STUDENT PAPER[1]

Benchmarking Service Excellence: The Nigerian Company Experience

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Abstract

In the face of growing competition in an economically volatile environment, service organizations are under pressure to reduce service costs while meeting rigorous service level agreement (SLA) levels and shorter response windows. In jeopardy are not only customer satisfaction and loyalty, but overall company growth and profitability.

In this paper, an attempt is made to benchmark a Nigerian maintenance service company with forward-thinking companies that have implemented strategic actions to achieve service excellence.

Given the strong impetus of technology-enabled initiatives, it is noteworthy as revealed in the paper that for the Nigerian maintenance service company, though, the route to significant improvement in service excellence is in the actions of the people assisted by technology, rather than purely the application of technology.

This paper concludes by stating, among other things, that the company should develop the right technician workforce, equip the technicians with the right tools and enable the right level of access to performance results in the drive towards achieving service excellence.

Keywords: Benchmark, Service Excellence, Customer Satisfaction, Loyalty

Chapter 1

1.0 Introduction

In today's oil and gas equipment and services market, equipment owners are operating on tighter budgets and making more demands for effective service.

[1] *Editor's note: Student papers are authored by graduate or undergraduate students based on coursework at accredited universities or training programs. This paper was prepared as a result of a course delivered by Dr Paul Giammalvo of PT Mitratata Citragraha in Jakarta, Indonesia. The paper was submitted to the Association for the Advancement of Cost Engineering International (AACEi) in 2013 in fulfillment of the certified cost engineering consultant (CCEC) requirements, for which the author was a successful applicant.*

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The market environment described as erratic and vibrant has made it necessary for service companies not only to predict service workloads and plan resources accordingly in order not to lose huge cost savings as a result of disproportionate technician and inventory utilization according to an Aberdeen report[i], but to seek the opportunity to improve the predictableness of cost and schedule outcomes.

The Association for the Advancement of Cost Engineering [AACE] (2012) states that:
"Total cost management is the effective application of professional and technical expertise to plan and control resources, costs, profitability and risks. Simply stated, it is a systematic approach to managing cost throughout the life cycle of any enterprise, program, facility, project, product, or service."[ii]

In line with this definition, therefore, efforts geared towards lowering service costs can be considered paramount in the management process of the total life cycle cost investment, in my opinion.

This paper describes how benchmarking service excellence helps in identifying aspects of company operations that require improvement thereby resulting in lower service costs and higher customer satisfaction.

1.1 The need for service excellence

In a recent report released by Alcatel-lucent in 2011, it was stated that equipment owners are becoming more conscious of the quality of service (QoS) that they get from service providers. Although, the report focused on the telecommunication industry, the situation is not uncommon in the oil and gas equipment and services industry. As a consequence, service providers are becoming more focused on providing QoS and Quality of Experience (QoE)[iii].

A similar research report by the Aberdeen Group published in 2007 stated that the main driving force for service benchmarking is the customer demand for more effective service performance.[iv]

Analysts believe that the quality of a product is no longer sufficient to retain customers if it is not complemented with superb customer service. To this end, effective service performance is closely linked to quality of service (QoS) and quality of experience (QoE) in relation to the customer. The goal of service quality is customer satisfaction, and a delighted customer keeps coming back and high levels of repeat customers means high levels of profit.

The implication of this development for the service provider is the need for 'operational excellence' - which encompasses service excellence, in my view - in every aspect of the business according to Alcatel-lucent report. As a result, service providers now favor

service-centric key performance indicators (KPIs) and key quality indicators (KQIs), metrics that measure services and experience in concrete terms.

1.2 The value of service excellence

The value of service excellence can be measured in the resulting change in financial and operational performance. Six KPIs were used in an Aberdeen Group study in recent times which included service level agreement (SLA), First-time fix rate, workforce utilization, First-time part fill rate, work-orders completed late and dispatcher to technician ratio.

