

## ***Metrics for Business Performance Management***

*Magdalis Figueroa Álvarez  
Master of Engineering in Manufacturing Engineering  
Dr. Miriam Pabón González  
Industrial Engineering Department  
Polytechnic University of Puerto Rico*

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**Abstract** — *Business Metrics are very useful tools to promote business performance, assure quality and promote continuous improvement. During economic recession the application of these tools becomes imperative to assure business subsistence. Adhering to traditional cost reduction tools and strategies even though can be effective it is in some respect orthodox and can have an adverse effect. However, the most appropriate course of action is to perform a throughout assessment of the current business situation and the market conditions to understand business operational cost drivers. Measuring against established goals and Key Performance Indicators (KPI's) is the best way to evaluate business performance. Successful businesses today more than ever place a pronounced emphasis in the concept Voice of the Customer (VOC) as their guiding principle to thrive during economic crisis and recession. Lean Six Sigma principles and tools are also proven strategies to reach the next level.*

**Key Terms** — *Business Metrics, Improvement, KPI's, Lean Six Sigma, Performance, Quality.*

### **INTRODUCTION**

Due to current market conditions and global economies, today's businesses require more strict and high attaining controls to comply with exigencies. The 2008-2009 global economic collapse marked the new era for individuals and businesses in general. No country, industrial sector, governmental agency or socio economical class have been spared from these events.

Additionally, the World Trade Center 9/11 terrorist attacks had a devastating and counterproductive impact in our already harmed economy. The 9/11 events had immediate impact, but also long-term effects that last to these days, it changed our safety mindset and definitively

changed the strategies with respect to how to do business worldwide. Operational budgets started to contract in the private and public sectors and this effect created pressure on management to develop non-traditional strategies to survive the crisis by reducing operational costs.

During difficult economic periods, people is tempted to implement quick fixes motivated by desperation feelings and adhere to traditional cost reduction strategies instead of performing a throughout current state analysis to develop long-term strategies to thrive in the new economy. Without performing a planned, advised and conscious analysis to understand business operational cost drivers, reductions are not long-term strategies.

In crisis time, consumer behavior changes and emerging markets provide the basis for new business opportunities. The most capable companies to survive are those willing to swiftly adapt to the new changes and be capable of complying with the new trends requirements. Exceptional customer service and customer satisfaction are infallible strategies especially during critical times and cannot be underestimated as a performance improvement strategy.

### **Business Performance Management, Business Process Management and Business Metrics**

*Business Performance Management* is a business management approach that review the overall business performance to determine the best way that it can reach its objectives and goals. Its greatest challenge is to allocate people and resources to meet specific and defined business goals and targets within a particular time.

*Business Process Management* controls business processes and its outcome. It provides the basis to manage processes effectively and

efficiently to comply with customer requirements.

The basic Business Process Management pillars are:

- **Top Priority, Critical Processes Identification**

These are typically core processes related to process or product delivery to external customers.

- **Customer Requirements Validation**

It is necessary to continuously review customer requirements and needs to assure that they are specific, measurable, unchanged, and can be provided timely and accurately.

- **Process Documentation**

Process documentation make processes visible to everyone. It is a formal and standard way to describe the process step-by-step by means of various graphical methods including flowcharts, value stream maps, computer modeling. The language used to develop standard process documentation shall be understandable at all levels.

- **Process Measurement Development**

Process measurement is important to determine if the process is meeting customer requirements and needs and how the process is performing. To develop valid process measurements it is necessary to identify *KPI's* with respect to business operations and budget. *Business Metrics* are traditionally associated to the P&L (Profit & Lost) and the Balance Sheet. However, it comprise all business operation aspects that defines management strategy, cost control and process improvement. *Business Metrics* performance evaluation compare obtained results against established targets to demonstrate business health and capability to meet long-term goals.

There are two basic types of metrics:

- **Performance Metrics** – these are metrics that monitor outputs, customer requirements and process business needs, it measures ‘what’ you are doing.

