Master of Science in Project Management

Project Quality Management Application in the Financial Service Industry

By

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The presentation will focus on:

1) Project Management and Financial Industry.

2) The credit card.

3) Total Quality Management and Customers.

4) Total Quality Management and Banking Industry.

5) Techniques and processes that measure quality.

6) Credit Card Back Office process.

7) The Taguchi L9 Design of Experiment.

8) Factors and the Responses.

9) Discussions-Conclusions-Recommendations.

❖Project management is the new wave of the future in global business and projects are closely related with customers.

❖Customers are part of the projects.

❖Projects are becoming customer driven in order to achieve customer satisfaction.

❖**Project management literature is focused on business community and how practices and tools can be used with success.**

❖**This study has a core the practices of project quality management and how can be applied in sectors like financial services industry where the customer is a core of each kind of project.**

The Financial Service Industry seems to be one of the fastest growing parts of world economy.

Legend:
- Banking
- Life Assurance
- Gen. Insurance
- Asset Management
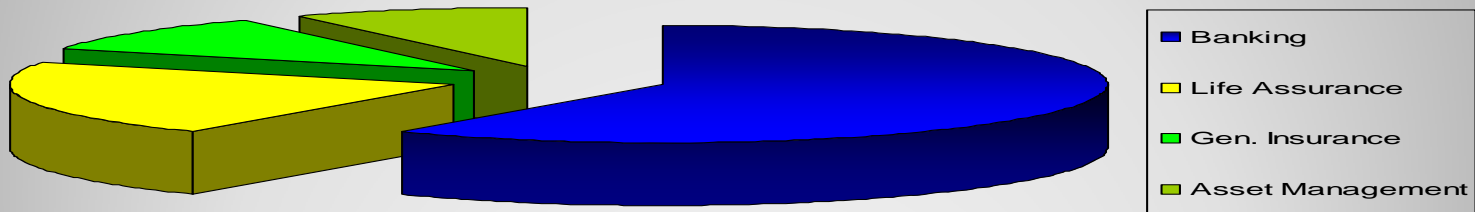
There are four main areas of this sector:

❖ **banking**

❖ **life insurance**

❖ **general insurance**

❖ **asset management**

❖The most common 'product' offered from financial industry is the credit card.

❖A credit card portfolio can be easily demanding therefore a wide range of effective processes is required to manage acquisition units, back office servicing teams and card holder support center.

❖ **The evaluation thesis presents a credit card back office process from a financial institution in which a quality tool applied in order to measure the outcome of the process which is related with the customer satisfaction.**

❖ **The implementation of the quality tool in the process is a project which is monitored, controlled and evaluated from the Project Management Office of the financial institution.**

❖ **In many organizations around the globe both project management (P.M) and total quality management (T.Q.M) are separated.**

'THIS DISADVANTAGE AFFECTS CUSTOMER SATISFACTION'.

❖**The Project Quality Management practices combine both Project Management and Total Quality Management.**

❖**From the early 1990's organizations started to adapt project management practices in combination with the total quality management philosophy.**

❖**Total Quality Management process is a series of activities that include inputs, processes and outputs.**

Inputs	Process	Outputs
Customers needs, wants, expectations	Total Quality Management	Satisfied Customers

Joseph M.Juran noted that:
"*the twentieth century was the century of productivity the twenty-first century will be the quality century*".

❖**Total quality management targets the total customer service and continuous customer satisfaction. Can be applied not only in the manufacturing industry but in service sector as well where:**

THE CUSTOMER IS IMPORTANT.

❖The banking industry often the biggest service industry in a country, stand to benefit from Total Quality Management.