Best –in-class organizations exhibited strong maturity traits over the two years following the survey, according to the Aberdeen report. The statistics showed that First –time fix rate went up by 29% compared to 9% of all others (industry average and laggards), worker utilization by 29% compared to 12% of all others and reduction in overtime costs by 14% compared to 6% of all others.[v]

Chapter 2

2.0 Literature Review

Benchmarking:

The American Productivity and Quality Council (APQC) defines benchmarking as "The process of identifying, learning, and adapting outstanding practices and processes from any organization, anywhere in the world, to help an organization improve its performance"[vi]

In developing benchmarking KPIs, it is important to involve the people who will be responsible for the work for accountability purposes. The process encompasses ascertaining critical work processes and customer requirement; the critical results desired and aligning them to customer requirements; developing measurements for the critical work processes or critical results and formulating performance goals or benchmarks.[vii]

To ensure quality, each KPI is subjected to the **SMART** (an acronym for **S**pecific, **M**easurable, **A**ttainable, **R**ealistic, **T**imely) test[viii].

The real value of KPIs is in the usage at team discussions for future performance improvements. KPIs take on added value when used in benchmarking other organizations in the same industry. In this regard, with benchmarking, leadership can analyze the organization's vital signs, gain control of the numbers, build teamwork, improve communications and spot trends and imbalances.

Service:

There are three main groups of industrial and economic activities, as identified by the economists:[ix] They are primary (Agriculture, fishing, and forestry), secondary (Manufacturing and construction) and tertiary activities (Services and distribution).

Interestingly in today's post-industrial society, the service sector holds sway. Countless literatures abound on the effective management of services, perhaps leading to an inconclusive debate. However, one thing that has been brought to the open is the very nature of service activities as compared to production. The principal factors are that services are performed and not produced, and more people-oriented than technology based although technology is fast becoming more relevant in the achievement of service excellence in today's oil and gas equipment and services industry.

2.1 'As Is' Situation: Typical Rotating Equipment maintenance service delivery

In its simplest form, a typical rotating equipment maintenance service delivery involves creating a service work order from notice of asset failure and/or performance decline directly from the operative asset or from the customer, followed by effective scheduling of a field service technician to go to the customer site(s) to resolve the service issue and close out the work order. Service organizations are confronted with balancing the need to deliver quicker, superior service while aggressively controlling service-related costs.

With one-fifth of the work orders not being completed on-time, service organizations are still simply assigning a technician to a work order based on territory allocation or availability, instead of emulating best-in-class companies by, in addition, taking SLA requirements, customer preferences, traffic conditions, technician skill set, parts availability and precise technician location into account prior to dispatch.
Many service organizations do not

- Perform routine benchmarking and measurement of their service performance;
- Implement effective measuring, monitoring and tracking systems;
- Integrate service KPIs with companywide CRM or ERP systems – nonexistent in most cases - wherever possible; and
- Establish a formal process for automatically collecting and disseminating data.

A frustrating situation that exists in many service organizations is that over time, as performance sink towards its pre-transformation level, management turn to the performance measures to identify the cause of the decline only to find out that the data offers no clue. The field service staff is working so hard to meet the local targets, but

this work is not reflected in the overall success. This situation is often times as a result of the disconnection between field service measures and the organization's top level requirements. This implies that for improvement efforts not to be wasted, KPIs must connect back to facets of operations that are of importance to the customer. Thus the effectiveness of a KPI at driving desired overall business performance is crucial.

Often missing but equally important to management are KPIs that mirror the customer's experience of operational performance. As a consequence, in the oil and gas equipment and services industry, for example, the need to sustain equipment uptime, reduce cost, and maintain health and safety standards would translate, at team level, to measures of workforce utilization, equipment downtime, and injuries.

There has been inaccurate demand forecasting over the years mainly due to heavy reliance on historical trends and demand patterns only, which fail to take into account changes in business activity such as marketing campaigns and product obsolescence.

2.2 Maturity framework

Adopting the Aberdeen six KPIs used in the study[x] comprising of service level agreement (SLA), First-time fix rate, workforce utilization, First-time part fill rate, work-orders completed late and dispatcher to technician ratio, it was observed that Best-in-Class companies over two years following a previous study, had an improved first-time fix rate by 26% compared to 9% of all others, 29% improvement in worker utilization compared to 12% of all others and 14% reduction in overtime costs compared to 6% of all others.[xi] (See Table 1 below).

This results show that there is a significant difference in the service performance of Best-in-Class organizations when compared to Laggards – companies whose practices are significantly behind the average of the industry and results below average performance. Best –in-Class companies have matured over time in the practices that are best currently in the industry, resulting in top performance. The survey was administered on the Nigerian maintenance company (See Appendix 1) and it turned out that the Nigerian company is a Laggard.

