

**IMPROVING PERFORMANCE ON INFORMATION AND TECHNOLOGY SYSTEMS AND SERVICES  
AT A LIFE SCIENCES MANUFACTURING PLANT FOR THE GRADUATE PROGRAMS  
AT POLYTECHNIC UNIVERSITY OF PUERTO RICO**

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**ABSTRACT**

*The establishment of a continuous improvement program and culture at a Life Sciences company has giving them great business results. By using Lean, Six Sigma and Team involvement methodologies areas like Information Technology has been assess. Information Technology is a supporting department that has a strong impact on the daily business operations. By treating the Information Technology department as a services supplier and the other departments as customers a Voice of customer exercise was use to collect information. The assessed areas were service desk, the Kronos time attendance program and the Mapics transactions system. A customer satisfaction survey was administered to a sample of employees. The data obtained was transformed into specific projects. Six months after projects implementation a new survey was conducted showing an increased level of customer satisfaction.*

**PROBLEM STATEMENT**

The Information Technologies (IT) Department at the Life Sciences Company is experiencing a lot of complaints verbally and through the IT Help Desk System by the end users. The System is not performing as they expect and the functions they need to accomplish are being delay or interrupted. An outside contractor runs the IT Department. The contractors are in charge of providing support to all network activities such as communications systems, infrastructure, and desktop support. The Company

has a strong believe on continuous improvement methodologies as the way to achieve the quality on the products and services. At the Life Sciences Company there is a Process Excellence Team who is in charge of using different Quality tools towards continual improvement in all areas of the plant by doing specific projects. After improving performance in other areas, the top management understood that it was the turn to asses the IT Systems due to the impact they have in other business units. By improving the performance of the IT Systems and services other departments and functions will be impacted and will improve its performance also.

**RESEARCH OBJECTIVES**

The objectives of the project were (1) to asses the performance of the IT Systems (Mapics and Kronos) and Services (Contractors), to establish a baseline of the current performance. (3) to prioritize projects to work that will improve system performance, (4) apply the Lean Six Sigma methodology and (5) measure the performance after the implementation of the projects.

**RESEARCH CONTRIBUTIONS**

This research presents an opportunity for the Life Sciences Company to use a different Quality improvement tools like capturing the Voice of Customer to improve the IT System performance. The IT Department will have a documented baseline to use as a comparison for future projects. All employees will be part of the improvement

process. The IT Department customers will improve the performance of its operations as a consequence. This project also, will serve as a baseline for the development of a future Customer Satisfaction Program.

### **BACKGROUND**

At the end of the 1990s most American businesses accord the measurement of customer satisfaction a high priority. Customer satisfaction has become the most important quality metric today. Hayes (1997) defines quality as the extent to which products meet the requirements of people who use them, this means that people decides what quality is, and people opinion is an important factor. To better understand customer satisfaction, few definitions must be considered. What is a customer? Generally speaking a customer is anybody who receives a service, a product from others. There are two main types of customers: External customers and internal customers. Internal customers can be defined as anyone in the company who is affected by the product or service as it is being generated. Internal customers are often employees of the company. External customers are also referred as "end users".

What is the customer satisfaction concept? Customer satisfaction is a state of mind that a customer has about a company in which their expectations have been met or exceeded over the lifetime of the product or service. This leads to company loyalty and product repurchase (Anton, 1997). Customer satisfaction measurement has become so important. Satisfaction is quickly becoming the key to competitive posture within a category or industry. Improved customer satisfaction will increase organizational profitability.

