IJREAT International Journal of Research in Engineering & Advanced Technology, Volume 5, Issue 5, Oct - Nov, 2017
ISSN: 2320 – 8791 (Impact Factor: 2.317)
www.ijreat.org

SPICE - A Benchmarking Analytics Model

ASHOK ANAND RAMAKRISHNAN[1], Dr. SELVAN C Ph.D.[2], CARYN L WOODRUFF[3]

[1]Senior Consultant, Data Science & Cognitive Solutions, IBM INDIA PVT LTD, GTS - NA & EUROPE
[2]Principal Data Scientist, Global Europe Delivery Excellence (Quality) Leader
Predictive Business Insights Leader - CIC India, IBM INDIA PVT LTD, CHENNAI, INDIA
[3]Principal Data Scientist, Sr. Manager, GTS NA Client Experience & Analytics
IBM USA, Research Triangle Park, NC, UNITED STATES

ABSTRACT

SPICE is a very systematic and practical model that helps in performing Benchmarking Analysis effectively. SPICE unlike other model it has strong statistical background for Data Analytics with easy understanding for communicating with key stakeholders. SPICE helps to identify the key client metrics to perform and analyze the Benchmarking within the same customer over a period of time and with other customers as well. SPICE deals with Qualitative Approach and as well as with Quantitative Approach. It means anyone can interprets from Numbers that interprets the data and also the Inferences made in the Business Language. SPICE Model is very effective in addressing the Customer requirements in the Business Language and converts it into Statistical Language which in turns translates into Business Language. SPICE is a very humble Model that translates the Client Needs to Business Results effectively.

1 INTRODUCTION:

Benchmarking is one of the most asked expectation from customer in all their business developments. The Benchmarking had gained its momentum in all the Industry Space due the following factors:

i. Performance does matter. Customer should understand where they are standing and where they are proceeding towards.
ii. Competition is inevitable. Customer need to understand their opponent's state and hence comparing their state of performance.
iii. Strategy to be changed as per the business needs.
iv. Stability of the business is highly expected.
v. Infrastructure Availability is another vital factor to be focused on.
vi. Compatibility to the new changes.
vii. Understanding the Customer Climate.
viii. Corporate Policies and Governances.
ix. Technology Development.

x. Predicting Business Behavior.

A systematic study reveals that the current state Benchmarking Analysis is not sufficient in order to meet the above mentioned expectations from Outside Market. This is due to the following reasons:

a. No sufficient Knowledge on Benchmarking Analysis.
b. Poor exposure to Market and its elements.
c. Lack of understanding on Customer Requirements.
d. Perceiving Quality only from Producer Point of View and not from Customer Point of view.
e. Lack of proper Metrics Management System.
f. Insufficient knowledge of selection of KPIs and CSF to Business.
g. Traditional thinking and no paradigm shift in the thought process.
h. Missing the most important element of Critical to Quality CTQ.
i. Treating all the cases or problems as one and giving the same weightage to the metrics.
j. Unable to identify the Critical Configurable Items that has greater Impact to customer.
k. Unable to identify the applications that creates the greater and adverse impact when not attended effectively.
l. Lack of studying the Peak Period Analysis.
m. No indepth understanding of Measures used.
n. Using same yardstick for all expectations.
o. Trend and patterns not inferred properly.
p. Poor Communication between key stakeholders.
q. No effective Data communication.
r. Unable to understand the different languages at various layers.
s. Within Variations not identified and addressed appropriately.
t. Between Variations not identified and addressed appropriately.
u. Exposure to various case studies was not appropriate.
v. Poor skill in Statistics to Infere on the data.
w. No abundant knowledge to translate the statistical statements into business statements.
x. Poor usage of Statistical Tools
y. Lack of Adoptability for Infrastructure Environment

2 CURRENT STATE:

BENCHMARKING

A measurement of the quality of an organization's policies, products, programs, strategies, etc., and their comparison with standard measurements, or similar measurements of its peers.

The objectives of benchmarking are as follows:
(1) To determine what and where improvements are called for,
(2) To analyze how other organizations achieve their high performance levels, and
(3) To use this information to improve current performance.