Table 1: Top Performance Companies Earn "Best-in-Class" Status[xii]

Definition of Maturity Class	Mean Class Performance
Best-in-Class: **Top 20%** of aggregate performance scorers	• **87.1%** SLA Compliance Rate • **84.6%** First-time Fix Rate • **80.7%** Workforce Utilization • **81.8%** First-time Part Fill Rate • **8.7%** Work-orders completed late • **1:19** Dispatcher to Technician Ratio
Industry Average: **Middle 50%** of aggregate performance scorers	• **83.0%** SLA Compliance Rate • **76.6%** First-time Fix Rate • **73.7%** Workforce Utilization • **76.6%** First-time Part Fill Rate • **16.6%** Work-orders completed late • **1:13** Dispatcher to Technician Ratio
Laggard: **Bottom 30%** of aggregate performance scorers	• **73.7%** SLA Compliance Rate (**77%** Don't Know or Don't Measure) • **70.8%** First-time Fix Rate • **72.9%** Workforce Utilization (**65%** Don't Know or Don't Measure) • **76.1%** First-time Part Fill Rate (**74%** Don't Know or Don't Measure) • **30.7%** Work-orders completed late • **1:12** Dispatcher to Technician Ratio

Source: Aberdeen Group, August 2007

2.3 The PACE model

The Aberdeen PACE model of Best-in-Class sets the framework for industry average companies and particularly laggard companies to adopt to improve performance. The acronym PACE stands for pressure, action, capabilities and enablers. The pressures (P) represent external forces that impact the company's market position, competitiveness or business operations; Actions (A) represent the strategic approaches that the company is taking in response to the industry pressures; Capabilities (C) represents the business process competencies needed to execute the corporate strategy and Enablers (E) represents the key functionality of technology solutions

needed to support the company's business practices. The PACE model for Best-in-Class organization is shown below (Table 2):

Table 2: Best-in-Class Framework[xiii]

Pressures	Actions	Capabilities	Enablers
• Customer demand for rigorous SLA provisions and precise response windows	• Integrate service workforce and parts planning with the execution initiatives including scheduling, routing, parts management • Use information from other departments as input during demand forecasting (e.g., sales and marketing plans) • Purchase and/or upgrade technology solutions to enable robust demand forecasting and resource planning	• Conduct "what-if" analysis and examine the impact of change in service demand and capacity variables on profitability and performance • Systematic integration between demand forecasting, capacity planning and service execution processes at the lowest level of detail • Closed loop integration of customer, warranty, SLA, historical asset information with the demand forecasting process • Senior executive accountability for field service performance including forecasting, planning and budgeting • Real time updates on field service performance, inventory levels, demand forecast and resource capacity	• Integrated planning and forecasting system with an intuitive, web-based graphical display of service workload and capacity • Resource planning applications (Territory, Parts, Multi-day, Crew) • Demand Forecasting application • Dynamic Scheduling & Route Optimization

Source: Aberdeen Group, August 2007

Service organizations need to accurately forecast future workload and make provision for resources, if they are to succeed in getting the right technician with the exact part at the specific time at the precise window to the customer site. Best-in-Class companies, about two-thirds, have integrated their service execution processes such as scheduling and routing with service workforce and parts planning process. Additionally, the responsible managers have also started using information obtained from other departments such as sales/marketing as input in developing the demand forecast.[xiv]

These phenomena are depicted in figures 3 and 4 below.