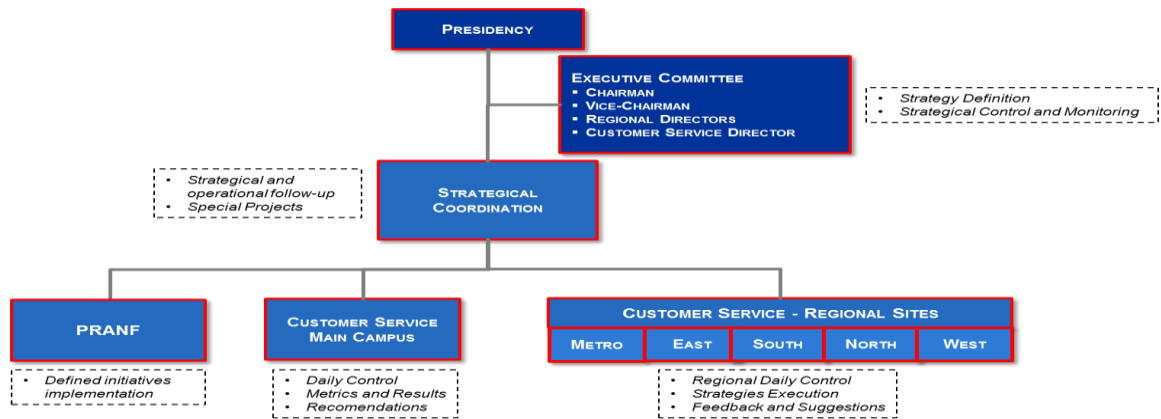
- **Diagnostic Metrics** – these are metrics that measure ‘why’ a process is not performing, they are focused mainly on internal processes.

- **Process Management and Improvement** – Process management involves collecting process data and analyze data to determine whether the process meet customer requirements. Once the process is unable to comply with customer requirements, it shall be improved. Process improvement is a continuous, never ending process.

## COMPANY BACKGROUND

The public company under study has the world most complex system with approximately 5,131 employees, including upper management and employees from two guild worker’s unions [1]. It currently have 24 commercial sites distributed in five regions: North, South, East, West, and Metro. Historically, the economic model used by the company is supported by population increase, however, from 2000-2010 Puerto Rico’s territory population experienced a 2.2% reduction. This trend in conjunction with the prevalent economic crisis have had an adverse effect in company’s revenues from which the need of developing a *Business Performance Management* project was born.

This company has been operationally challenged characterized by lack of experimental planning in the past, the island topographical diversity, the population density, and the central government requirement to optimize operations. The agency main objectives are to improve the operational system, incentive cultural organization transformation, and to maintain financial independence. The strategies to achieve the proposed objectives are to focus on customer satisfaction by means of the *Voice of the Customer (VOC)*, the implementation of data documentation and acquisition technology and environmental regulatory agencies compliance; Environmental Protection Agency (“EPA”) and Puerto Rico’s Health Department.



**Figure 1**  
**New Organizational Structure**

In 2009, the company underwent a breakthrough management leadership restructuring that has made possible to achieve important and significant institutional goals since then. The Customer Service department is the liaison between the customer and the overall agency for services such as service contracts, devices readings, invoicing, and claiming. Traditionally, the Customer Service department was structured commercially and administratively under one director's responsibility. Subsequently, it was reorganized in two departments; Administrative Customer Service and Operational Customer Service. The Administrative Customer Service Department deals with administrative issues such as invoicing, claims, and payment plans requests. The Operational Customer Service Department developed two divisions; the one dealing with high consumption customers and the other for condominiums.

### PROJECT'S INITIAL STATE – ANALYZE

Almost every life event, personally and professionally involves a process. When it is done repeatedly, it is a repeatable process requiring a defined structure. However, establishing a process is not enough for business continuous improvement. It is necessary to measure its output in order to control it because if you can't control it, you can't improve it. Process measurement is important to determine if it is meeting customer

requirements and to understand how the process is performing.

Since 2010, the company implemented *Business Process Management* to measure its operational performance by means of *Business Metrics*. From that period, innumerable improvements have been implemented as a result of the measurement process.

However, after a throughout assessment the following observations were noted:

- **Many error incidents because of dates input recording.**

The dates input was not standardized with respect to the metrics cut-off date and the report date. The date displayed was the report date instead of the cut-off date which brought discrepancies and misinterpretations among associates.



**Figure 2**  
**Header Date Input Error**

- **Discrepancies in total operational customer service orders.**

The individual operation customer service orders should be the same as the total operational customer service orders, however, not selecting all input dates for orders type C13 specifically generated incorrect reports.