Benchmarking is comparing one's business processes and performance metrics to industry bests and best practices from other companies.

In project management benchmarking can also support the selection, planning and delivery of projects. Dimensions typically measured are quality, time and cost. In the process of best practice benchmarking, management identifies the best firms in their industry, or in another industry where similar processes exist, and compares the results and processes of those studied (the "targets") to one's own results and processes. In this way, they learn how well the targets perform and, more importantly, the business processes that explain why these firms are successful. According to National Council on Measurement in Education, benchmark assessments are short assessments used by teachers at various times throughout the school year to monitor student progress in some area of the school curriculum. These also are known as interim assessments.

Benchmarking is used to measure performance using a specific indicator (cost per unit of measure, productivity per unit of measure, cycle time of x per unit of measure or defects per unit of measure) resulting in a metric of performance that is then compared to others.

Apples & Oranges:
Comparing things that are not comparable or using unfair or impractical criteria of comparison.

Biased Labeling:
Misleading labels on a graph.

Biased Samples:
Poor quality samples such as answers to leading questions.

Cognitive Biases:
Misinterpretations of numbers due to flawed logic such as cognitive biases.

Correlation vs Causation:
The invalid assumption that because two things are correlated that one causes the other.

Data Dredging:
Looking for patterns in data using brute force methods that try a large number of statistical models until matches are found. Data dredging has valid applications for exploratory data analysis. However, it is generally considered poor practice to draw conclusions using data dredging as it tends to find random patterns that are meaningless.

Estimation Error
Neglecting estimation error in results.

Garbage In Garbage Out

Low quality data produces low quality statistical analysis.

Omitting A Controversy
Failing to mention controversial assumptions in your data. For example, representing the result of a particular IQ test as "intelligence."

Out Of Context Data:
Using data without understanding its context.

Over complexity:
Graphs and data visualizations that are too complex to be interpreted by your audience. This may prevent data from being challenged and validated.

Over fitting:
Testing too many theories against data such that random patterns are sure to be found.

Prosecutor's Fallacy:
A general term for an invalid interpretation of a valid statistic.

Regression Toward The Mean:
The tendency for extreme sets of results to become more average as the set grows. Neglecting regression toward the mean is a common error of statistical analysis.

Significance:
Basing analysis on a statistically insignificant number of samples.

Subject Mater Interpretations:
Interpretations that are made without input from an expert on a topic. For example, a data analysis that suggests a particular vitamin has health benefits that is performed by a statistician without involvement of medical doctors and other professionals who might spot errors and alternative explanations for observed data.

Tyranny Of Averages:
A tendency for averages to convey little practical information about a data distribution. For example, an average is often greatly influenced by outliers in data.

BENCHMARKING ANALYSIS INFLUENCERS

Influencers of Benchmarking are as follows:

1. Selection of Appropriate Metrics
2. Variation Analysis and Understanding

3. Data Analytic Tools

SELECTING APPROPRIATE METRICS

A frequently asked question by Six Sigma practitioners is how to select appropriate metrics for a particular organization or process. Considerable material has been written on this subject. This paper focuses on three aspects that should be of interest to Six Sigma practitioners:

•Why are metrics – and more importantly appropriate metrics – needed?
•A five-step procedure for selecting appropriate metrics for an application.
•Two cases – one simple and constructed, and the other real-life – to explain the selection of appropriate metrics.

This paper should be of use to Six Sigma practitioners beginning work in new organizations and/or on new projects. It should also be useful to those who have begun their Six Sigma work experience in a developed environment where appropriate metrics are already defined, and so they have not grasped the importance and nuances of the subject.

Developing Appropriate Metrics

Think about having to solve A and B's problem without the metrics of hour, minutes and seconds existing and the problem of developing appropriate metrics will become apparent. And this is a problem that most Six Sigma practitioners encounter as they begin work in a new company or a new problem within the same company. The five easy steps listed below will enable them to systematically arrive at the appropriate metrics.

Step 1 Why is the measurement required?
Step 2 What needs to be measured?
Step 3 What is the precision of measurement required?
Step 4 How will it be measured?
Step 5 What use will the measurement be put to? By whom?