❖Many financial institutions describe Total Quality Management (TQM) as a methodology for continuous monitoring and incremental improvement of a supply-line process by identifying causes of variation and reducing them.
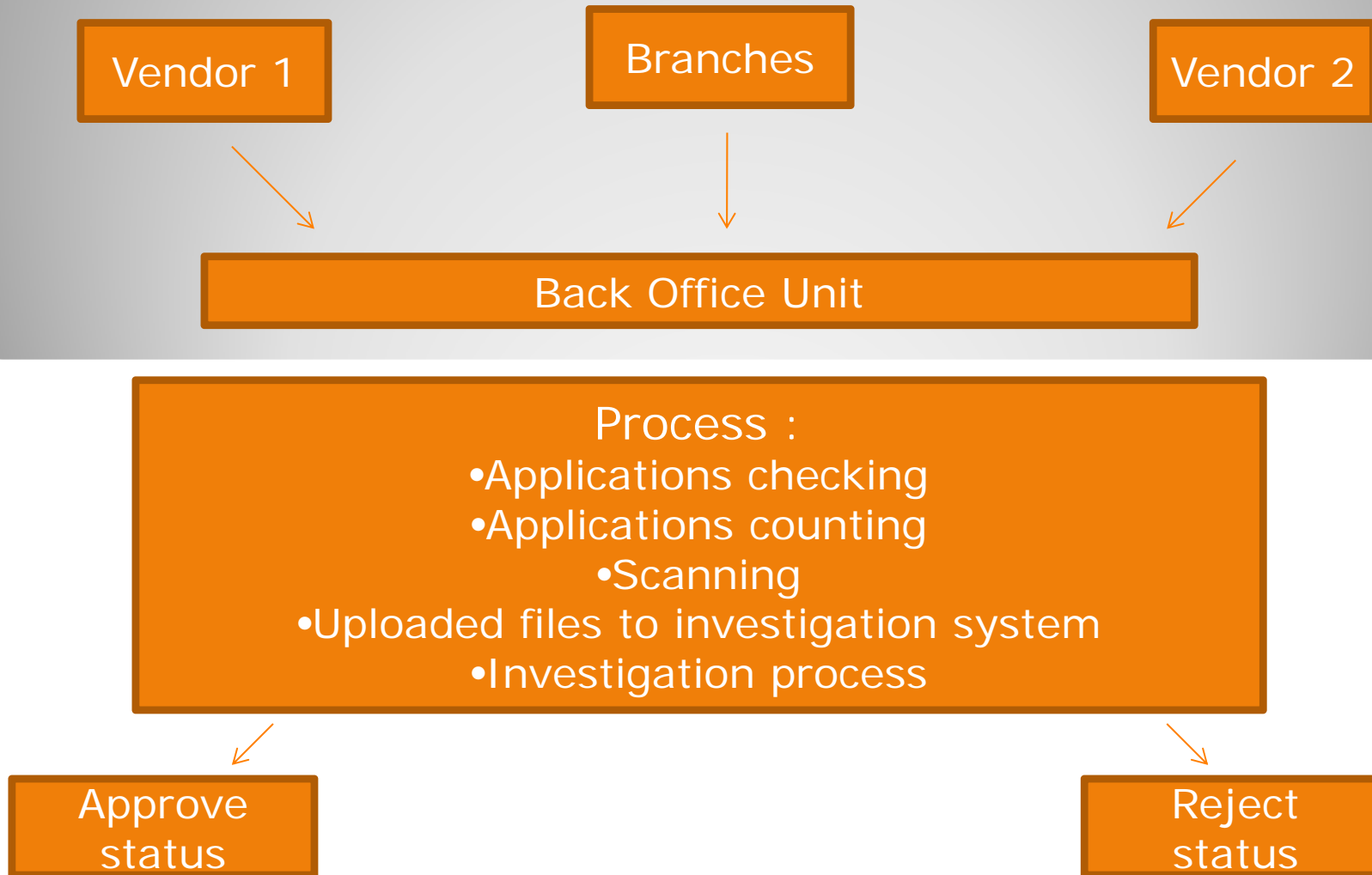
❖The quality concept requires to observe the final outcome, which could be a product or a service, from the customer's perspective

❖In order the quality of a product or service be measured or be improved many different techniques and tools and processes were developed and are still developing to achieve customer's satisfaction.

Techniques and processes measuring quality

Statistical Process Control (SPC).

Zero Defects.

Six Sigma.

Quality Cycles.

