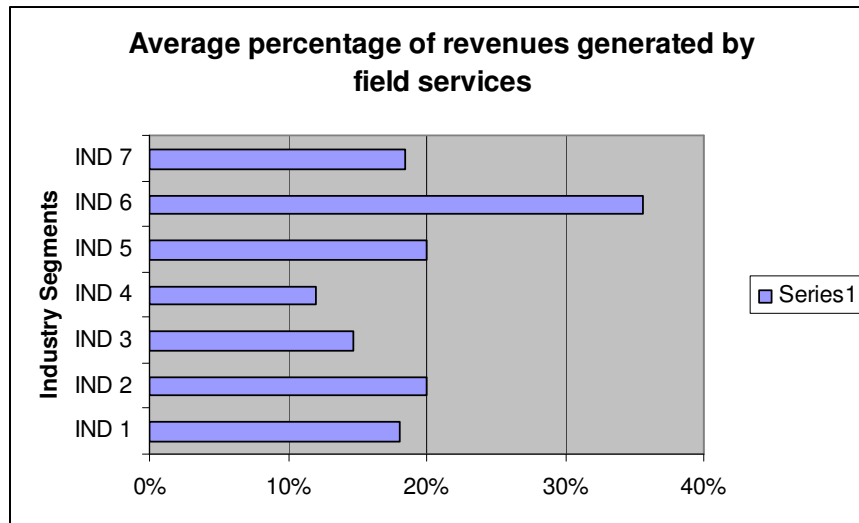
	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
Average # employees	172	1648	218	465	473	516	726	1520
Smallest	15	45	24	14	9	10	12	21
Largest	1000	5400	2500	2350	3000	5000	12000	3000

Also, we inquired about your WC or BU's last year revenues (in million US dollars).

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
Average Revenue	24.5	80	13	24.5	31	21.5	13	14
Lowest	<0.5	25	<0.5	<0.5	1	0.5	<0.5	<0.5
Highest	>110	>110	>110	>110	>110	>110	>110	>110

Finally, we also collected information on the percentage of your revenues that is generated by field services.

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
Average	18 %	20 %	14.7 %	12 %	20 %	35.6 %	18.4 %	22.5 %
Lowest	<10 %	<10 %	<10 %	<10 %	<10 %	<10 %	<10 %	<10 %
Highest	>80 %	60 %	>80 %	60 %	70 %	>80 %	> 80 %	60 %



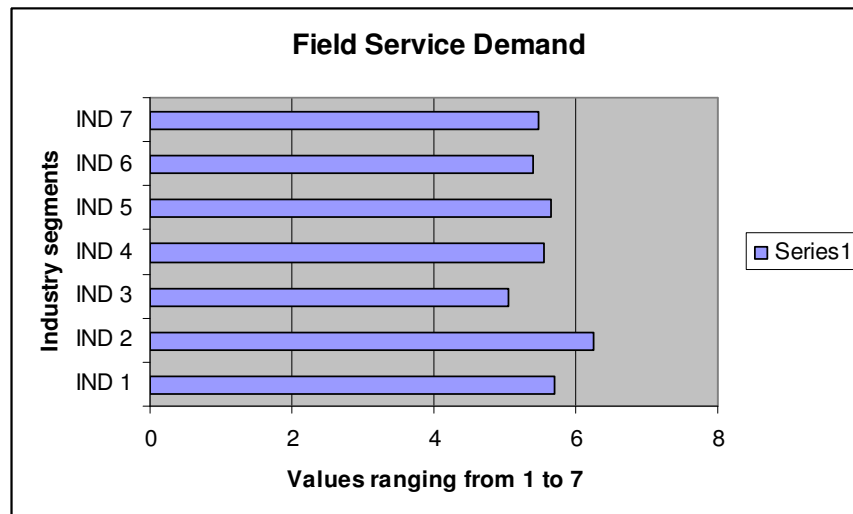
IV. YOUR MARKETS AND YOUR PERFORMANCES

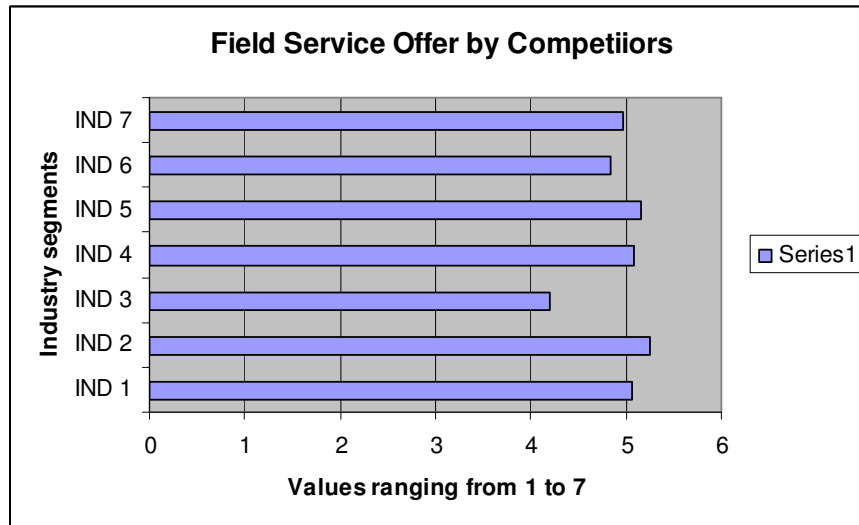
Here we expose results about your perceptions of the following (over the last 3 business years in your primary industry segment)