VARIATION ANALYSIS AND UNDERSTANDING

What is statistical variation?

In probability theory and statistics, variance is the expectation of the squared deviation of a random variable from its mean. Informally, it measures how far a set of (random) numbers are spread out from their average value.

What does the sample variance tell us?

The variance measures how far each number in the set is from the mean. Variance is calculated by taking the differences between each number in the set and the mean, squaring the differences (to make them positive) and dividing the sum of the squares by the number of values in the set.

How do you find variation?

To calculate the variance follow these steps:

1. Work out the Mean (the simple average of the numbers)
2. Then for each number: subtract the Mean and square the result (the squared difference).
3. Then work out the average of those squared differences. (Why Square?)

What is variability in statistics?

Variability is the extent to which data points in a statistical distribution or data set diverge from the average, or mean, value as well as the extent to which these data points differ from each other. There are four commonly used measures of variability: range, mean, variance and standard deviation.

DATA ANALYTICS TOOLS:

Cause-and-effect diagram (also called Ishikawa or fishbone chart): Identifies many possible causes for an effect or problem and sorts ideas into useful categories.

Check sheet: A structured, prepared form for collecting and analyzing data; a generic tool that can be adapted for a wide variety of purposes.

Control charts: Graphs used to study how a process changes over time.

Histogram: The most commonly used graph for showing frequency distributions, or how often each different value in a set of data occurs.

Pareto chart: Shows on a bar graph which factors are more significant.

Scatter diagram: Graphs pairs of numerical data, one variable on each axis, to look for a relationship.

Stratification: A technique that separates data gathered from a variety of sources so that patterns can be seen (some lists replace “stratification” with “flowchart” or “run chart”).

3 SPICES

The SPICE is a systematic and disciplined Analytics Model that yield the best possible results to the customer. It promotes the Data Analytics at all levels and in all ways that starts with Customer and End with Customer.

SPICE ACT AS METHODOLOGY: A discipline approach has been inbuilt with various controls so as to increase the effective implementation of processes with ease of use.

SPICE ACTS AS PHILOSOPHY: It covers all the basic principles used in other defined models and structured to adopt for the existing process models and for the newer ones.

SPICE ACTS AS TOOL: A quick way to deploy and see the results without any pain. Anyone even without statistical back ground can use this model with ease. Analysis are made very easier even for those who start using at entry levels. Interpretation can be made from Statistical to business at very less effort.

COMPONENTS OF SPICE MODEL:

3.1 SELECTION OF METRICS
3.2 PARADIGM SHIFT IN BENCHMARKING ANALYTICS
3.3 INTRA VARIATION ANALYTICS
3.4 COMPARITIVE ANALYTICS
3.5 EXCHANGE CONSTANTLY

3.1 SELECTION OF METRICS

One of the critical success in this model is that the Key Metrics are selected for the right Benchmarking Analytics All the metrics will not hold good for all the cases.

For Server Benchmarking Analytics "CI Stability" is Very important and the key metric used is the "Service Time Between Failure"

For Application Benchmarking Analytics "Availability" is very important and "Resilience" is the Key metric used.

For Effective Quality Management System Benchmarking Analytics "Quality Return On Investment" is the pulse of success and the "Total Cost of Quality" is the Key Success Metric used.

RULES FOR SELECTION OF Benchmarking Analytics:

MERCY is the Approach used as Rules in Selection Of Metrics.

Measurable and Manageable
Easy to Achieve

Realistic
Customer Oriented - CTQ
Yield the results for short term & Long-term Goals

CASE 1: STABILITY:

Stability is one of the Quality Parameter to be observed and maintained across the model class. Say for example Defect Density is said to be a stable when compared between the various customers. The variation among the customers are not explained significantly in this approach. Hence before comparing with others it becomes very essential to have a holistic comparison within the customers/ clients.

Example: Defect Density as a whole is seem to be stable among customer but not the same when compared within the self at different intervals.