Quality Management Systems (ISO 9000).

Theory of Constraints (TOC).

Malcom Baldrige National Quality Award.

Fishbone Diagram – Ishikawa.

Design of Experiments (DoE –Taguchi's L9, L12 experiments).

The credit card back office process in which a quality tool applied in order to measure the outcome of the process which is related with the customer satisfaction.

Vendor 1

Branches

Vendor 2

Back Office Unit

Process :
- Applications checking
- Applications counting
- Scanning
- Uploaded files to investigation system
- Investigation process

Approve status

Reject status

Design of Experiment

❖A Taguchi L9 (3^4) orthogonal array experiment is applied for investigating non-linear effects considering as main factors the:

❖the lead time that the application of the process needs

❖the back office and investigation process function

❖customer satisfaction as a result of the back office process

❖This method ensures good performance in the design stage of product or process. The aim is to make a product or a process less variable (more robust) in the face of variation over which there is little or no control. Design of Experiments (DoE) as a statistical technique can improve therefore the performance of the product or the process design.

A quality characteristic can follow one of the three possible optimization directions which are:

i. *"Smaller-the-better" quality characteristic. Rank one is assigned to data observation entry possessing the smallest magnitude, rank two is to the next smaller and so on.*

ii. *"Larger-the-better" quality characteristic. Rank one is assigned to data observation entry possessing the largest magnitude, rank two is to the next larger and so on.*

iii. *"Nomimal-is-best" quality characteristic. Rank one is assigned to the data observation with the smallest absolute discrepancy with respect to the nominal value, rank two the next smaller and so on.*

Thus the Taguchi SN- plot answers the question:
"What level of the independent variable yields the "best" value of the response (as measured by the largest value of the signal-to-noise ratio)?"

- S/N=-10*log10($|\Sigma y^2/N|$)   "smaller-the-better"

- S/N= -10*(log (Σ (1/Y^2)/N)) "larger-the-better"

Where **N** is the number of observations in the subsample
and **y** is the data observations in the subset.
The Taguchi SN plot consists of the following:
Vertical axis = the Taguchi S/N value for each sub-group;
Horizontal axis = sub-group designation.

❖**The inputs are the personnel, the vendor network, the application processing and the selection criteria.**

❖**The outputs are the lead time, the back office reconciliation and investigation process and the customer satisfaction.**

A six step Design of Experiment (DoE) process encloses the orthogonal array concept that is based on Taguchi's principles. Thus:

i. *Step1: problem identification.*
The first step is important because specifies which parts of the process need investigation.
ii. *Step 2: identification of quality characteristics and the control of factor settings.*
In this step are pointed the inputs and the outputs of the process.
iii. *Step 3: orthogonal array selection.*
This step selects the experiment settings.
iv. *Step 4: trial conduction.*
During this step trial runs are being set in order to define the effects during every random change of the factors.
v. *Step 5: data analysis on weighted responses.*
Data are converted in from original variables to ranks that will conclude to a single master response.
vi. *Step 6: confirmation experiment.*
The settings from each factor which have a statistical importance assist in the estimation of the responses.

ANOVA Table

Source of Variation	SS	df	MS	F
Between	$SS_{between} = \sum_{j=1}^{j} n_j \left(\bar{Y}_j - \bar{Y} \right)^2$	$j-1$	$MS_{between} = \dfrac{SS_{between}}{j-1}$	$\dfrac{MS_{between}}{MS_{within}}$
Within	$SS_{within} = \sum_{j=1}^{j} \sum_{i=1}^{n_j} \left(Y_{ij} - \bar{Y}_j \right)^2$	$n-j$	$MS_{within} = \dfrac{SS_{within}}{n-j}$	
Total	$SS_{total} = \sum_{j=1}^{j} \sum_{i=1}^{n_j} \left(Y_{ij} - \bar{Y} \right)^2$	$n-1$		