Customer satisfaction measurement has its roots in the Total Quality Management movement (TQM). The TQM School focused on the more pragmatic application of satisfaction information to design and manufacture, the marketers explored the

psychology of satisfaction – how it was formed and the nature of its impact on the future purchase behavior. As the quality management "gurus", notably W.E. Deming the quality improvement process is rooted on customer information and feedback. Deming's called the process "Helix of Continuing Improvement". Then Juran created the "Spiral of progress in quality" as a mirror image of Deming. Both Quality – masters see customer input and feedback as a necessary input to direct product design and improvement. There are some statistics that shows the importance of the customer satisfaction as a quality indicator for the last 20 years. By 1994, The Juran Institute conducted a survey; they found that 90 percent of the top managers of more than 200 of America's largest companies agreed with the statement: *Maximizing customer satisfaction will maximize profitability and market share*". On the same survey, 124 large US companies (Mentzer and colleagues, 1995) found that 75 percent of the companies surveyed mentioned customer satisfaction in their mission statements. On a survey conducted by TARP (Technical Assistance Research Programs) they found, 87% of the 500 companies with annual revenues in excess of 100 million dollars listed customer satisfaction as one of their most important corporate initiatives; but only 16.1% of the companies had any method in place to measure their effectiveness in satisfying the customer. TARP also conducted studies on the 70's for the White House Office of Consumers Affairs. The studies revealed consumers with problems who did not complain were less loyal than those who did and had their issues resolved (Quality Progress 2006). Subsequent studies up today confirm initial findings. About half of all consumers usually complain about serious problems to a frontline retail representative. For less serious problems, complaint rates drop significantly. Complaints are inevitable and each one must be seen as a chance to correct a process, educate a customer and strengthen loyalty. The simple fact that it costs five to eight times as much to get new customers as it

does to hold onto old ones is key to understanding the corporate drive toward increased customer satisfaction (TARP, 1986).

The subject of customer is receiving extraordinary attention. Companies now recognize that the new global economy has changed things forever. There is more competition and that competition is fierce. Markets are crowded with products that customers can hardly differentiate. Measuring customer satisfaction is the key to their prosperity. Customer satisfaction is a critical strategic weapon that can bring them increased market share and increased profits. Focusing on customer satisfaction requires a commitment from top management, changes in corporate organization and new values in the corporate culture. Some companies rely on outdated and unreliable measures of customer satisfaction. They watch sales volume; they track and count frequencies of complaints. They watch accounts receivables aging reports. These approaches are not completely without value, but it is needed a well-designed customer satisfaction surveying program. It is not surprising that firms, which systematically and formally measure customer satisfaction, are usually market leaders in their area. These market leaders are designed to hear the Voice of the Customer (VoC) and achieve customer satisfaction. In these companies marketing and sales employees are primarily responsible for the customer satisfaction program. Satisfaction results are made available to all employees. Customers are informed about changes brought about by the results of listening to them. Internal and external quality measures are often tied together. Customer satisfaction is incorporated in to the strategic focus of the company via mission statement. Listening to the Voice of customer (VoC) pays because you gain with the customer retention, customer satisfaction, employee satisfaction, improvement on quality management systems requirements and cost avoidance. Another important aspect of the customer satisfaction measurement is to understand the mind of the customers. The customer's decisions are based on two sources: the customer

experience known as "Moment of truth" and the experience of others known as "Word of mouth". An exceptional experience leads to strong word of mouth recommendations.

To compete with other quality-oriented economies today, it is absolutely necessary to collect the right data, to be attuned to the appropriate market indicators. Measures allow a business to: (1) Know how well the business process is working, (2) know where to make changes to create improvements, if changes are needed, and (3) Determine if the changes led to improvements (Hayes, 1997). One way to measure customers' attitudes is through questionnaires. The companies should design customer satisfaction questionnaires that accurately assess customers' perceptions about quality of services or products. The primary intention for measuring customer satisfaction is to collect information regarding either what customers report needs to be changed (in a product, service or delivery system) or to assess how well an organization is currently delivering on its understanding of these needs. Information collection is generally based on the cost efficient methods of sampling the general base of customers. The information collected should be statistically representative and the technique cost efficient. The surveys or customer satisfaction questionnaires are commonly used over other data gathering techniques because it permits the accumulation of data in relatively little time. The system must be relatively easy to design and understand, inexpensive to implement and monitor and must generate actionable reports for management. It can be effectively argued that the very act of surveying customers conveys a very positive message: the organization is interested in its customer well being, needs, pleasures and displeasures. Customer satisfaction questionnaires are constructed in phases: (1) Determining questions to be used in the questionnaire, (2) Selecting the response format and (3) Writing the introduction to the questionnaire. A customer satisfaction questionnaire should use specific statements that would leave less room for varying