CASE 2: PERCENTAGE USAGE CONTROLLED:

Another major problem was identified and sorted out in this mechanism. The percentage as a whole is a misleading factor for the decision making. Because the percentage is the combination of Numerator and Denominator.

Example 1: There is definitely a big difference with 5 P1 tickets out of 100 Total tickets Vs 50 P1 tickets out of 1000 tickets. This is because the Denominator will be nullified when the ratio is converted into Percentage. But the actual comparison should give a different picture.

Example 2: The percentage sometimes might be a misleading in terms of shares. Once a MNC organization announced that their share value got increase to 100% within one day. This is really a very nice statement to hear but this is not real happiness when we start exploring from Numerator and denominator values. The real value says that previous day the share value is 0.5 Rupee and the next day the value is 1.00 Rupee which is a real surprising form financial point of view. By percentage there is a 100% hike but from the real value point of view it is one rupee which is not much appreciable one.

3.2 PARADIGM SHIFT IN BENCHMARKING ANALYTICS

CASE 1: PARADIGM SHIFT FROM FOCUSING ON TICKETS TO CONFIGURABLE ITEM

In some cases the focus was very critical when there occurs more numbers of P1 and P2 tickets. The thought process is that even a single P1 or P2 is considered as punishable act.

Example: In Linux or Unix environment the occurrence of tickets are more likely to happen than considering any other domain. Hence the Data Analytics team should be very careful to handle that more occurrence of P1 and P2 tickets are not be considered painful but rather the cause for occurrence with respect to overall volume of tickets and CI impacted to be noticed.

If a customer receives 20 P1 tickets with overall 100 tickets then the analysis should not concluded that 20% of volume of tickets is P1 impacted and hence the steps taken to nullify the occurrence. But the concentration should be focused on 20 P1 tickets out of 100 total volume with respect to CI

Configuration Item to be considered. This will be the perfect and sensible analysis once can make for the customer. A customer with 20% P1 ticket with 10 CI impacted is better 20% P1 with 100 total volume with 40 CI impacted. This analysis is missing in the traditional one which is overcome in this model.

CASE 2: SEASONAL VARIATION – PEAK PERIOD ANALYSIS:

Another major enhancement made in this model is that Benchmarking should be flexible and dynamic across all the domain at all period of times. Benchmarking Analytics empowers the customer data and gives the very precise and sensible analysis that would be the core value addition for the business.

The Benchmarking can be considered at all the period of time. However the following inferences should be kept in mind.
For Self Analysis the Q1 and Q4 should not be considered.
"Between Variation Analysis" for the Benchmarking Analytics can be performed with other customer with same peak period that gives the precise and sensible results.

SCENARIO 1: Benchmarking for Automobile Industry:

Consider the case that an Automobile Customer AUTOCUST1 is considered for the Benchmarking Analytics. Following are the inferences:

Q1 (January-February-March): High Sales due to Year Opening
Q2 (April-May-June): Better Sales due to various offers.
Q3 (July-August-September): Less sales
Q4 (October-November-December): Very Less Sales due to closure of the year.

SCENARIO 2: But the same would be totally different when compared to the Retail Customer.

Q1 (January-February-March): Better Sales
Q2 (April-May-June): Normal Sales
Q3 (July-August-September): Less Sales
Q4 (October-November-December): High Sales due to festival season.