PERSONNEL	VENDOR NETWORK	APPLICATION PROCESSING	SELECTION CRITERIA	Lead Time	Back Office Reconsiliation& Investigation Process	Customer Satisfaction
P1	B	Current	X	2	2	7
P1	V1	D	1000	3	2	6
P1	V2	Dp	45000	2	4	8
P2	B	D	45000	4	2	8
P2	V1	Dp	X	3	4	7
P2	V2	Current	1000	2	3	3
P3	B	Dp	1000	2	2	9
P3	V1	Current	45000	4	2	5
P3	V2	D	X	3	4	5

❖ **i. _Personnel (P1, P2, and P3):_ _The personnel indicates the back office employees._**

❖ **ii. _Vendor Network (B, V1, and V2):_ _The vendor network indicates the sales channels._**

❖ **iii. _Application Processing (Current, D, and DP):_ _The application processing indicates the current process and the possible changes (D, Dp) on the process._**

❖ **iv. _Selection Criteria(X, 1000, 45000):_ _The selection criteria indicate the credit limit of the credit card._**

❖ **v. _Customer satisfaction:_ _Customer satisfaction is measured with rank 1 to 10 where 10 is the delight customer._**

❖ **vi. _Lead time:_ _The lead time indicates the working days for the application to be approved or rejected._**

❖ **vii. _Back office Reconciliation & Investigation process:_ _The back office reconciliation and investigation process indicates the working days of the process._**

Response :Lead time

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Personnel	2	8,0550	8,0550	4,02751	*	*
Vendor Network	2	16,3239	16,3239	8,16193	*	*
Application Processing	2	16,3239	16,3239	8,16193	*	*
Selection Criteria	2	12,2176	12,2176	6,10881	*	*
Residual Error	0	*	*	*		
Total	8	52,9204				

❖The calculations present the numerical results regarding the lead time.

❖The sum of the squared deviations from the Vendor Networking and the Application processing has the biggest dispersion (MSs = 8,16193).

❖The dispersion indicates that these two sources need improvement.

Level	Personnel	Vendor Network	Application Processing	Selection Criteria
1	-7,195	-8,027	-8,027	-8,368
2	-9,201	-10,375	-10,375	-7,195
3	-9,201	-7,195	-7,195	-10,034
Delta	2,007	3,181	3,181	2,840
Rank	4	1	2	3

Main Effects Plot for SN ratios
Data Means

Signal-to-noise: Smaller is better
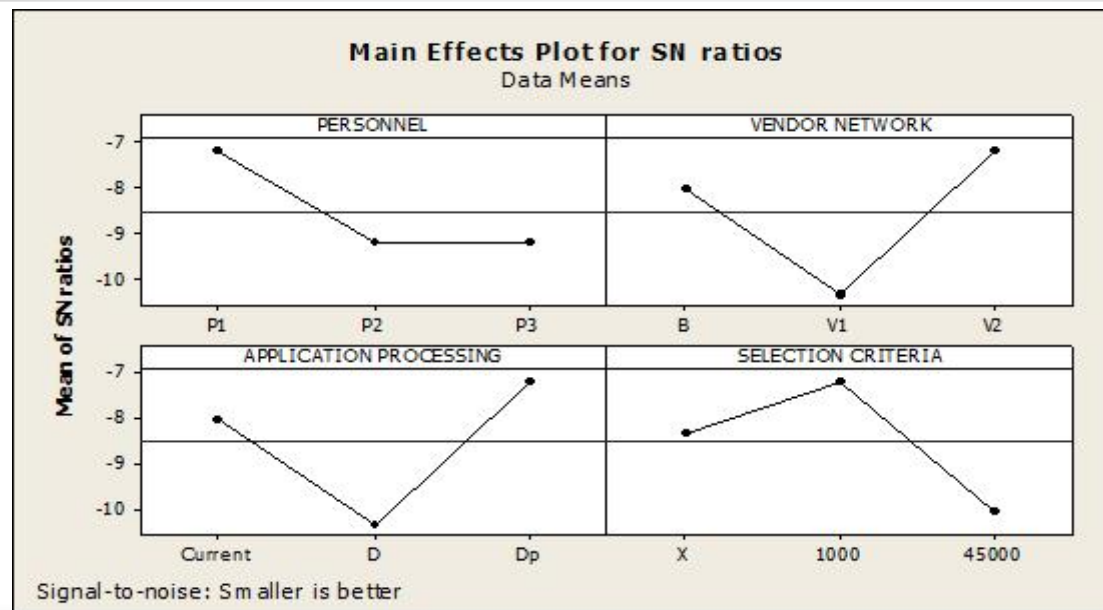
Response :Back Office Reconciliation & Investigation process