- Whether your customers are increasingly demanding support services (CD)
- Whether your competitors are increasingly offering support services (CO)
- Whether the average annual market growth rate of total sales is perceived as "very low" to "very high" (MGR)
- Whether your primary market is perceived as "not at all competitive" to "very competitive" (MC)
- What is your profit before tax as a percentage of total sales (PRO)

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
CD	5.70 (2-7)	6.25 (5-7)	5.06 (1-7)	5.54 (2-7)	5.64 (2-7)	5.41 (3-7)	5.48 (3-7)	6.00 (3-7)
CO	5.07 (2-7)	5.25 (3-7)	4.20 (1-7)	5.08 (2-7)	5.16 (2-7)	4.83 (3-7)	4.96 (2-7)	4.80 (3-7)
MGR	3.55 (1-7)	3.00 (1-6)	3.93 (1-7)	4.25 (2-6)	3.96 (1-6)	3.78 (2-6)	3.76 (1-6)	3.25 (1-4)
MC	4.90 (1-7)	7.00 (7-7)	5.40 (1-7)	5.83 (4-7)	5.60 (3-7)	5.39 (3-7)	5.52 (3-7)	5.00 (2-7)
PRO	8 % (<-6 % to >46 %)	8.5 % (-5 % to 35 %)	16 % (1 % to 30 %)	12 % (-5 % to 35 %)	12 % (<-6 % to 40 %)	15 % (<-6 % to 45 %)	8 % (<6 % to 40 %)	6 % (-5 % to 20 %)

(The numbers in parenthesis are the minimum and maximum reported on a scale from 1 to 7. For profit, the observations are reported in percentages)





Our results show that the market is perceived as significantly more competitive by managers in IND 2 (automobile manufacturing) than in the IND1, IND3, IND5, IND6 and IND7. Additionally, it appears that their customers are also more demanding in terms of field services. This result should be carefully interpreted since there are fewer observations in IND2. However, all respondents rated the market competitiveness at its maximum.

Even if there are no differences statistically, managers in Electrical/Manufacturing appear to perceive their market growth rate as more favorable than others. Interestingly, the industry with the highest market growth rate (perceived by respondents) is also the industry that generated the lowest revenue from field services. This can be explained by the fact that firms in this industry have more opportunities to generate revenues with the sales of the tangibles. Further, the lowest percentage of revenues generated by field services can also be a consequence of a lower support for SSP strategies in this industry segment (see page 12).

Statistically, there is no significant difference between the profits before tax as a percentage of total sales in the different industries. Construction/Manufacturing is, however, the industry that appears to be doing best on profitability.

IV. 1. How Service Oriented Are You?

Service Orientation of Corporate Arrangements

As exposed previously, Service Orientation is divided into two domains: that of the corporate arrangements and that of the business strategy.

We start by exposing the service orientation of the corporate arrangements. The following table regroups the service orientation of recruitment, training and reward structures (also forming an overall service orientation of HR practices measured using a multiplicative effect), the communication of (customer) service department with the rest of the firm with regards to the development of products, the use of service information and communication technology, and the customer treatment by your contact/frontline employees. Together, these practices will form the overall measure of service orientation of your corporate arrangements.

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
Recruit	5.10	6.00	5.27	4.90	5.28	4.95	4.80	3.40
Train	4.26	4.25	4.43	4.87	4.55	4.25	3.63	4.73
Reward	3.91	3.38	3.88	5.07	4.63	4.21	3.26	3.60
HR SO	4.43	4.54	4.53	4.53	4.82	4.48	3.90	4.91
Communication	4.67	4.85	5.11	5.25	4.64	5.54	3.75	5.68
ICT	5.08	5.42	5.13	5.49	5.45	5.00	4.72	5.87
C.Treatment	5.29	5.67	5.11	5.26	5.21	5.02	4.41	5.33
SO Overall	2.39*	2.69	2.52	2.72	2.59	2.56	1.76	3.18

[All measures were taken on a scale from 1 (low support) to 7 (high support)]

*: The maximum score for service orientation is $7 \times 7 \times 7 \times 7 =$ approx. 2400. The actual score with the multiplicative effect is: $4.43 \times 4.67 \times 5.08 \times 5.29 = 555.95$ On a scale from 1 to 7, with 7 being equal to 2400, the score for service orientation is equivalent to 2.39.

The overall service orientation using a multiplicative approach shows that **there is room for improvement for manufacturers in being more constant in equally supporting all practices**. Additional support for using a multiplicative effect is shown by the correlation matrix below. All practices are highly correlated with each other.