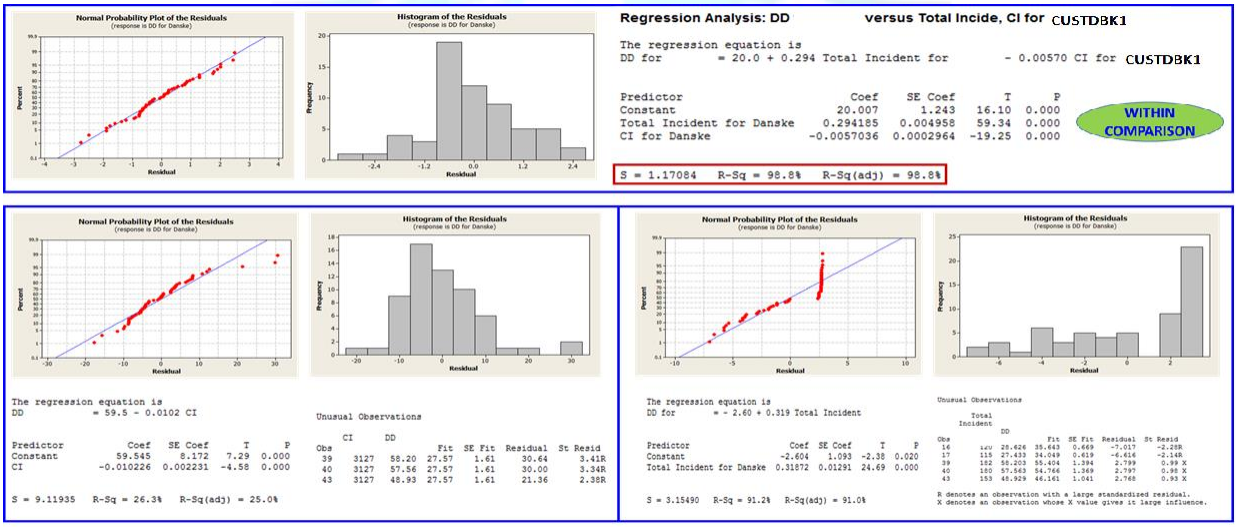
3.3 INTRA VARIATION ANALYTICS

During the Self Comparison following inferences were arrived:
The Model equation of the Defect Density is found to be stable as a "whole" when compared to the individual parameter analysis.
The variation of Defect Density was not showcased in the expression.
The variations of CI shows greater significant than the Ticket Volume group
There were continuous outliers presented in the groups of CI and Tickets volume
The P-value does not supports the rejecting the Null Hypothesis within the group.
Unix and Intel Servicelines portrait more variations than compared to the BUR Serviceline.

The Defect Density of CUSTBNK1 shows influencing effects when compared with other CUSTOMERS Defect Density.

The variation explained in terms of Defect Density for CUSTBNK1 is high when compared to other Financial Accounts

CI count is one of the CSF for Defect Density but the variations attached to the change of CI count was not explained.



Following are the observations found during the analysis pertaining to Defect Density when compared to other customers:

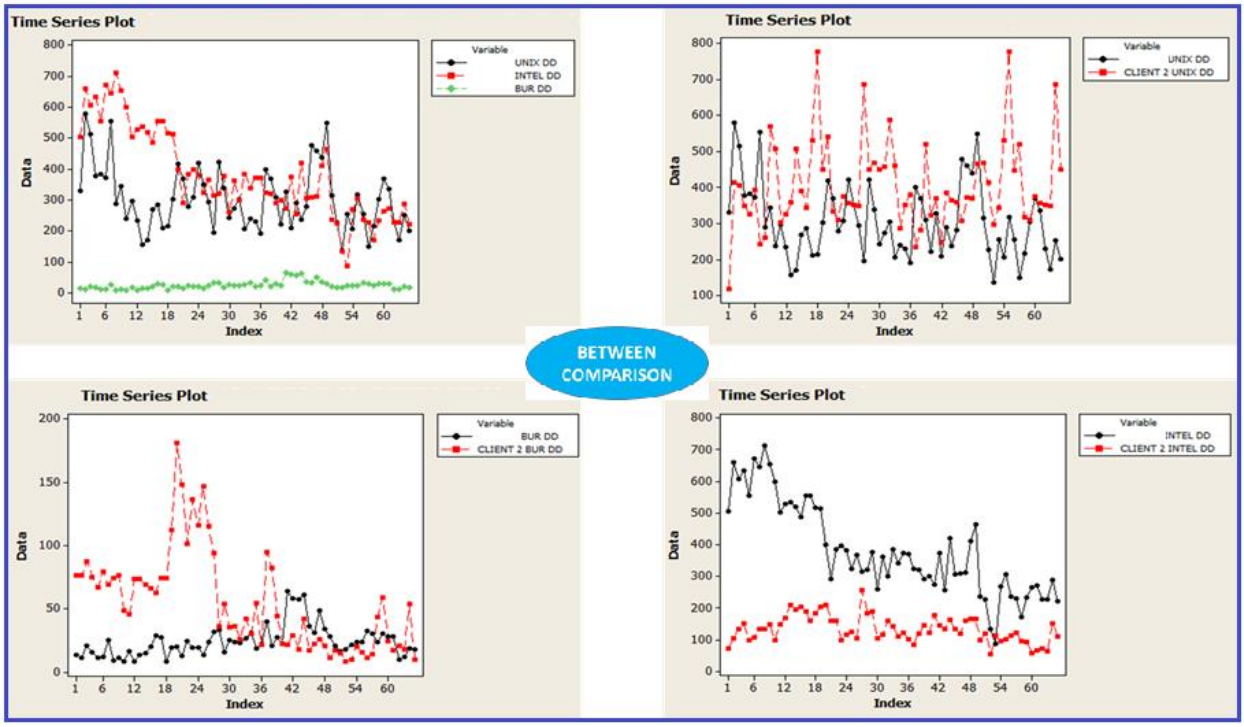
CUSTBNK1 CUSTOMER depicts very lower significant variations to BUR Serviceline
Unix Serviceline though found to have similar pattern the variation is more
The noise of Intel Serviceline is very high at initial data points however which got depreciated over a period of time.