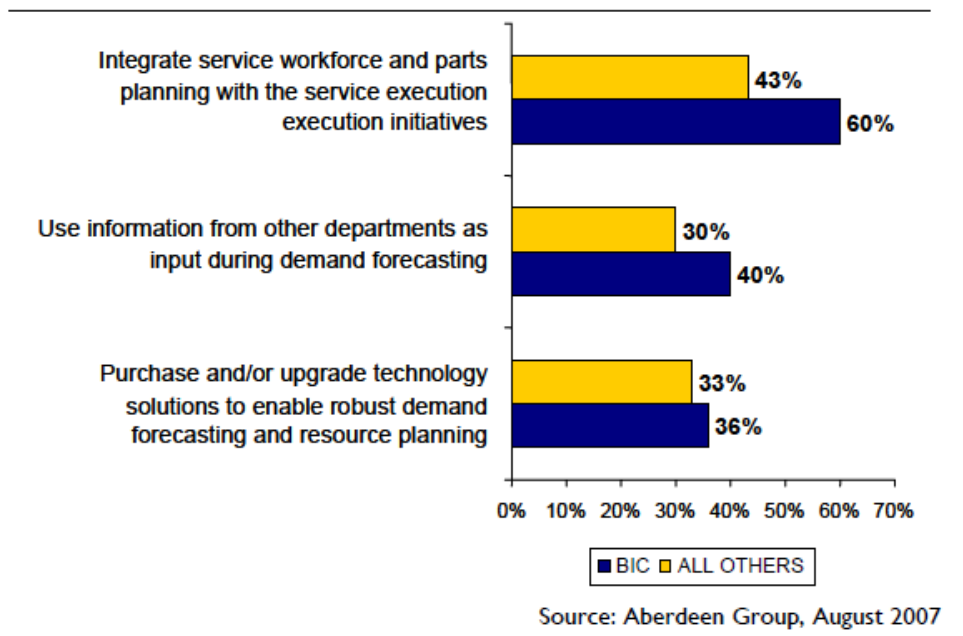

Figure 1: Actions Taken to Align Demand with Capacity[xv]

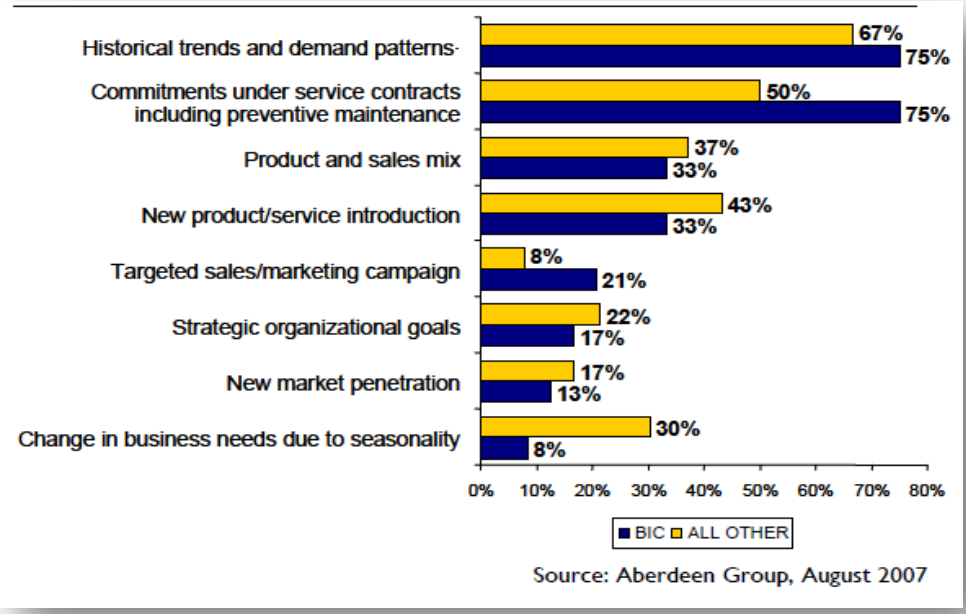

Figure 2: Top Inputs Used to Forecast Service Demands[xvi]

Chapter 3

3.0 Feasible Alternative

The feasible alternatives of benchmarking service excellence for consideration are as follows:

- **Alternative A**: Adopt the benchmarking KPIs as used by Aberdeen Group in the survey[xvii] – See Appendix 1
- **Alternative B:** Conduct a market assessment
- **Alternative C**: Develop a new set of benchmarking KPIs for adoption
- **Alternative D**: Maintain status quo

Selection criteria of the alternatives are as follows:

- KPI must be linked to the business objectives of the organization
- Connect with areas with opportunity for higher potential for improvement in relation to the upfront investment cost outlay
- Test the 4-I's – [Indicators ineffective in isolation] – comparison of an indicator with other related indicators to obtain a full picture of the business aspect under examination.
- KPIs should be formulated by experienced personnel working together as a group
- Leading versus Lagging indicators
- Ease of implementation in stages
- Ease of establishing business tiers in the reporting structure
- Ease of setting appropriate sampling frequency and trend windows
- Robustness to recognize human factors that could jeopardize the results

Selected Alternative:

Using the criteria stated above, an assessment is made as shown in Table 3:

Table 3: Selecting best service excellence performance measure (By Author)