Region/Oficina	Cantidad	AVG. Dias
Este	903	3
Norte	881	3
Sur	1,086	1
Grand Total	922	3

Figure 3

**Customer Service Operational Orders Errors Pivot Table**

- **Discrepancies in errors log data retrieval.**  
Errors log data was retrieved manually and there was a high probability for data omission.

Div.	Porción	Un.lect.	Fecha Error	Hora Error	Cl.	Orden	Nro Mat.	Nro Serie	Nro Mat.	Nro Serie
010	44	10446000	05/08/2015	00:05:41	OC11	50030685	AB85/8'4E	13304783	AB85/8'4E	07265517
010	52	10526206	05/08/2015	00:05:41	OC11	50067553	KEN5/8'4E	07224420	AB85/8'4E	07224339

Figure 4

**Errors Log Data Retrieval Screen**

- **Customer service attention time and waiting time metrics calculation performed manually.**

Calculations for the 24 commercial offices was performed manually increasing arithmetical errors probabilities.

Ofic/Cientes	Tiempo Espera	Tiempo Transacción	Tiempo Total	TE Redondeado	TT Redondeado
VIQUES(20)	0:03:12	0:05:46	0:08:58	3	6
COAMO(494)	0:08:46	0:05:08	0:13:54	9	5
SAN SEBASTIAN(490)	0:08:50	0:06:02	0:14:52	9	6
YALCO(1016)	0:11:42	0:06:12	0:17:54	12	6
CAMUY(454)	0:12:10	0:06:38	0:18:48	12	7
SAN JUAN(1341)	0:10:40	0:10:48	0:21:28	11	11
BAYAMON(1078)	0:11:20	0:10:30	0:21:50	11	11
GUAYNABO(604)	0:11:14	0:11:32	0:22:46	11	12
CAJUY(458)	0:10:18	0:13:20	0:23:38	10	13
SAN GERMAN(459)	0:15:32	0:08:32	0:24:04	16	9
ISABELLA(431)	0:16:44	0:08:28	0:25:12	17	8
TOA ALTA(396)	0:17:50	0:11:44	0:29:34	18	12
UTUADO(148)	0:19:44	0:10:56	0:30:40	20	11
ARECIBO(669)	0:21:44	0:09:48	0:31:32	22	10
FAMARO(440)	0:22:14	0:11:18	0:33:32	22	11
GUAYAMA(788)	0:27:54	0:06:40	0:36:34	28	9
CAGUAS(977)	0:30:12	0:08:18	0:38:30	30	8
CARDUÑA(771)	0:30:58	0:10:38	0:41:36	31	11
PONCE(880)	0:35:30	0:08:52	0:44:22	36	9
HUMACAD(568)	0:34:54	0:15:08	0:50:02	35	15
AGUADILLA(414)	0:41:42	0:13:28	0:55:10	42	13
VEGA BAJA(754)	0:57:56	0:06:44	1:04:40	58	7
MANATI(475)	0:57:40	0:09:02	1:06:42	58	9
MAYAGUEZ(512)	1:00:04	0:12:12	1:12:16	60	12
Average	0:24:07	0:09:34	0:33:41	24.21	9.63

Figure 5

**Customer Service Attention Time and Waiting Time Manual Calculations**

- **Pending cut-off orders data retrieval too extensive.**

Data was allocated by office, instead of regions (24 commercial offices vs. 5 regions). Additionally, each data file had to be managed individually and further compiled in a master file to facilitate report generation. The compilation process also presented high error probabilities because of data omission during the copy/paste process to the master file.