The above analysis proves the importance of the Intra Variation Analytics otherwise the decision making will be biased and might end up in major problem.

3.4 COMPARITIVE ANALYTICS

There is very close correlation between CI and Ticket volume that influences the Defect Density. The CI quantity is static and Ticket

Volume data changes very often. This is one of the major benefit in COMPARITIVE Benchmarking Analytics because comparison should happen with the same standard and not with different one. There could be the possible of different tickets volume between comparisons that can be normalized in the statistical approaches. The very critical factor is the CI that should not change till the full process get completed.



The Lessons learnt of other Customers will be easily adopted in this method as both are speaking the same language. This will enhance the Continual Service Improvement.

STAR Approach is used in the COMPARITIVE Analytics.

STAR:

a. **SOURCE OF DATA**
b. **TRACK**
c. **ALIGN**
d. **REALIZE**

SOURCE OF DATA

Source of Data need to be validated. All the non-normal data to be transformed into normal data. This will very effectively address the variation explained in the system. When the source of data seems to be unrealistic then sampling methods of data sources can be used. Larger the Data Source Samples better the results achieved.

TRACK:

Track the progress in the same period of time which is very important. During the COMPARITIVE Benchmarking Analytics same time period namely when the retail customer is considered Q1 data of Customer 1 to be compared with other retail customers. This will have direct implication in the results. This analysis will eliminate the uncertainty of Tickets occurrence for a give set of CIs.

ALIGN:

Always align with the Customer Requirements. Chances are possible when the baseline changes the Benchmarking would have a deeper adverse effects. When a customer CUST1 data for Q1 is compared with CUST2 and suddenly the CUST2 baselined data got changes then whole analysis would go for a bigger failure. This needs to be monitored with extra care. When there was an instance of change in Baselining then accordingly the Normalization need to be triggered so that Benchmarking Analytics between two customers should have the same language.

REALIZE:

Realization is one of the vital step in COMPARITIVE Benchmarking Analytics as it brings the customer the real flavor of success in the business.

Results should be meaningful meaning which customer is better in performance need to be carefully stated.

The Scope of Improvements needed for the customer self or others or both.

Period of time the changes will occur in process / steps to be revisited.

CIA should be followed strictly.

Adoptability for Lessons Learnt and Best Practices to be in place.

3.5 EXCHANGE CONSTANTLY

Benchmarking Analytics should constantly Exchange the mode of communication among the data. This is very important because the success of the Benchmarking Analytics depends on how well the data communication happens at various levels.