interpretations. When use more specific statements, the questionnaire provides specific feedback concerning organizational and staff performance. We must ensure our questions are not ambiguous. Using specific statements in questionnaires will enhance the information gained, because responses from our customers mean the same thing across customers (no differing) definitions) and responses will provide specific feedback on ways to improve the service or product (Hayes, 1997). Items should be also concise, too long questions can make the survey too long and difficult to read. A good item should appear relevant, be concise and unambiguous, contain only one thought, and not obtain double negatives. The response format also can influence the quality of the responses obtained. It is extremely important to select the response format because it determines how the data from the questionnaire can be used. There are several response format or scaling methods. These scaling methods include Thurstone's method of equal appearing intervals, Guttman's scalogram approach, and the Likert scaling method. For its simplicity and utility the most use is the Likert method. The Likert method yields higher reliability coefficients with fewer items. The Likert method is designed to allow customers to respond in varying degrees to each item that describes the service or product. The low end represents a negative response while the high end represents a positive response. Some examples are: Strongly disagree, disagree, neither Agree nor disagree, Agree and strongly agree or Very poor, Poor, Neither Poor Nor Good, Good and Very Good. The Likert method will produce variables scores that will allow you to determine the percentage of positive and negative responses for a given item. Other important factor of a good questionnaire is the introduction. The introduction should be brief, but it should explain the purpose of the questionnaire, provide instructions for completing the questionnaire and might include how the data will be used and the reason for the similarity of some items. Since sometimes it is not possible to administer surveys to all the customers and in fact it

may not be necessary there are sampling techniques to determine the sample size, determine the confidence levels, and increasing response rates. Commonly used type of sampling includes: census, judgment and Statistical. The census sampling is sampling all the customers, all of the possible cases in the population. The judgmental sampling is based solely on the discretion of the person conducting the sampling procedure. The Statistical sampling method is based on statistical probability. The samples are randomly chosen, the sample size is statically determined and we can make generalizations from our results.

Customer satisfaction should be part of the culture of the company. Once we have capture the VoC different improvements methodologies could be use to analyze the data and obtain the Critical to Quality characteristics that we need to work with. Today different type of business like healthcare, manufacturing, banks, education and services are using Lean or Six Sigma methodologies to achieve their quality goals, but recently it has been agree by the users of both methodologies that both improvement tools merged works better especially in service related operations. Service operations now comprise more than 80% of GDP in United States of America. Lean Six Sigma for services is a business improvement methodology. Lean is defined as an initiative focused on eliminating all waste in manufacturing processes. Principles of lean manufacturing include zero waiting time, zero inventories, scheduling (internal customer pull instead of push system), batch to flow (cut batch sizes), line balancing and cutting actual process times. The Six Sigma method provides organizations tools to improve the capability of their business processes. This increase in performance and decrease in process variation lead to defect reduction and improvement in profits, employee morale and quality of products or services.

Lean and or Six Sigma alone cannot dramatically improve process speed or reduced invested capital; both enable the reduction of complexity costs. Six Sigma (1) emphasizes the

need to recognize opportunities and eliminate defects as defined by customers (2) recognizes that variation hinders our ability to reliably deliver high quality services (3) requires data driven decisions and incorporates a comprehensive set of quality tools under powerful framework for effective problem solving. Lean focuses on maximizing process velocity (2) provides tools for analyzing process flow and delay times at each activity process (3) centers on separation of “value-added” from non-value-added” work with tools to eliminate the root causes of non-value-add activities and their cost provides for quantifying and eliminating the cost of complexity. In general lean creates process speed (by reducing cycle times) and efficiency (minimal time, capital invested and cost) in any process. Extra cost, time, and complexity are waste. George 2003, propose three Lean lessons: Most processes are un lean, the primary goal should be reducing “Work in process – WIP”, WIP could be reduced creating a “Pull System”.