Job	Lista	Documen	Job creado p	Status	Fe. Inicio	S. Inicio	Duración (seg.)	Retorno (seg.)
Z100_DTEC_IM39_OC08_010			SAPCP8	terminado	05/23/2015	09:44:10	810	0
Z100_DTEC_IM39_OC08_012			SAPCP8	terminado	05/23/2015	09:44:10	991	0
Z100_DTEC_IM39_OC08_013			SAPCP8	terminado	05/23/2015	09:44:10	2,115	0
Z100_DTEC_IM39_OC08_014			SAPCP8	terminado	05/23/2015	09:44:10	593	0
Z100_DTEC_IM39_OC08_015			SAPCP8	terminado	05/23/2015	09:44:10	664	0
Z100_DTEC_IM39_OC08_016			SAPCP8	terminado	05/23/2015	09:44:10	796	0
Z100_DTEC_IM39_OC08_017			SAPCP8	terminado	05/23/2015	09:44:10	890	0
Z100_DTEC_IM39_OC08_018			SAPCP8	terminado	05/23/2015	09:29:08	884	0
Z100_DTEC_IM39_OC08_021			SAPCP8	terminado	05/23/2015	09:29:08	851	0
Z100_DTEC_IM39_OC08_022			SAPCP8	terminado	05/23/2015	09:29:08	405	0
Z100_DTEC_IM39_OC08_023			SAPCP8	terminado	05/23/2015	09:29:08	309	0
Z100_DTEC_IM39_OC08_025			SAPCP8	terminado	05/23/2015	09:29:08	185	0
Z100_DTEC_IM39_OC08_027			SAPCP8	terminado	05/23/2015	09:29:08	542	0
Z100_DTEC_IM39_OC08_028			SAPCP8	terminado	05/23/2015	09:29:08	247	0
Z100_DTEC_IM39_OC08_033			SAPCP8	terminado	05/23/2015	09:29:07	704	0
Z100_DTEC_IM39_OC08_035			SAPCP8	terminado	05/23/2015	09:29:07	196	0
Z100_DTEC_IM39_OC08_037			SAPCP8	terminado	05/23/2015	09:29:07	493	0
Z100_DTEC_IM39_OC08_038			SAPCP8	terminado	05/23/2015	09:00:03	907	0
Z100_DTEC_IM39_OC08_044			SAPCP8	terminado	05/23/2015	09:00:03	831	0
Z100_DTEC_IM39_OC08_045			SAPCP8	terminado	05/23/2015	09:44:10	143	0
Z100_DTEC_IM39_OC08_047			SAPCP8	terminado	05/23/2015	09:00:03	1,043	0

Figure 6

**Pending Cut-off Orders Data Retrieval Screen**

- **Results analysis report was generated on email.**

Electronic mail has formatting limitations compared to a word processing application, additionally for printing purposes it requires more paper resources. This analysis report is used to develop action plans for unattained performance weekly goals together with other tools.

- **No Standard Operating Procedures (SOP'S), work instructions, or inaccurate procedures for performing the various tasks.**

Training process and knowledge transfer becomes more difficult. There was no formal and standard guidance for generating business metrics weekly tasks. Additionally, considering absenteeism, if the assigned personnel was not available for whatever

reason, task reassignment became more struggling.

- **No double check review before report release.**

No one was reviewing the final presentation before being released to end users and occasionally there were errors in the presented data or the presented was incorrect.

- **The total process completion time was higher than expected.**

Completion time was over one day-work (8 hours) increasing labor cost allocation and budgeting.

Entrada	Alm. Desde	Alm. Hasta	Salida	Almuerzo	H	OT	MP
8:00 AM	12:00 PM	1:00 PM	5:00 PM	1.00	8.00	0.00	0.00
8:00 AM	12:00 PM	1:00 PM	10:30 PM	1.00	13.50	5.50	1.00
8:30 AM	12:00 PM	1:00 PM	6:15 PM	1.00	8.75	0.75	0.25
8:30 AM	12:00 PM	1:00 PM	5:00 PM	1.00	7.50	0.00	0.00
9:00 AM	12:00 PM	1:00 PM	6:00 PM	1.00	8.00	0.00	0.00
9:00 AM		12:00 AM		0.00	15.00	7.00	3.00

**Figure 7**  
Time Sheet Data Record Screen

From the assessment observations, it was concluded that there were potential and multiple improvement opportunities to streamline the process and various problem solution tools like root cause analysis, SIPOC, flowcharts, five-why's, among others were used to perform the solution approach analysis.

### IMPROVE PHASE

During the improve phase, all observations were provided a solution and the implementation was effectively validated:

- **Many error incidents because of dates input recording.**

Dates were standardized to be the cut-off date, as of now, Friday.



**Figure 8**  
Header Date Input Standardized

- **Discrepancies in total operational customer service orders.**

A checklist containing orders ID was developed. The user shall record the individual orders total and verify that the sum of the individual orders equal the total orders. Additionally, the SOP was modified to include the instruction to verify that in the data filter for order C13 all input dates are selected.