	Recruit	Train	Reward	Commu.	ICT	C. Treat.
Recruit	1					
Train	0.415	1				
Reward	0.420	0.393	1			
Commu.	0.404	0.362	0.393	1		
ICT	0.499	0.398	0.522	0.441	1	
C. Treat	0.548	0.525	0.455	0.439	0.487	1

All correlations shown are highly significant.

These results show that there is a significant positive impact of recruiting, training and rewarding service people and the use of service ICT on the level of customer treatment.

Service Strategy: Services Supporting the Products

The following table provides information on the percentage of firms offering services supporting the products, the number of clients that are offered the services (1= less than 5% - 7= 100 %) and the proactiveness (1= very passive – 7= very proactive) with which manufacturers offer these services.

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
DOC*	90.1 %	100 %	93.7 %	92.3 %	92.3 %	68.4 %	92 %	90 %
#C**	5.82	6.75	5.44	6.17	5.71	5.76	6.17	7.00
PRO**	5.31	6.50	4.94	5.36	5.17	4.62	5.19	6.00
TRANS	90.1 %	50 %	93.7 %	76.9 %	88.5 %	89.4 %	84 %	20 %
#C	6.44	7.00	5.87	5.50	5.83	6.29	5.73	7.00
PRO	5.56	7.00	5.50	5.70	5.52	6.47	5.33	7.00
INST	77 %	25 %	68.7 %	30.7 %	76.9 %	78.9 %	68 %	80 %
#C	5.94	7.00	5.25	4.00	4.90	5.74	4.71	7.00
PRO	5.82	7.00	5.08	4.40	4.55	5.73	5.11	7.00
HD	77 %	50 %	62.5 %	76.9 %	84.6 %	94.7 %	52 %	60 %
#C	6.18	7.00	4.91	5.80	6.18	5.94	5.71	6.67
PRO	5.82	6.00	5.00	5.40	5.59	5.89	4.85	4.00
INSP	72 %	75 %	81.2 %	61.5 %	73 %	73.7 %	72 %	80 %
#C	5.19	5.33	4.79	4.56	5.16	4.73	4.42	5.75
PRO	5.19	4.67	3.93	4.33	4.74	4.40	4.84	5.50
REP	93 %	100 %	81.2 %	76.9 %	80.7 %	84.2 %	88 %	100 %
#C	6.45	7.00	5.69	5.82	6.71	6.81	5.77	6.80
PRO	5.75	7.00	5.08	5.55	5.76	6.44	5.48	5.40
UPG	70 %	50 %	50 %	69.2 %	80.7 %	89.5 %	40 %	80 %
#C	5.43	4.00	4.87	4.40	5.95	5.50	3.83	7.00
PRO	5.10	4.00	5.43	4.40	5.14	4.94	3.67	7.00
REFUR	53.4 %	25 %	50 %	61.5 %	57.7 %	52.6 %	44 %	60 %
#C	5.00	4.00	5.44	3.50	4.40	4.09	4.42	7.00
PRO	4.57	1.00	5.13	3.40	3.87	3.64	4.00	7.00
RECY	37.2 %	25 %	37.5 %	23 %	26.9 %	42.1 %	12 %	0 %
#C	4.24	7.00	3.00	3.50	4.14	4.20	2.83	6.50
PRO	4.12	4.00	1.67	3.25	3.86	3.60	2.67	6.50
PM	67.4 %	75 %	68.8 %	30.7 %	61.5 %	57.9 %	68 %	80 %
#C	5.66	6.33	5.00	3.40	5.53	5.45	4.39	6.50
PRO	5.52	6.00	5.00	4.60	5.73	5.36	5.00	7.00
CM	37.2 %	25 %	12.5 %	23 %	46.1 %	47.4 %	48 %	40 %
#C	4.22	7.00	1.40	3.00	4.00	5.67	2.92	7.00
PRO	4.33	7.00	1.40	2.67	4.54	5.22	4.00	6.50
POE	44.2 %	50 %	50 %	38.5 %	65.3 %	57.9 %	44 %	40 %
#C	4.89	6.00	3.88	2.67	4.06	3.73	4.00	7.00
PRO	5.00	6.00	4.13	3.17	4.06	4.00	4.36	6.50

* The abbreviations of services follow the same order as those cited in the Services Supporting the Products table in section II 2.

** #C: Number of Customers; PRO: Proactiveness of the Offer.

We calculated the business strategy's service orientation with regards to the offering of SSP for each firm. The overall business strategy's service orientation (SSP) is the average of the individual results, which were calculated as presented in the formula in section II 2. These are presented per industry (on a scale ranging from 1 to 7):

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
SSP	2.96	2.82	2.24	2.02	2.74	2.85	2.09	3.50

Again, these results show that there is room for improvement. Of course, each firm must also evaluate whether it makes sense (whether there is a demand and whether it is profitable) to offer all these services, to all your clients and very proactively. It is unlikely to be the case.