Various Layer of Data Communication:

LAYER 1:	LAYER 2:	LAYER 3:	LAYER 4:
Business Layer Key Stakeholder: Customer Accepted Language: Business Language Process/ Phase: Business Problem	Data Science Layer Key Stakeholder: Data Analytics Professionals Accepted Language: Statistics Process/ Phase: Statistical Problem	Data Science Layer Key Stakeholder: Data Analytics Professionals Accepted Language: Statistics Process/ Phase: Statistical Solution	Business Layer Key Stakeholder: Customer Accepted Language: Business Language Process/ Phase: Business Solution

In any Benchmarking Analytics make sure that right candidate is communicated with right communication that only yield the correct success.

4 FOUR ASPECTS OF DATA COMMUNICATION MODE IN BENCHMARKING ANALYTICS.

PEOPLE	PROCESS	TECHNOLOGY	COMMUNICATION	RESULTS
BAD	BAD	BAD	BAD	SYSTEM FAILURE
BAD	BAD	BAD	GOOD	SYSTEM DECREASING PERFOMANCE
BAD	BAD	GOOD	BAD	SYSTEM FAILURE
BAD	BAD	GOOD	GOOD	SYSTEM DECREASING PERFOMANCE
BAD	GOOD	BAD	BAD	SYSTEM FAILURE
BAD	GOOD	BAD	GOOD	SYSTEM DECREASING PERFOMANCE
BAD	GOOD	GOOD	BAD	SYSTEM FAILURE
BAD	GOOD	GOOD	GOOD	SYSTEM DECREASING PERFOMANCE
GOOD	BAD	BAD	BAD	SYSTEM FAILURE
GOOD	BAD	BAD	GOOD	SYSTEM DECREASING PERFOMANCE
GOOD	BAD	GOOD	BAD	SYSTEM FAILURE
GOOD	BAD	GOOD	GOOD	SYSTEM DECREASING PERFOMANCE
GOOD	GOOD	BAD	BAD	SYSTEM FAILURE
GOOD	GOOD	BAD	GOOD	SYSTEM DECREASING PERFOMANCE
GOOD	GOOD	GOOD	BAD	SYSTEM FAILURE
GOOD	GOOD	GOOD	GOOD	SYSTEM HIGH PERFORMANCE

4.1 INFERENCES:

When any parameter operates at BAD condition but COMMUNICATION when operates at GOOD state then the System will not fail but have Decreasing Effect in System Performance.

When any parameter goes to GOOD State but COMMUNICATION when operates at BAD state then the System will not have Decreasing Effect in System Performance but rather SYSTEM FAILURE OCCURS Directly.

This shows how the Data is very important Communication among the Key Stakeholders.

Data Analytics when performed with High Level of Statistical Inference will not yield greater results but when communicated with right stakeholders with right intention will fetch the fruitful results.

5.0 COMPARISON OF SPICE WITH CURRENT STATE MODELS

The comparison between the SPICE and the current Model is as follows:

S.NO	CRITICAL FACTORS IN BENCHMARKING	CURRENT STATE MODEL	SPICE MODEL
1	Metrics Management System	N	Y
2	Knowledge of selection of KPIs and CSF to Business	N	Y
3	Paradigm shift in the thought process	N	Y
4	Perceiving Quality only from Producer Point of View and from Customer Point of view	N	Y
5	Knowledge on Benchmarking Analysis	Y	Y
6	Exposure to Market and its elements	Y	Y
7	Understanding on Customer Requirements	N	Y
8	Critical To Quality - CTQ	N	Y
9	Cases or problems treatment with differences in weightage to the metrics	N	Y
10	Identifying the Critical Configurable Items that has greater Impact to customer	N	Y
11	Identifying the applications that creates the greater and adverse impact when not attended effectively	N	Y
12	Peak Period Analysis	N	Y
13	Indepth understanding of Measures used	N	Y
14	Different yardstick for all expectations	N	Y
15	Trend and patterns Inference	Y	Y
16	Very Effective Communication between key stakeholders	N	Y
17	Effective Data communication	N	Y
18	Understanding the different languages at various layers	N	Y
19	Identification and addressing of Within Variations	N	Y
20	Identification and addressing of Between Variations	N	Y

21	Exposure to various case studies	N	Y
22	Skill in Statistics to Infere on the data	Y	Y
23	Knowledge to translate the statistical statements into business statements	N	Y
24	Availability of Statistical Tools	Y	Y
25	Adoptability for Infrastructure Environment	N	Y