Row Labels	Count of Orden	Average of Dias Back log	Región / Oficina	Cantidad	AVG. Dias	Región / Oficina	Cantidad	AVG. Dias
Este	203	230	Este	203	230	Norte	239	204
Caguas	12	134	Caguas	12	134	Arecibo	30	271
Cayey	3	83	Cayey	3	83	Camuy	37	230
Fajardo	25	187	Fajardo	25	187	Manatí	64	109
Humacao	163	246	Humacao	163	246	Toa Alta	40	280
Metro	65	91	Vieques	0	0	Utuado	14	161
Bayamón	2	9	Metro	65	91	Vega Baja	54	214
Carolina	19	70	San Juan	44	104	Oeste	111	200
San Juan	44	104	Bayamón	2	9	Aguadilla	29	209
Norte	239	204	Carolina	19	70	Isabela	8	176
Arecibo	30	271	Guaynabo	0	0	Mayagüez	47	191
Camuy	37	230				San Germán	22	227
Manatí	64	109				San Sebastián	5	145
Toa Alta	40	280				Sur	64	231
Utuado	14	161				Coamo	0	0
Vega Baja	54	214				Guayama	3	1059
Oeste	111	200				Ponce Centri	51	210
Aguadilla	29	209				Yauco	10	90
Isabela	8	176						
Mayagüez	47	191						
San Germán	22	227						
San Sebastián	5	145						
Sur	64	231						
Guayama	3	1,059						
Ponce Centri	51	210						
Yauco	10	90						
Grand Total	682	203						

**Figure 9**  
Customer Service Operational Orders Pivot Table Standardized

- **Discrepancies in errors log data retrieval.**

A formal request to the Information System Department was performed to compile the errors log data in a batch, reducing incidents 100%.

Div.	Porción	Un.lect.	Fecha	Hora	Cl.	Orden	Nro Mat.	Nro Serie	Nro Mat.2	Nro Serie3
10	51	10516107	5/22/2015	0:08:43	OC11	50102698	ABB5/8'4E	8027560	KENS/8'4E	8030605
10	17	10170231	5/22/2015	0:08:44	OC11	50165868	KEN	7883997	ABB5/8'4E	2.01401E+11
12	53	12536501	5/22/2015	0:02:29	OC11	50153590	ABB5/8'4E	13232842	ABB5/8'4E	2.01501E+11
12	54	12546705	5/22/2015	0:16:45	OC11	50167028	ABB5/8'4E	13196697		
14	39	14391709	5/22/2015	0:10:53	OC11	50167113	KEN	8993030		
15	17	15171928	5/22/2015	0:02:29	OC11	50167107	KEN	11508248		
18	31	18312886	5/22/2015	0:08:20	OC11	6768400	ABB5/8'4E	2.014E+11	ABB5/8'4E	2.01401E+11
18	1	18012831	5/22/2015	0:08:20	OC11	50166563	ABB	5091192		
18	26	18262957	5/22/2015	0:02:29	OC11	50166909	ABB	7029538		
22	8	22083820	5/22/2015	0:02:29	OC11	50167238	ABB	7005001	ABB5/8'4E	2.01501E+11
23	2	23023632	5/22/2015	0:05:12	OC11	50144189	KENS/8'4E	5059948	ABB5/8'4E	14325451
37	21	37214849	5/22/2015	0:10:19	OC11	50167245	ABB5/8'4E	9143425	ABB5/8'4E	13219898
38	37	38375297	5/22/2015	0:12:20	OC11	50167100	ABB	7099911		
44	17	44175466	5/22/2015	0:02:30	OC11	50166792	KEN	12617936		
44			5/22/2015	0:09:23	OC11	50166897	ABB5/8'4E	9031925	ABB5/8'4E	2.01401E+11
44			5/22/2015	0:09:23	OC11	50166900	KEN	94084917		
47	19	47195937	5/22/2015	17:34:38	OC11	50117299	ABB	6260204	ABB5/8'4E	2.0114E+11
55	9	55086499	5/22/2015	0:13:46	OC11	50166363	BADS/8'4E	8480308		
57	11	57116732	5/22/2015	0:10:57	OC11	49587632	ABB	5068371	ABB5/8'4E	13142275
57	13	57136733	5/22/2015	0:10:48	OC11	50130545	KEN	12913421		
57	21	57216568	5/22/2015	0:10:48	OC11	50130550	ABB5/8'4E	13221869		
57	21	57216568	5/22/2015	0:10:48	OC11	50130554	ABB5/8'4E	13221869		

Figure 10  
Errors Log Data Batch Screen

- Customer service attention time and waiting time metrics calculation performed manually.