	Alternatives			
Attribute	**Adopt Aberdeen Group Service Benchmarking KPIs**	**Conduct market Assessment**	**Develop new set of Benchmarking KPIs**	**Maintain Status Quo**
Link to Business Objectives (Excellent, Good, Fair)	Excellent	Fair	Good	Poor
High Potential (Excellent, Good, Fair)	Excellent	Fair	Good	Poor
4-Is Test (Excellent, Good, Fair)	Excellent	Fair	Good	Poor
Tested KPIs (Excellent, Good, Fair)	Excellent	Poor	Good	Poor
Balanced Leading/Lagging KPIs (Excellent, Good, Fair)	Good	Poor	Excellent	Poor
Implementation in stages (Excellent, Good, Fair)	Excellent	Poor	Good	Poor
Business Tier Structure (Excellent, Good, Fair)	Excellent	Poor	Good	Poor
Sampling Frequency (Excellent, Good, Fair)	Good	Good	Good	Poor
Human Factors protection (Excellent, Good, Fair)	Excellent	Fair	Poor	Poor

Selection of the acceptable criteria:

Using the Compensatory Multi-attribute Decision Model - Additive Weighting Technique[xviii] there will be 9(8)/2 =36 pair wise comparisons necessary for the four alternatives and they are shown in table 4.

TABLE 4: **Ordinal Ranking of Benchmarking Service Excellence Attributes**

A. Results of Paired Comparison

Link>Potential	(Link is more important than potential)
Link >4-Is	(4-Is is more important than link)
Link>Tested	(Link is more important than tested)
Link>Balanced	(Link is more important than balanced)
Link >In-stages	(Link is more important than in stages)
Link>Structure	(structure is more important than link)
Link>Sampling	(Sampling is more important than link)
Link>Human Factors	(Human factors is more important than link)
Potential>4-Is	(Potential is more important than 4-Is)
Potential>Tested	(Potential is more important than tested)
Potential>Balanced	(Potential is more important than balanced)
Potential>In-stages	(In-stages is more important than potential)
Potential>Structure	(Structure is more important than potential)
Potential>Sampling	(Sampling is more important than potential)
Potential>Human Factors	(Human factors is more important than potential)
4-Is>Tested	(4-Is is more important than tested)
4-Is>Balanced	(Balanced is more important than 4-Is)
4-Is>In-stages	(In-stages is more important than 4-Is)
4-Is>Structure	(Structure is more important than 4-Is)
4-Is>Sampling	(Sampling is more important than 4-Is)
4-Is>Human Factors	(Human Factor is more important than 4-Is)
Tested>Balanced	(Balanced is more important than tested)
Tested>In-stages	(In-stages is more important than tested)
Tested>Structure	(Structure is more important than tested)
Tested>Sampling	(Sampling is more important than tested)
Tested>Human Factors	(Human Factor is more important than tested)
Balanced>In-stages	(In-stages is more important than balanced)
Balanced>Structure	(Structure is more important than balanced)
Balanced>Sampling	(Sampling is more important than balanced)
Balanced>Human Factors	(Human Factor is more important than balanced)
In-Stages>Structure	(In-stages is more important than structure)
In-Stages>Sampling	(Sampling is more important than In-stages)
In-Stages>Human Factors	(Human Factor is more important than In-stages)
Structure>Sampling	(Sampling is more important than structure)
Structure>Human Factors	(Human Factors is more important than structure)
Sampling>Human Factors	(Human Factors is more important than sampling)

B. Attribute	Number of times on left of >(=Ordinal ranking)
Link	4
Potential	3
4-Is	2
Tested	0
Balanced	2
In Stages	5
Structure	5
Sampling	7
Human Factors	8

TABLE 5: **Benchmarking Service Excellence Attribute Weight (By author)**

Attribute	Ordinal Ranking	Weight
Link to Business Objectives	4	0.11
High Potential	3	0.083
4-Is Test	2	0.056
Tested KPIs	0	0
Balanced Leading/Lagging KPIs	2	0.056
Implementation in stages	5	0.14
Business Tier Structure	5	0.14
Sampling Frequency	7	0.19
Human Factors protection	8	0.22
Total	**36**	**1.00**

The following formulae were used in converting the original data in table 3 for a particular attribute to its dimensionless rating[xix]

For large numerical values that are considered undesirable

Rating = (Worst outcome – Outcome being made dimensionless)/ (Worst outcome – Best outcome) – EQ 1

For large numerical values that are considered desirable

Rating = (Outcome being made dimensionless –Worst outcome)/ (Best outcome – Worst outcome) – EQ 2

Using entries from Table 5, the dimensionless values are derived as shown in Table 6.