Unless decision makers fully understand customer complaint behavior and can quantify the return of investment (ROI) of complaint handling, they won't see the link between complaint handling and loyalty and profits, and will never allocate adequate resources. Every problem represents an opportunity to enhance both loyalty and word of mouth. Customer satisfaction in a world oriented to quality improvement is the appropriate indicator to protect the most valuable corporate asset – loyal customers.

### **METHODOLOGY**

To reach the goals established in this project the first step was to assess the status of Kronos, Mapics and Help Desk Support directly from the end users. To capture the Voice of Customer (VoC) of the employees a customer satisfaction questionnaire or survey was used. A web based commercial survey (Survey Methods.com) was used to facilitate the data acquisition process and analysis. The participants received an e-mail notification with a link to access the online survey.

For those who do not have online access, a copy of the survey was distributed to employees through their supervisors. The information recorded on paper was then transferred on the web site. The sampling method used was census, in which every person who has an account on the Mapics or Kronos applications had the opportunity to complete the survey. The questions/items on the survey followed the Likert method. The questions were based on the five dimensions of service quality (availability of support, responsiveness of support, timeliness of support, completeness of support and pleasantness of support) and on the quality dimensions of software (correctness, reliability, usability, maintainability, interoperability, intra-operability and flexibility). The results were discussed with the Process Excellence Team, the Information Technology department management and the outside contractors that provide the IT support. Based on the results different projects were considered. The satisfaction survey will be available for two weeks on November 2007 and then a second survey after all the projects has been completed.

### **RESULTS**

The first survey was run on November 2007. A total of 296 employees were invited via e-mail and by hard copy, 208 employees completed the survey for a 70.3% of participation. For the post implementation survey, corrections to original listings were made and 252 employees were invited, as described before and 162 employees representing a participation of 62%. The participants of both surveys were from four different buildings, four different working shifts, all manufacturing and supporting departments at the Life Sciences Company. The participants were hourly, exempts and managerial employees. The demographics of the survey were extremely important to understand the results. The overall satisfaction with the Kronos time attendance software was 25%. The details of each criteria for the software parameters were consistent demonstrating the problems with the program.

**Table 1: Performance of Kronos software**

Kronos	Agree		Neutral		Disagree	
	Nov-07	Jul-08	Nov-07	Jul-08	Nov-07	Jul-08
Stability	12.5%	55.5%	25.0%	20.0%	62.5%	24.4%
Availability	14.3%	46.6%	19.6%	22.2%	66.1%	31.1%
Usability	26.8%	51.1%	28.6%	33.3%	46.4%	15.5%
Meet expectations	25.0%	46.6%	26.8%	31.1%	48.2%	22.2%
*56 Users (Nov 07)		*45 Users (Jul 08)				

More than 60% of employees agree that the Kronos was not stable and was not available to perform their functions. For the usability and meet the expectations criteria, around 50% of employees were not agree also. For 25-30% of the employees the system was not good, nor bad. On Figure 1, the frequency of problem reporting shows that once a month or twice a month they need to report a problem with Kronos.



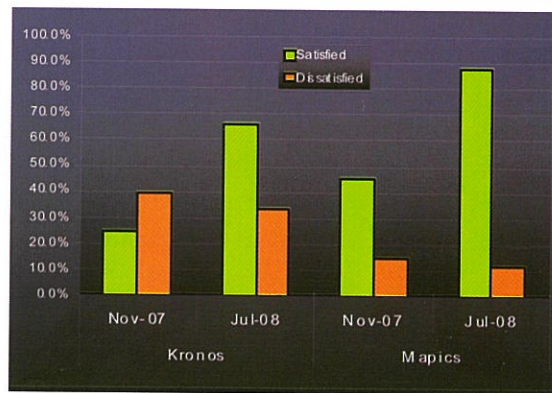
**Figure 1: Kronos Frequency of Problem Reporting**

In respect to the Mapics results were different. The employees found this system to be more stable, available, and appropriate for use and met their expectations on nearly 50% for each of the criteria as shown in Table 2 and consistent with the 46% of the overall satisfaction observed in Figure 2. Data shows that the higher frequency of problem reporting was once a month, refer to Figure 3. For