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Personnel	2	2,7563	2,7563	1,3781	*	*
Vendor Network	2	41,0570	41,0570	20,5285	*	*
Application Processing	2	12,7857	12,7857	6,3928	*	*
Selection Criteria	2	12,7857	12,7857	6,3928	*	*
Residual Error	0	*	*	*		
Total	8	69,3847				

❖The calculations present the numerical results regarding the back office reconciliation and investigation process.
❖The sum of the squared deviations from the Vendor networking has the biggest dispersion (MS=20, 5285).
❖The dispersion indicates that this source need improvement.

Level	Personnel	Vendor Network	Application Processing	Selection Criteria
1	-8,027	-6,021	-7,195	-10,034
2	-9,201	-8,027	-8,027	-7,195
3	-8,027	-11,208	-10,034	-8,027
Delta	1,174	5,188	2,840	2,840
Rank	4	1	2,5	2,5

Main Effects Plot for SN ratios
Data Means

Signal-to-noise: Smaller is better

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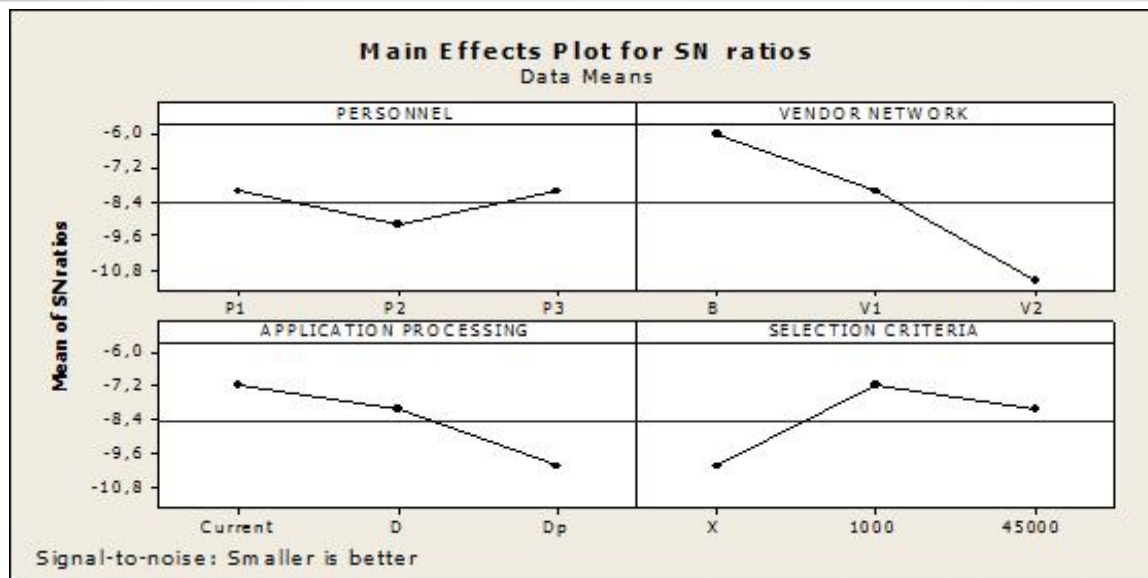
Response :Customer Satisfaction

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Personnel	2	6,0910	6,0910	3,0455	*	*
Vendor Network	2	26,3141	26,3141	13,1571	*	*
Application Processing	2	30,9694	30,9694	15,4847	*	*
Selection Criteria	2	5,9167	5,9167	2,9584	*	*
Residual Error	0	*	*	*		
Total	8	69,2912				

❖The calculations present the numerical results regarding the customer satisfaction.
❖The sum of the squared deviations from the Application processing has the biggest dispersion (MS=15, 4847).
❖The dispersion indicates that this source need improvement.