TABLE 6: **Dimensionless Values for Benchmarking Service Excellence (By author)**

Attribute	Value	Rating Procedure	Dimensionless Value
Link to Business Objectives	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
High Potential	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
4-Is Test	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
Tested KPIs	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
Balanced Leading/Lagging KPIs	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
Implementation in stages	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
Business Tier Structure	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
Sampling Frequency	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00
Human Factors protection	Poor	(Relative Rank -1)/3	0.00
	Fair		0.33
	Good		0.67
	Excellent		1.00

Relative ranking – Poor -1, Fair – 2, Good – 3, Excellent - 4

Selected Alternative:

TABLE 7: **Weighted Scores for Benchmarking Service Excellence measure (By author)**

		Adopt Aberdeen Group Service Benchmarking KPIs		Conduct market Assessment		Develop new set of Benchmarking KPIs		Maintain Status Quo	
Attribute	**Weights**	**Performance**	**Weight value**	**Performance**	**Weight value**	**Performance**	**Weight value**	**Performance**	**Weight value**
Link to Business Objectives	0.11	1.00	0.11	0.33	0.036	0.67	0.074	0.00	0.00
High Potential	0.083	1.00	0.083	0.33	0.027	0.67	0.056	0.00	0.00
4-Is Test	0.056	1.00	0.056	0.33	0.018	0.67	0.038	0.00	0.00
Tested KPIs	0.00	1.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00
Balanced Leading/Lagging KPIs	0.056	0.67	0.038	0.00	0.00	1.00	0.056	0.00	0.00
Implementation in stages	0.14	1.00	0.14	0.00	0.00	0.67	0.094	0.00	0.00
Business Tier Structure	0.14	1.00	0.14	0.00	0.00	0.67	0.094	0.00	0.00
Sampling Frequency	0.19	0.67	0.13	0.67	0.13	0.67	0.13	0.00	0.00
Human Factors protection	0.22	1.00	0.22	0.33	0.073	0.00	0.00	0.00	0.00
TOTAL Score			**0.92**		**0.28**		**0.54**		**0.00**

Examining Table 7, and considering the scaling and weights used, the best service excellence measure to be used is the Aberdeen Group service benchmarking KPIs as it has the highest total score of 0.92.

Chapter 4

4.0 Required Actions

As a laggard[xx], the Nigerian maintenance service company would want to take the following actions:

- Equip technicians with the right tools

  - Including mobile tools and applications for better information gathering to improve productivity and problem resolution rate

- Develop the right technician workforce
  - Embark on required training

- Enable the right level of access to performance results

4.1 Company steps to success

The required company steps to success include the following:

- Identify cause(s) of sub-optimization[xxi]
  - Measure variance between planned and actual service costs and demand
    - The benefit of tracking the variance is to gain insight into the cause(s) of sub-optimization in the service operation.

- Improve technician productivity
  - Develop guidelines for communication between dispatcher and technicians

- Optimize service operations
  - Focus on metrics that have direct impact on the customer's business

- Strive for real-time schedule assessment
  - Frequently assess cost-effectiveness of service schedules

- Identify and document all constraints that affect field service work order execution in terms of planning, forecasting and provision of resources
  - Technician -based constraints – skill set, knowledge, type of work, attitude etc.
  - Environment-based constraints – road, weather, security, community etc.
  - Business-based constraints – inventory, equipment and tools, logistics etc.

- Perform existing technology infrastructure stock analysis
  - Identify gaps that impact on service optimization capability
  - Deploy ERP, Order management, CRM or SMS to establish demand forecasting and planning capabilities for service optimization functionalities

- Consider all factors to accurately forecast service demand
    - Move away from bias to historical trends only as basis for forecasting

- Integrate demand forecasting and planning processes with contract and asset information of the customer[xxii]