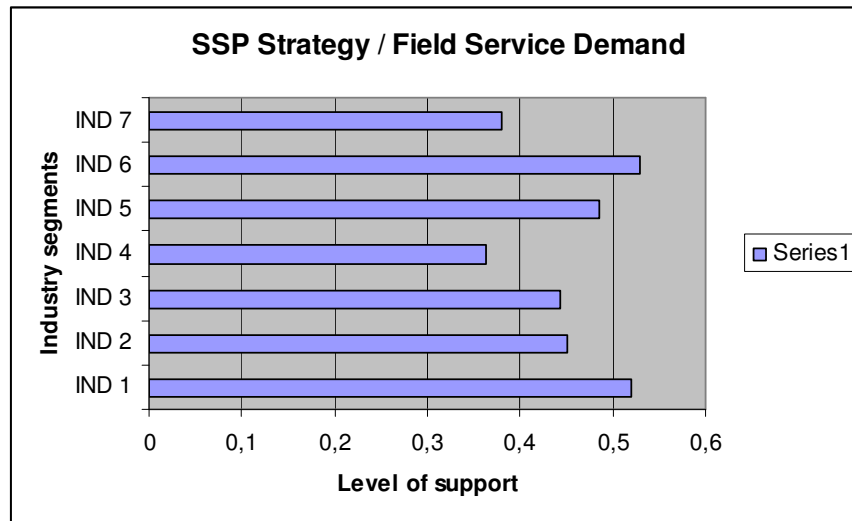
- In IND 1, the mean number of SSP offered is 8 to 80 % of the customers.
- In IND 2, the mean number of SSP offered is 6 to 89.5 % of the customers.
- In IND 3, the mean number of SSP offered is 7 to 69 % of the customers.
- In IND 4, the mean number of SSP offered is 6 to 74.4 % of the customers.
- In IND 5, the mean number of SSP offered is 8 to 77 % of the customers.
- In IND 6, the mean number of SSP offered is 8 to 78.7 % of the customers.
- In IND 7, the mean number of SSP offered is 7 to 68.8 % of the customers.

Finally, we compare the following ratios in order to evaluate which industry responds better to its market demands for field services:

Service Orientation of SSP / Field Service Demands

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
SSP	2.96 /	2.82 /	2.24 /	2.02 /	2.74 /	2.85 /	2.09 /	
	5.70 =	6.25 =	5.06 =	5.54 =	5.64 =	5.41 =	5.48 =	
	0.519	0.451	0.443	0.364	0.486	0.529	0.381	

From these ratios, we conclude that IT and Telecom manufacturers are those that better fulfill the need for field services of their customers.



Service Strategy: Services Supporting the Client's actions

The following table provides information on the percentage of firms offering the services supporting the clients, the number of clients that are offered the services (1= less than 5% - 7= 100 %) and the proactiveness (1= very passive – 7= very proactive) with which manufacturers offer these services.

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
FS*	23.3 %	75 %	37.5 %	38.5 %	34.6 %	37.8 %	16 %	25 %
#C	3.91	5.67	2.43	3.83	3.20	4.71	3.25	5.00
PRO	3.73	6.00	1.71	4.00	3.30	3.71	3.25	2.00
SPM	39.5 %	25 %	25 %	53.8 %	61.5 %	42.1 %	44 %	60 %
#C	5.29	6.00	3.40	3.25	5.06	5.11	4.42	7.00
PRO	5.25	6.00	3.40	3.75	4.86	5.11	4.83	7.00
POT	60.5 %	50 %	50 %	46.1 %	65.5 %	36.8 %	48 %	40 %
#C	4.88	4.50	4.11	3.71	5.06	4.86	3.31	4.00
PRO	5.00	4.00	4.67	4.29	4.76	4.43	3.77	3.50
BOT	9.3 %	25 %	18.8 %	15.4 %	3.9 %	10.1 %	8 %	0 %
#C	5.20	7.00	2.25	3.00	7.00	2.67	2.33	
PRO	3.60	7.00	2.00	2.67	6.00	2.33	2.67	
POC	46.5 %	0 %	50 %	46.2 %	42.3 %	36.8 %	44 %	25 %
#C	3.67		3.63	2.67	4.55	2.75	3.55	3.00
PRO	3.67		4.00	2.83	4.09	2.63	4.09	1.00
BOC	9.3 %	0 %	6.25 %	15.4 %	3.8 %	26.3 %	4 %	0 %
#C	3.60		2.00	2.25	2.00	2.83	1.00	
PRO	4.20		2.00	2.25	4.00	3.17	1.00	
MMF	41.9 %	25 %	37.5 %	30.8 %	50 %	42.1 %	48 %	60 %
#C	4.06	5.00	3.33	2.40	3.92	5.00	3.31	5.33
PRO	4.44	5.00	3.33	3.40	4.33	5.13	4.00	5.33
FMP	11.6 %	25 %	6.25 %	7.7 %	34.6 %	47.4 %	28 %	80 %
#C	2.86	7.00	1.50	1.67	3.00	4.33	2.38	5.00
PRO	2.67	7.00	1.50	1.67	4.44	5.22	4.38	4.50

* The abbreviations of services follow the same order as those cited in the Services Supporting the Clients table in section II 2.