Using basic spreadsheet software programming functions, calculations are performed automatically reducing processing time and data input error probability.

Región	Tiempo de Espera	Tiempo de Atención
Este	9.4	8
Caguas	10	8
Cayey	5	7
Fajardo	5	8
Humacao	25	13
Vieques	2	4
Metro	8.25	10
San Juan	10	11
Bayamón	9	10
Carolina	7	10
Guaynabo	7	9
Norte	9	6.333333333
Arecibo	11	10
Camuy	10	6
Manatí	7	7
Toa Alta	21	9
Utua	1	1
Vega Baja	4	5
Oeste	10.2	8.6
Aguadilla	11	10
Isabela	6	8
Mayagüez	19	10
San Germán	9	9
San Sebastián	6	6
Sur	11	8
Coamo	8	8
Guayama	16	9
Ponce Centro	15	8
Yauco	5	7
Isla	9.57	8.186666667

Figure 11  
Customer Service Attention Time and Waiting Time Calculations

- Pending cut-off orders data retrieval too extensive.

A request to the Information Systems Department to compile the data was performed, reducing files from 24 to five (5).

Job	Lista	Documen	Job creado p	Status	Fe. inicio	H.inicio	Duración(seg.)	Retraso (seg.)
0100_MTEO_TIW99_CONCILIADAS_EST			SAPPS	terminado	05/31/2015	08:00:02	1,045	0
0100_MTEO_TIW99_CONCILIADAS_MET			SAPPS	terminado	05/31/2015	08:00:02	1,643	0
0100_MTEO_TIW99_CONCILIADAS_MJR			SAPPS	terminado	05/31/2015	08:00:02	1,057	0
0100_MTEO_TIW99_CONCILIADAS_OES			SAPPS	terminado	05/31/2015	08:00:02	809	0
0100_MTEO_TIW99_CONCILIADAS_SMR			SAPPS	terminado	05/31/2015	08:00:02	815	0
Resumen							5,339	0

Figure 12  
Pending Cut-Off Orders Data Condensed Reports

- Results analysis report was generated on email.

Email has formatting limitations and it increases the report generation time. A word processing application was used to generate the analysis report and afterwards it was converted to PDF format to avoid any accidental or intentional modification. This report is used by supervisors to develop weekly work orders.

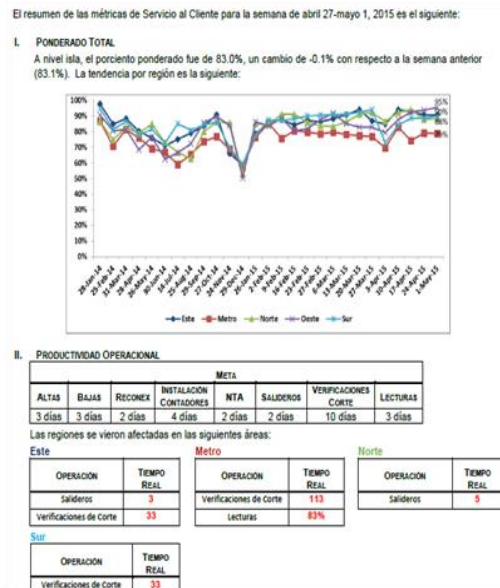


Figure 13  
Results Analysis PDF Report

- **No SOP'S, work instructions, or inaccurate procedures for performing the various tasks.**

A total of 12 standard operating procedures were developed and/or verified for content accuracy with respect to the current process to assure that anybody can perform the required tasks without major obstacles. Language style used and content was validated at all hierarchical levels.

- **No double check review before report release.**

The department technical consultant was assigned to perform this task to capture any discrepancy before the report is released to the regional directors.

- **The total process completion time was higher than expected.**

The completion time before the improve phase was over one day-work (8 hours) and after implementing the improvements it is completed in four (4) to six (6) hours. This provides opportunity to measure other business areas that were not previously measured because of time constraints. As of now, eight (8) additional business performance metrics will be implemented.