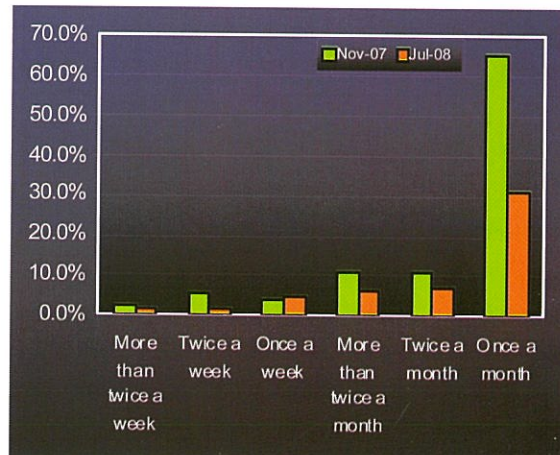
the Help Desk Reporting tool is being used frequently by employees (Figure 4) as the way to communicate the need of service. This is good considering that system is new. All requests must be raised on the “Help Desk” to have a real scenario of services and be able to track them for performance and accountability.

**Table 2: Mapics Performance**

Mapics	Agree		Neutral		Disagree	
	Nov 2007	Jul 2008	Nov 2007	Jul 2008	Nov 2007	Jul 2008
Stability	50.0%	73.3%	30.8%	*	19.2%	26.7%
Availability	51.9%	68.3%	26.9%	*	21.2%	31.7%
Usability	49.4%	72.5%	32.1%	*	18.6%	27.5%
Meet expectations	47.4%	72.5%	29.5%	*	23.1%	25.8%
156 Users (Nov 07)			120 Users (Jul 08)			
* data not recorded						



**Figure 2: Kronos and Mapics Overall Satisfaction**



**Figure 3: Mapics Frequency of Problem Reporting**

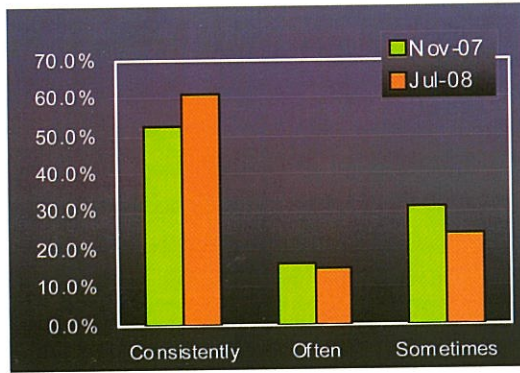


Figure 4: Use of Help Desk Reporting Tool

A 78% of people found the Help Desk easy to use, but 56% found the reporting options not adequate and less than 50% agree on the accessibility of the reporting tool and on the short response time. Results are shown on Table 3.

Table 3: Help Desk Reporting Tool Performance

Help Desk Reporting Tool	Agree		Neutral		Disagree	
	Nov-07	Jul-08	Nov-07	Jul-08	Nov-07	Jul-08
Easy to use	77.9%	88.0%	18.1%	*	3.9%	12.0%
Adequacy (Reporting options)	56.4%	75.3%	29.9%	*	13.7%	24.7%
Accessibility	45.1%	74.1%	33.3%	*	21.6%	26.0%
Short Response Time	44.1%	71.5%	32.8%	*	23.0%	27.2%
204 Users (Nov 07)	158 Users (Jul 08)		* data not recorded			

For the contractor that provides the services, the availability, responsiveness, timeliness and completeness of the service, the satisfaction was not as high as the professionalism of the staff as per data on Table 4. None of the criteria were above the 80% of agreement; the percentages of disagreement were no high also. Many employees decided to choose the neutral option. In some occasions the neutral response was nearly to the “agree” response.