We calculated the business strategy's service orientation with regards to the offering of SSC for each firm. The overall business strategy's service orientation (SSC) is the average of the individual results, which were calculated as presented in the formula in section II 2. These are presented per industry (on a scale ranging from 1 to 7):

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
SSC	2.11	1.97	2.02	2.22	2.59	2.44	2.10	2.45

In IND 1, the mean number of SSC offered is 2 to 62.28 % of the customers.

In IND 2, the mean number of SSC offered is 2 to 78.6 % of the customers.

In IND 3, the mean number of SSC offered is 2 to 43.86 % of the customers.

In IND 4, the mean number of SSC offered is 2 to 61 % of the customers.

In IND 5, the mean number of SSC offered is 3 to 60.5 % of the customers.

In IND 6, the mean number of SSC offered is 2 to 62 % of the customers.

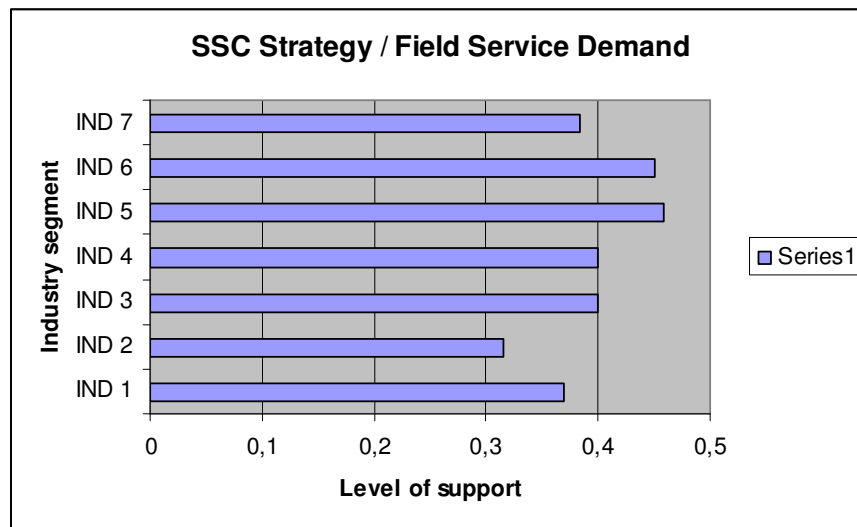
In IND 7, the mean number of SSC offered is 2 to 51 % of the customers

Finally, we compare the following ratios in order to evaluate which industry responds better to its market demands for field services:

Service Orientation of SSC / Field Service Demands

	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
SSC	2.11 / 5.70 = 0.370	1.97 / 6.25 = 0.315	2.02 / 5.06 = 0.399	2.22 / 5.54 = 0.400	2.59 / 5.64 = 0.459	2.44 / 5.41 = 0.451	2.10 / 5.48 = 0.383	

If the demand for field services is equally valid for services supporting the client, it is IND 5, which better fulfills customer needs.

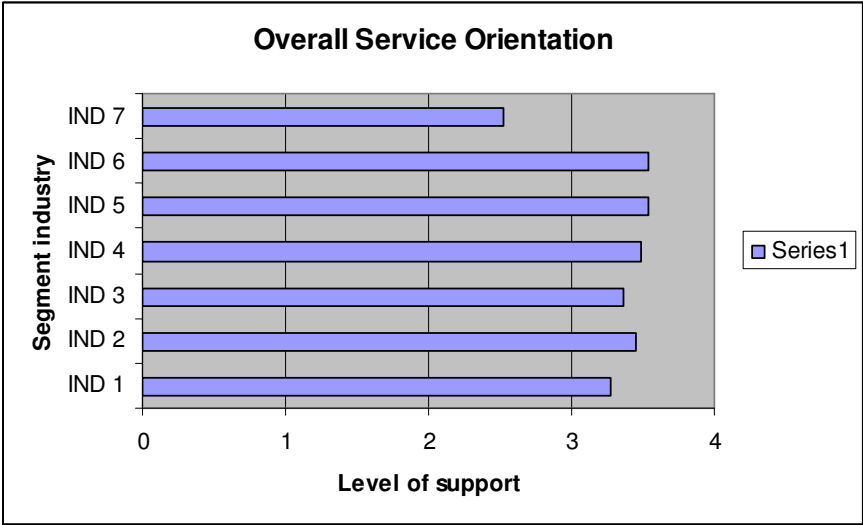


Summary: Overall Service Orientation

The overall service orientation is presented in the following table. The service orientation of corporate arrangement is not weighted according to field service demands since low or high demands still require changes in the organization's corporate arrangements.