Level	Personnel	Vendor Network	Application Processing	Selection Criteria
1	16,84	18,02	13,47	15,93
2	14,84	15,48	15,87	14,73
3	15,68	13,86	18,02	16,70
Delta	2,01	4,15	4,54	1,97
Rank	3	2	1	4

Main Effects Plot for SN ratios
Data Means

Signal-to-noise: Larger is better
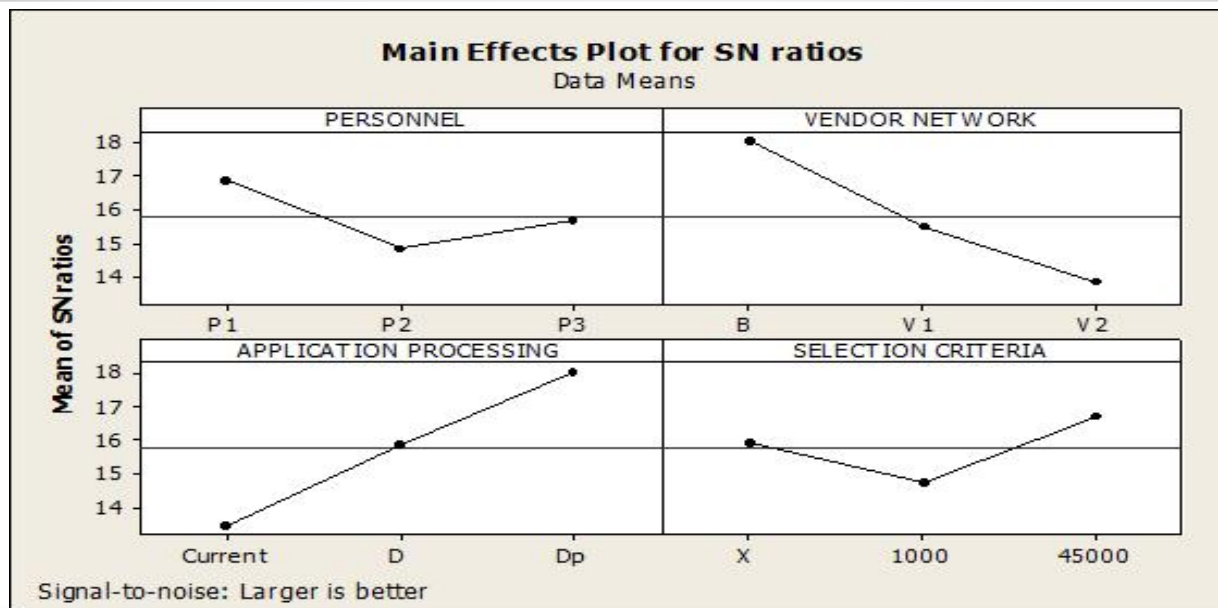
❖**The improvement of the process is a project which is monitored, controlled and evaluated from the Project Management Office of the financial institution.**

❖**The desirable goal of improvement targets the growth of the customer base.**

❖**The process is close related with three major factors.**

The rankings are not same for all factors therefore the desirable results can not be achieved

❖**The implementation of the Taguchi's Design of Experiment (DoE) had as a primary goal to present the main effects of these factors to the process and how these weaknesses can be minimized or eliminated.**

❖**The use of a dynamic response experiment is to analyze and improve the functional relationship between the input signal and the output response.**

❖**The quality characteristics of the signal factors that were used have different range of values which are depending on inputs of the system.**

❖**The response tables show the average of the selected characteristics for each level of the factors.**

❖**The ranks that are included on the response table are based on Delta statistics which compare the relative magnitude of effects.**

❖**Taguchi Design of Experiment (DoE) gives the ability to evaluate several factors in a minimum number of tests. Thus it is achieved:**

i. Better understanding of the factors

ii. Quantitative understanding of the factors

iii. Influence of one factor on the others.

iv. Optimal combination of various factors to reduce variation

❖ **The factors pointed from the analysis are the same for lead time, back office reconciliation and investigation process and customer satisfaction.**

❖ **The Vendor Network as well as the Application Processing have the highest rankings that indicate improvement.**

❖ **From the S/N ratios the influence of one factor to the other or others can be quantitative and thus can be better understandable.**

❖The application of the quality tool in the process revealed critical results.