Table 4: IT Support Staff Performance

IT Service and Support	Agree		Neutral		Disagree	
	Nov-07	Jul-08	Nov-07	Jul-08	Nov-07	Jul-08
Availability Response	52.7%	81.0%	28.4%	*	18.9%	19.0%
Responsiveness Response	52.9%	79.1%	32.6%	*	14.5%	20.9%
Timeliness Response	51.2%	77.9%	34.6%	*	14.2%	22.2%
Completeness Response	60.3%	85.1%	29.9%	*	9.8%	14.9%
Professionalism Response	81.1%	94.6%	18.1%	*	0.7%	5.4%
Overall Satisfaction with Support Response	76.7%	93.0%	21.8%	*	1.5%	7.0%
Overall Satisfaction with the Support Output Response	67.7%	89.2%	26.2%	*	6.1%	10.8%

\* data not recorded

## DISCUSSION

The results shown in this survey were consistent with the literature about the customer satisfaction. There were a lot of comments and complaints at the Life Sciences Company related to the performance of the systems and the services. Even the number of employees that were agree with the system was not high, the number of employees that were not happy were not that high also. The quality of a product or a service is determined by the user, and not everyone consider the quality in the same way. The satisfaction is the perception of the user based on its experience. If we evaluate the survey with this baseline, it is clear that the definition of a good performance is not the same for all of them. Due to the comments received, the word of mouth heard, I though that the “disagree” numbers were going to be higher. The last question of the survey was a comments box; many employees use this opportunity to express their satisfaction or dissatisfaction with systems and services. After analyzing the comments, it was so clear to me that sometimes there is no second chance for a good impression; the moment of truth will define what we think about a product or service. After that the “word of mouth” will do the rest. For some employees, the systems are not bad,

but they get interrupted at the end of the month during closing. Due to the criticality of the functions interrupted and the date, the fix will take a while. For those employees, the interruption will mean stay late, coming on the weekend or skipping lunch to finish on time. Even if the interruption is only one time, for a short period of time is enough to create an uncomfortable situation. The same situation happens with the service. If end users are not able to get help immediately or get contacted by the IT staff to acknowledge the request, the employee will feel unattended. For some employees working the night shift the system is not good, because it gets interrupted for example every Sunday night for scheduled backups or because they need to wait more to get support on weekends if compare to regular Monday to Friday working hours, one dissatisfied person is enough to start a chain reaction. The most frequent complaints regarding service was that they close the Help Desk tickets without confirming with the end user first. The second complaint was the slow response time to start working on a request. The third complaint was the lack of communication between IT staff and end user. Definitively the survey showed that there was room for improvement on the systems and on the support personnel. The survey results were discussed with IT Management and with the outside contractors. The IT department decided to work with the Kronos and Mapics systems and I worked with the service and support personnel. I proposed them recommendations to address the service situations.

In respect to survey participation, we expect 80%, but several factors interfere. First the survey launch was delay few times and in both cases the final roll out was too close to long weekends or holidays (Thanksgiving and the 25<sup>th</sup> of July). For the Life Sciences Company, July is the end of the fiscal year, the ones that were not on vacation were extremely busy with the closings. Another factor was the novel experience of completing a questionnaire about their systems and coworkers. Even when complaining is part of the human nature, doing it verbally is fast and, but expressing

satisfaction/dissatisfaction in an official or systematic way is different. We used the web base survey to facilitate the process, but few people found it long and difficult. The average time for both was 8.5 minutes. It takes time to get use to express on feedback forms, they need to disconnect the feedback exercise from the people. Some of them though that being too honest will affect their partners or affect them in any way, that's why they choose the neutral option so frequent, they do not want to get anyone in trouble. This is an area of opportunity that they will learn with the exposure to events like this.

### ***RECOMMENDATIONS***

Before discussing the recommendations, I discussed with them their strengths as per survey results. Employees consider the IT support staff (outside contractors) to be a competent knowledgeable staff, good quality of work and respectfully with others. The weaknesses of the Help Desk System as a report tool were: reporting tool unavailable for all personal computers is bureaucratic process, no feedback during or after request, difficult status tracking, no flags or satisfaction tabs, system limiting the service. The weaknesses of the staff were: availability, no problem solving attitude, slow response, no feedback/verbal communication, no customer prioritization, need of more expertise on: Life Sciences company programs, computer and software validations, no support on extended hours and weekends, weekend support schedules not updated, Help Desk tickets closed without completing the work, no feedback translate into duplicated work. I proposed them to be part of the New Hire employee's indoctrination and yearly refresher trainings. Some of the issues were related to a lack of knowledge by the end users of how the systems work. I suggested them to operate the IT support like a customer call center in which someone receives the request and assign them to the appropriate person. Telephone requests can be entered into the system by them on behalf of the employee. They must have more communication