### CONTROL PHASE

During the Control Phase, it was assured that the implemented solutions performed as expected. As of now, the next step will be to train the commercial offices personnel to execute their own business performance metrics using the established tools. This process will provide commercial offices management the necessary feedback to develop action plans whenever a specific metric or metrics does not comply with the established goals or to mitigate the non-compliance consequences to assure they are performing according to business needs. Currently, the established goals to be met are:

ORDER TYPE	GOAL
<b>Operational Services</b>	
Discharges	3
Withdrawals	3
Reconnections	2
Devices Installation	4
No Water	2
Leakages	2
Cut-off Verifications	10
<b>Readings</b>	86%
<b>Investigations</b>	
Administrative Investigations	13
Field Investigations	18
<b>Customer Service</b>	
Waiting Time	15
Transaction Time	10
<b>Errors Log</b>	100%
<b>Administrative Services</b>	
PPP Discharges	5
Existing Service Discharges	5
Service WithSdrawals	5
New Service Discharge	5
Transfer (Move in/out)	5
Accounts Receivables vs. Budget	100%

Figure 14  
Business Operational Goals

### RESULTS

Since the *Business Metrics* project formal implementation in 2010 the company under study has had a positive impact in terms of revenues and operations. Some of the greatest achievements are [2]:

- 20% decrease in pending cases referred to the Ombudsman since 2013.
- Delinquent customers were identified and offered payment plans to recover \$12,772,978.11.
- Since 2012 a phone center was established providing the same services as the commercial offices. During 2012, 821,373 customers were served. This increase represents a 15% compared to the previous year.
- A reduction of \$41 million (52%) in pending cut-off orders since 2010 to 2014.
- A reduction in administrative investigations from 96,343 in 2010 to 11,612 in 2014.
- A decrease in non-invoiced accounts from 15,453 in 2010 to 97 in 2014.
- An overall decrease in backlog days for all operational orders.

- A significant reduction in the waiting and service times.

BALANCE DE DEUDA EN CORTES				
Región	Balance Deuda al 06/30/10	Proporción	Balance Deuda al 04/07/14	Dif. En \$
Metro	\$ 43,249,276	50%	\$ 33,781,742	\$ 9,467,534
Norte	\$ 7,142,222	8%	\$ 2,917,971	\$ 4,224,251
Oeste	\$ 13,085,567	15%	\$ 1,883,464	\$ 11,202,103
Sur	\$ 4,783,883	6%	\$ 2,632,486	\$ 2,151,397
Este	\$ 17,601,408	20%	\$ 3,471,136	\$ 14,130,273
<b>Total</b>	<b>\$ 85,862,356</b>	<b>100%</b>	<b>\$ 44,686,799</b>	<b>\$ 41,175,557</b>
			Reducción en %	52%

**Figure 15**  
**Pending Cut-Off Orders Trend**

Service	May '10	May '11	May '14	Difference	Improvement
Waiting Time	43 min.	23 min.	20 min.	23 min.	47% ↓
Administrative Investigations	96,343	26,959	11,612	84,731	90% ↓
Non-invoice Accounts	15,453	622	97	15,356	99% ↓
Service Discharge	74	2	2	72	97% ↓
Service Withdrawal	46	2	2	44	96% ↓
Readings	49%	60%	86%	37%	74% ↓

**Figure 16**  
**Improvement Trending 2010-2014**

## CONCLUSIONS

*Business Performance Management* is a broad approach to plan, measure and monitor company's business activities. It enable businesses to define strategic goals to measure and manage its performance against established goals. Its deployment represents to take people out of their comfort zone; it requires a real and genuine commitment from leadership to engage the whole population.

As part of the *Business Performance Management*, *Business Process Management* attempts to improve business processes on a continuously basis to align all business areas with respect to the *VOC*. When fused together in the right proportion, *Business Performance Management* and *Business Process Management* can lead to substantial cycle time, cost and resources reductions leading to business stakeholders and stockholders value increase.

*Business Metrics* are invaluable tools to assess business processes and to measure business performance in order to develop action plans whenever necessary or set new goals to promote business development. To be effective, *Business Metrics* should be compared to established

benchmarks or specific business objectives and to be continuously revised to keep up to date.

Today's businesses are more than ever challenged by globalization, lack of resources, nature, and competence, among others. In order to be profitable, business shall meet and comply with customer requirements and needs. Implementing methodologies such as Six Sigma, Lean Manufacturing and Lean Six Sigma, management is capable of maintaining businesses continuous improvement trend by developing growth and development opportunities despite the prevailing economic recession.

## REFERENCES

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