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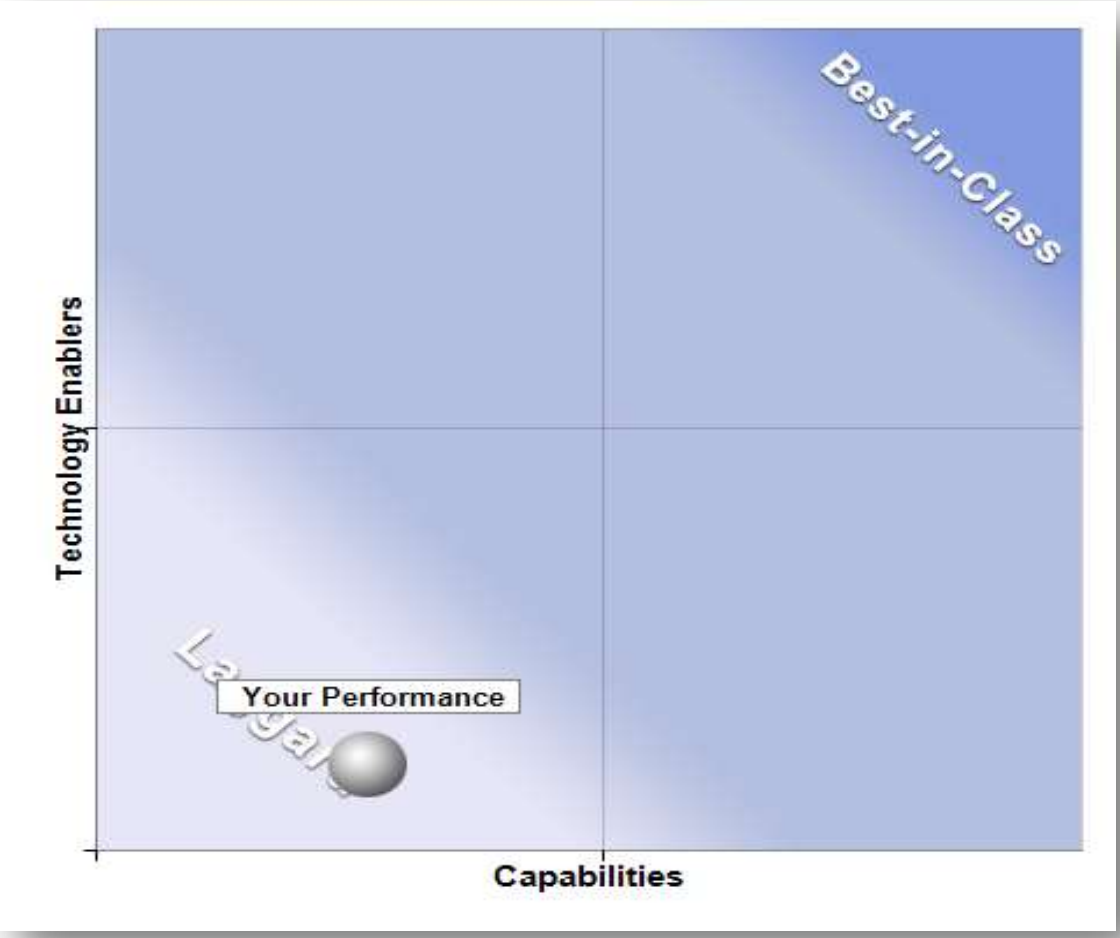
Appendix

SURVEY REPORT



Aberdeen Group Research Methodology

Aberdeen has prepared this report and personalized recommendations based on previously conducted Aberdeen benchmark studies. The participants of those studies were categorized based on their ability to hit specific performance targets: the top 20% of performers (Best-in-Class), the middle 50% (Industry Average), and the bottom 30% (Below Industry Average). Comparative analyses were then completed to understand which process, organizational and technology traits were exhibited more frequently by the Best-in-Class. To prepare this report Aberdeen has compared your answers to the study participants to determine where your company will see the most opportunity and to offer you personalized recommendations based on our benchmark research.

Performance Metrics

The following table provides a closer look at your company's profile along these individual Key Performance Indicators, and how it compares to the Best-in-Class and Laggards. Also, based on your current capabilities and enablers, in comparison to the established benchmark of Best-in-Class, Average, and Laggard performance, the following table represents a predictive analysis of your company's results over the next year.

KPI Metric	Your Company's Expected Performance	Best-in-Class	Laggards
Success rate in meeting response or project completion deadlines	70 %	92 %	67 %
Workforce Utilization	54 %	83 %	52 %
First-Time Fix Rate	62 %	88 %	59 %
Change in Productivity over the previous 12 months	Don't Measure	15 %	-1 %
Change in Time to Resolution over the previous 12 months	Don't Measure	-10 %	0 %

About the Author

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Lucky Enajite Edjenekpo is an oil and gas professional with over 24 years experience in project management and operations management.

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