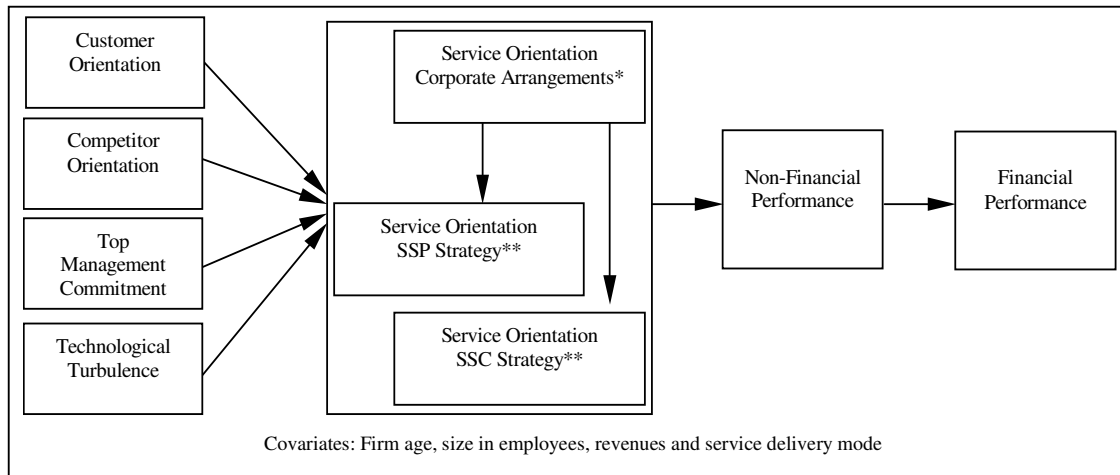
	IND1	IND2	IND3	IND4	IND5	IND6	IND7	Missing
SOCA	2.39	2.69	2.52	2.72	2.59	2.56	1.76	
SSP	0.519	0.451	0.443	0.364	0.486	0.529	0.381	
SSC	0.370	0.315	0.399	0.400	0.459	0.451	0.383	
Overall (Sum)	3.279	3.456	3.362	3.484	3.535	3.540	2.524	

Since there is no fundamental (statistical) difference between the extents of support for service orientation across industries we continue by presenting the relationships between the antecedents and consequences of service orientation at an aggregate level of analyses.



V. ANTECEDENTS AND CONSEQUENCES OF SERVICE ORIENTATION

Theoretically, this is our conceptual model:



* The service orientation of HR practices, cross-functional communication, information and communication technologies and customer treatment form the service orientation of corporate arrangements.

** The number of service offered, emphasis on and the proactiveness of the service offering form the service orientation of business strategy.

Question 1: What drives manufacturers to implement a Service Orientation of Corporate Arrangements (SOCA)?

Both customers and competitors put pressure on firms to become more efficient and effective in the market place. That is why we hypothesized a relationship between how oriented your company or business unit is to customers and competitors and the support for SOCA.

Customer Orientation: "the degree to which a company – or a strategic business unit – is committed to customers and aims at reaching customer satisfaction and creating customer value"

Competitor Orientation: "the means that a seller understands the short-term strengths and long-term capabilities and strategies of both the key current and the key potential competitors"

Also, "service leadership is the art of leading and espousing a mental, strategic and spiritual change in the organization and simultaneously initiating and accomplishing practical changes and ensuring that they are systems and measures". We postulate that top management's vision and leadership in managing services is also a key driver to the manufacturer's service orientation

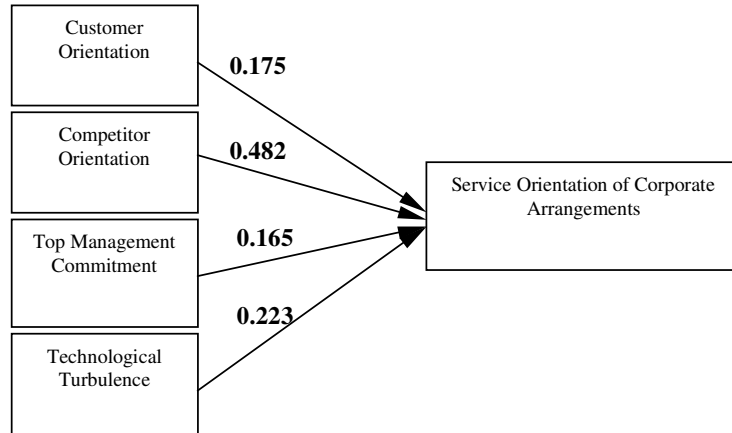
Top Management Commitment to Services: "Degree to which top management stimulate the organization to adopt a service orientation to various degrees and evaluates its service leadership"

Rapid technological changes, diminishing product life cycles and fast time to market requirements have most manufacturers under pressure. Competing in the market on the technological advancements can prove to be extremely complicated if not impossible for a large number of manufacturers. Indeed, constantly staying a leader by integrating the latest

technological advancement can prove to be a game where the winner takes it all. Therefore, we hypothesized that the more manufacturers are confronted to technological changes, the more they will integrate service offerings and alter their corporate arrangements in order to counter their competitors and stay in phase with their market. In other words, services will enable manufacturers to have a more flexible approach to changing markets.