with end user, at least before closing a ticket they must verify it by calling the employee. They must have portable devices to ease the communication between IT staff. They must develop local procedures specific to the manufacturing plant and all employees must be trained. They need to develop a prioritization matrix for their use. The extended hours support schedule needs to be updated, rethink and share with the affected areas to make sure it fits a manufacturing environment needs.

### ***POST IMPLEMENTATION SURVEY***

After eight months a new survey was offered to the Medical devices company. During that time the IT department improves the infrastructure of the Mapics and Kronos Systems by prioritizing the projects based on the high use systems. A new Kronos server was installed; the fiber optic cables on the building were changed. The capacities of the switches were incremented and reconfigured. The traffic capabilities of the network were increased and the data switches were change to a distribution center.

At the same time the IT staff support (contractors) were implementing different projects to address my recommendation. They created two different procedures, one to provide guidance on priority classification, service request assignment, escalation, updates, and service request closure. The other procedure was to cover areas of weakness that must be systematically addressed like the feedback and communication between the IT Staff and the customer. To establish the order of prioritizing the IT services provided. The Services Desk closure and feedback of the work provided and the IT Support hours during business hours and after hour support. Team Building and regular department meetings were establish to discuss activities and to improve the attitude and response of the IT Staff. The IT Support group was divided by two groups (IT Operations and IT Infrastructure)

and each individual was given the own area of responsibility. For the first time, IT Department is giving annual training to all the Medical devices company employees on the new IT Services Desk Procedures to explain the IT Support Process. A Mapics user profile tips was given to the employees in order to understand the basic knowledge of the system. The IT Computer System – Security Policy was explained to the employees to provide them the security guidelines to protect computer systems-software. A customer- supplier attitude and a better communications channels while working on employee requests are changing the perception of “slow response time”. Other activities to improve communication and response time are being developed by the group and there will be no time to evaluate them with this project.

The IT Top Management request few modifications from the original survey. The ask us to removed the “Neutral” response as an option and adding the “Never” response on the frequency of problem reporting. The Medical Devices employees were asked to complete the survey having in mind the current status of the IT systems. The improvement projects performed on the IT systems and services were perceived by the employees as evidenced on the survey results from July 2008. The overall satisfaction with Kronos software increase from 25% to 68%, the Mapics increased was from 46% to 89% and the Help Desk Reporting Tool increased in all the criteria’s. A definitive question that would resume the satisfaction of the customer is asking “will you recommend me”. No matter what people say on different survey questions if people are satisfied with a service, will use the word of mouth and will recommend the product or the services. If they are not satisfied they will not want to promote the company. Speaking in these terms the IT Help Desk Support recommendation increased from 70.1% to 93.7%, which mean that the improvement projects impacted the customers.



Figure 5: IT Staff possibilities of recommendation

### CONCLUSION

After completing the design project for the Improvement of It Systems and Services at the Life Sciences Company all the proposed objectives and research contributions were completed. A baseline was established for the continual improvement of IT Systems and Services. The IT staff used the data from the survey to confirm the word of mouth and developed projects that lead to improvements in the areas of infrastructure and services. The employees were able to see the difference in the service they received and demonstrated it through the survey. The Voice of customer technique was very useful to determine the areas that really need improvement first from a customer point of view. The use of the survey had a great impact. Besides the IT department other areas has been using questionnaires to gather data for different purposes since. For better and accurate results the methods use to capture the voice of customer should be of easy access, simple to complete and short. The customer satisfaction is a key performance indicator that we must take in consideration to improve any process. A satisfied customer is loyal and provides free promotion to its supplier, but at the same time, an unsatisfied customer can, with just one experience damage the image of a company or product.

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