❖The lead time, the back office reconciliation and investigation process and the customer satisfaction are close related with the Vendor Network and the Application Processing.

❖These two factors ought to be re-organized and re-evaluated for providing the best outcomes.

Back Office Reconciliation& Investigation Process

Customer Satisfaction

Lead time

Vendor Network

+

Application Processing
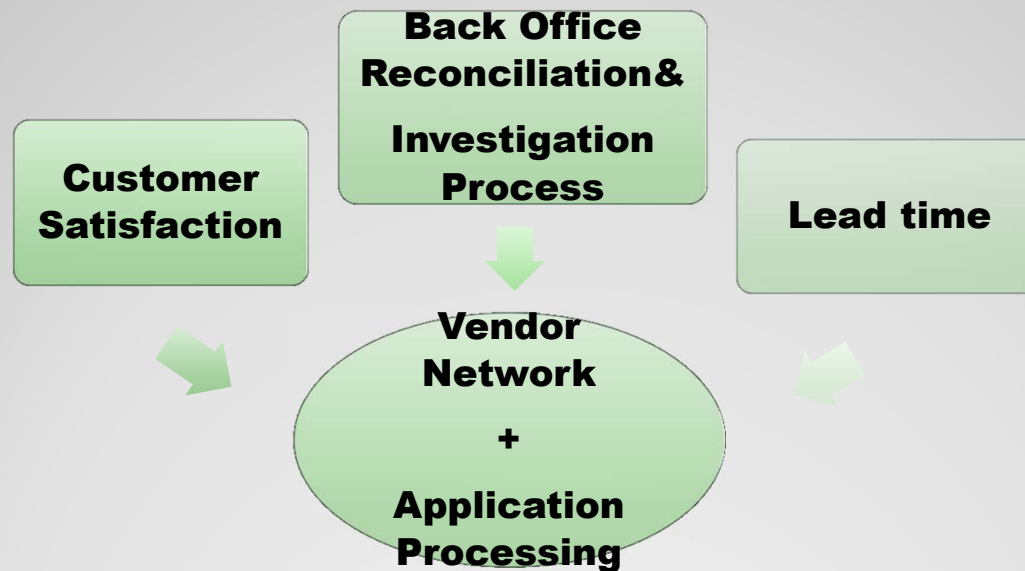
The following key points presented as the most important regarding the vendor network :

❖The vendor network ought to have accurate specifications of the service that will deliver.

❖ A vendor network compliance manual should be in use for defining the service that arrives from vendor as it should agreed.

❖ Good vendor network relationships ought to be established. A mutual communication plan can define and set the goals of the vendor network.

❖ The use of vendor network scorecards. The development of a scorecard is to measure the Vendor's performance.

❖ Implementation and conduction of a vendor network quality control program. The quality control program can keep overall cost in line and provide long term customer satisfaction.

Key elements that may considered vital for improvement for the Application Processing are :

❖ Implementation of IT infrastructure that supports the daily production. The computer based activities regarding the application process may minimize the lead time.

❖ The use of application templates that are computer adaptable e.x.ICR templates (Intelligent Characteristics Recognition) can also minimize the working time of the process.

❖ Eliminate unnecessary documentation. Many applicants have to present documents that are not appropriate for the application process. A control system can be established to reject the appropriate documentation.

❖ Initiate turn around time (TAT) tools that will provide information regarding the time of the application processing.

This Master's Thesis is dedicated to my grandparents for sharing with me their lives' experiences and especially my grandfather Konstantinos Sp.Kousouris who after his death still remains my guardian angel.

Thank you
for your time