Technological Turbulences: "Degree to which technology changes and develops quickly over time and the extent of opportunity that it creates"

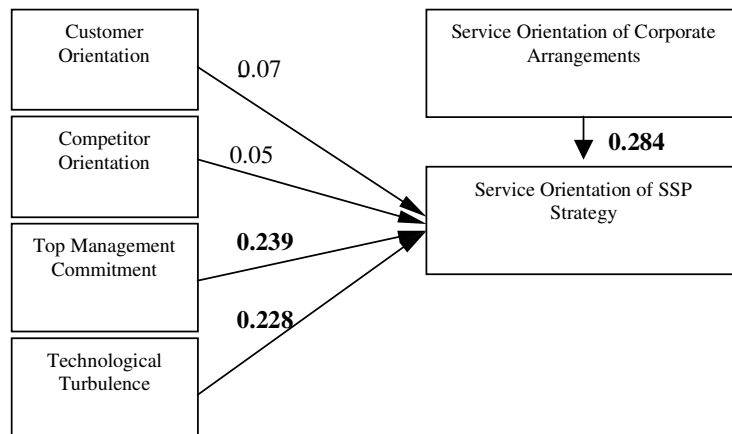
Question 1: Results



All four relationships were statistically significant. We show that most pressure in the manufacturing industry comes from **competitors** and that industries with a primary industry segment confronted to higher **technological turbulences** adopt SOCA to a higher extent.

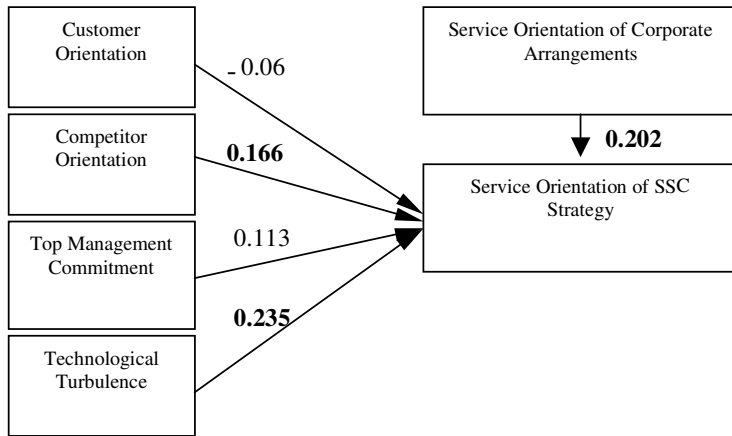
Question 2: What drives manufacturers to have a Service Orientation of (a) SSP and (b) SSC strategies?

Question 2 (a): Results



Our results showed statistical significance for three of the five relationships postulated to influence the service orientation of the SSP strategy. Those are top management, technological turbulences and the **SOCA**.

Question 2 (b): Results

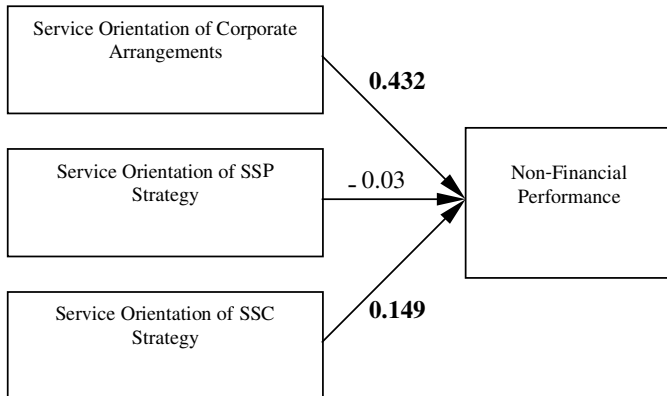


Our results showed statistical significance for three of the five relationships postulated to influence the service orientation of the SSC strategy. Those are competitor orientation, technological turbulences and the SOCA. Most interestingly, these results show that additionally to technological turbulence and SOCA, pressure from **competitors** drive manufacturers into focusing more on SSC strategies.

Question 3: What are the consequences on the non-financial performance (performance in the market) of manufacturers when they have a service orientation of corporate arrangements, SSP strategies and SSC strategies?

The performance in the market is measured by the ability of the manufacturer to: Achieve customer satisfaction, provide customer benefits, attain desired market share, attain desired growth in revenues, build positive image, keep existing customers, and attain new customers.

Question 3: Results



Our findings demonstrated that the SSC strategies are a key differentiator in order to attain relative non-financial performance. The link between SSP strategies is not significant and practically neutral in value. On the contrary, **SOCA** and **SSC strategies** demonstrate a significant link to non-financial performance. The role of SOCA appears to be crucially important.

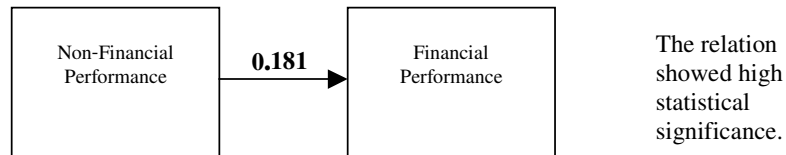
Question 4: Does non-financial performance lead to financial performance?