6.0 RESULTS ON SPICE – BENCHMARKING ANALYTICS MODEL

Study on customer requirements to be performed. What customer wants decides the actual success of the Benchmarking Analytics. Critical to Quality to be identified very cautiously. At times customer may demand very less important metrics to be tracked and followed but it does not mean that Benchmarking Analytics is not going effectively. First what customer wants to be delivered as very high priority and then as an extra value addition the other critical metrics can be performed with Benchmarking Analytics and the same can be shared to the customer. This will create an excellent bridge the service provider and customer. It is a matter of time and Sense of Urgency to be made understood as what and when the Benchmarking Analytics to be performed with what type of data.

BENCHMARKING ANALYTICS through the SPICE should not be considered as one another tool as available in the market. Because for any tool the principle is Garbage in Garbage Out. The systematic thinking of this statement is that when to use the Benchmarking Analytics and where to use the Benchmarking Analytics. How to use is not a problem at all as over a period of time the Benchmarking Analytics will gets improvised. But what is expected is that Benchmarking Analytics to be dealt as Philosophy. It means that when there arouse a situation of not being used for Benchmarking Analytics then it need to refrained. This is very important is Statistical Ethics.

Because the technology and tools should not replace human common sense. Always there exists the paradigm shift which is one of the key success for this model SPICE in Benchmarking Analytics.

All Data Analytics may not give the real expected results that customer may need. A deep dive analysis is required before start using such Analytics. Data Analytics are very good contributor in the field of Data Science. However the usage of such techniques should be followed with Right Intention of Usage.

Following questions to be kept in mind always before going for any selection of Data Analytics:

Need of Data Analytics in the current system.
Correct Data Analytics Tools and Techniques be used for different type of Analysis.
Strong and Indepth Inference to be made out of Data Analytics.
Benefits of using Data Analytics in the current system.
Scope for Improvement using Data Analytics for upcoming studies.

BENCHMARKING ANALYTICS through the SPICE is not a competitor to any of the existing tools or mechanism but rather BENCHMARKING

ANALYTICS is purely a complimentary one with others. It is built on the basis of two principles namely:

1. To Improve Quality
2. To Increase Productivity
3. To Enhance Mindset Behavior
4. To Optimize the Resources
5. To Realize the Opportunity for Future Excellence

7.0 CONCLUSION

BENCHMARKING ANALYTICS through the SPICE will eliminate all the bottlenecks of the current system and increases the process flow in the business that improves the customer satisfaction in directly proportionate. Any slowdown in the process will be monitored and analyzed and the same will be addressed as variation either internal or comparative and the same will be managed under course correction followed with Causal Analysis and Rectification.

There is a constant check required in terms of data communication happening at different layer in the Business and with Customer.

BENCHMARKING ANALYTICS through the SPICE will provide a realistic platform for connecting the all possible dots to understand not only the requirements but also the unexpressed or inherent Expectations that got converted into deliverables. The Customer when delivered with what they expect and where they stand will produces the actual transformation between the relationship customer and the producer.

BENCHMARKING ANALYTICS through the SPICE will be beneficial as it plays a major role in terms of connecting all relevant stakeholders and then collaborating to deliver customer needs so as to celebrate the Success.

REFERENCES

1. BENCHMARKING
   http://www.businessdictionary.com/definition/benchmarking.html

2. BENCHMARKING
   https://en.wikipedia.org/wiki/Benchmarking

3. 17 Misuses of Statistics
   By John Spacey, August 13, 2016
   https://simplicable.com/new/misuse-of-statistics

4. Selecting Appropriate Metrics
   Niraj Goyal
   https://www.isixsigma.com/methodology/metrics/selecting-appropriate-metrics/

5. VARIATIONS
   http://www.businessdictionary.com/definition/variation.html

6. Variance - Wikipedia
   https://en.wikipedia.org/wiki/Variance

7. The 7 Basic Quality Tools for Process Improvement
   http://asq.org/learn-about-quality/seven-basic-quality-tools/overview/overview.html