In fact, in terms of figures and in order to prove the benefits of customer retention, researchers state a five to ten times more expensive acquisition cost than retention cost. In the same perspective, but in a different manner, others suggest that the benefits are cumulative and that the longer the relationship cycle, the greater the company's financial strength. Higher customer retention really means a customer base, which buys more frequently and to whom the company can easily submit new offerings. Reichheld and Sasser found a high correlation between customer retention and profitability across a range of industries. Satisfaction, mutual

understanding, collaboration and loyalty were all stated as key factors in order to reduce operating costs, increase clients' share of wallet, acquire new customers through word-of-mouth as well as create lower price sensitivity and higher profit. This is especially true in business-to-business marketing.

Financial revenues: "the profit before tax as a percentage of total sales (before tax) of your company on average over the last three business years in your primary industry segment" (All other measured related to your primary industry segment as well).

Question 4: Results



VI. DISCUSSION AND MANAGERIAL IMPLICATIONS

The goal of this research was to empirically study the service orientation of manufacturing firms. We are witnessing changes in the market and there is a general trend showing that manufacturers are increasingly moving towards the offering of services to their customers.

This observation generated several questions. What really drives manufacturers to pay more attention to services? If they decide to offer more services, how should their organization change? Will a change in their organization help them in being more supportive of a service strategy? Yet, if they are service-oriented, does it help manufacturers increase their performance in the market? From these interrogations, we decided to look into the concept of service orientation and adapt it to this particular research setting. The definition of service orientation well reflected the evidence of a complex reality. It takes more than simply offering services to be service-oriented.

First and foremost, we prove that service oriented organizational behavior in the manufacturing sector does lead to **higher non-financial performance**. In order to implement these changes managers can focus on corporate parameters and business strategies.

One aspect that really proved to be of **key importance is the service orientation of corporate arrangements** validating the thoughts of other researchers on the importance of internal parameters to the firm. We demonstrate the importance of adopting a service orientation of HR practices, cross-functional communication behavior, technology and customer treatment. These are key issues that needed to be pointed out in order to help managers to focus and formulate a clear overall approach to service adoption.

Secondly, we demonstrate that **internal arrangements help support SSP and SSC strategies** of the firm. This is extremely important for one main reason. We demonstrate that the service orientation of top management did not significantly increase the support for SSC strategies. Yet, this strategy is the one that significantly increases the non-financial performance of the firms. Therefore, we have again demonstrated the crucial role of corporate arrangements to fill in the absence of a direct significant relationship between top management commitment and the support for SSC strategy. This may be due to the fact that **the top management of manufacturing firm still lacks service people**. This is an indication to manufacturing firms that the presence of a service director in top management is crucial.

In terms of service strategy, we have replicated the measures that were initially implemented by other researchers for the simple reason that they well represented the reality of the service strategy. Therefore, even of the conceptualization of and computation for service strategy is not new; it has created awareness in the management of manufacturing firms. Even if not all manufacturers can or wish to offer the complete list of service supporting the clients, they may decide to analyze the demand and focus on those that are the most requested by customers. **By having a large customer base, emphasizing and proactively offering a few of these services, manufacturers can develop relationships and retain their customers.**

Further, we have demonstrated that customer orientation does not directly impact the service orientation of SSP and SSC strategies. From these findings stems a very critical question. Manufacturers know that there is a need to focus on services because they are implementing service orientation of corporate arrangements but are manufacturers adequately focusing on their service strategies to respond to these needs? More interesting is the fact that manufacturers implement **SSC strategies under pressure of competitors**. Could it be – even if SSC strategy has proven to create non-financial performance – that manufacturers are quickly reacting to each other's strategies without truly developing their strategy sufficiently? Descriptive data (in section IV) on the support for SSC strategies shows that there is **room for improvement in developing the offer and emphasis on strategies for services supporting the client's actions**. Service orientation does not come for free. Could the relationship between SSC strategy and non-financial performance be significantly strengthened if manufacturers focused more on customer needs and encouraged top management to be more involved with service strategies? This is definitely a key issue that manufacturers should be taking into consideration because we believe the answer to the previous interrogation to be positive.

With regards to technological turbulences, we demonstrated that it affected all three measures of service orientation. **This tells manufacturers in a turbulent market place that their competitors will focus on services and will utilize this approach and strategy to differentiate themselves**. Yet, the question remains the extent of scope with which they will develop their service orientation and the adequacy between their service offering and the demands of customers.

In addition, when observing the descriptive data, one can suggest that manufacturers should further support the service orientation of corporate arrangements. This support can appear low due to the multiplicative effects but descriptive data on section IV shows that **manufacturers should focus on service rewards, service training and cross-functional communication of the service department**. This is especially important because of the significant correlations between the implementation of these practices and the significant impact on your possibilities to attain good customer treatment.