Improved System Availability Reporting at My-T-Fyne Wireless[1]

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[1] My-T-Fyne Wireless is a fictitious company name created by the author to protect the anonymity of the case-in-point examples and procedures found within this research paper.

Abstract

Objectively evaluating Information Technology (I.T.) performance and system availability has become increasingly important as companies continue to invest capital into the automation of business processes for increased market competitiveness. This study examines I.T. industry data on the metrics used and benefits of improved system availability reporting; along with the results from an online survey about current system availability reporting tactics. Major elements include importance of effective system availability management and reporting, system availability report audiences and content, and system availability report types. Data were collected from an online survey that was administered to selected individuals at My-T-Fyne Wireless Company, along with leading industry research. Results showed reporting changes should be made to yield more granular and meaningful system availability comparisons and trend information for a variety of audiences, and ultimately, an improved relationship between the My-T-Fyne I.T. department and the I.T. user community.

A glossary is provided in Appendix 2 to define technical words and concepts.

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Introduction – Research Problem

An Overview of System Availability Reporting at My-T-Fyne Wireless

Investing in business application software and hardware is a necessary and costly aspect

of a company's technical strategy for business success. Application software, supporting

hardware, and the network that connects users to the software combine together to provide the

technical environment for which business transactions are performed, such as: processing

hundreds of accounts receivable records in the span of a few minutes, supporting an internet-

based company website that sells products and services, or automating a corporate supply chain

from warehouse to retail store. As a company grows larger, investing capital in Information

Technology (I.T.) resources such as hardware, software, and I.T. services is required in order to

support growing customer demands for increased functionality. A 2004 article addressing

capital spending on I.T. infrastructure states that, "In the USA, businesses spend $2.3 trillion –

25% of the GDP – every year on growth projects, many of which have complex I.T.

components" (Benko & McFarlan, 2004). The ability to assess and accurately report on system

performance and availability is essential in order to measure value, return on investment, and

portray worth to the business groups who often finance I.T. purchases.

A company may become so reliant upon the availability of their I.T. systems that when software

or hardware failures occur, business workflows, as well as customer transactions may come to a

halt, resulting in lost revenue, or even worse, lost customers. The Information Technology

Infrastructure Library (ITIL) organization is a body of IT professionals from multiple industries

that have built an industry-accepted repository of best practices for the I.T. environment. In their

manual titled *Best Practice for Service Delivery,* the authors set the premise that "If I.T. stops,

the business stops" (2001). At My-T-Fyne Wireless (My-T-Fyne), diligent measures are taken to

fortify I.T. systems in order to provide the utmost system reliability. The production environment

is measured with automated tools and processes, and staffed 7x24x365 days a year. I.T. crisis

management, the process earmarked for efficient and effective problem resolution, is segregated amongst a 4-tier response ladder ranging from basic problem triage to exert level diagnosis. With such a hefty resource investment deployed to supporting the production I.T. environment, gaining an accurate insight into root cause and properly understanding customer impact when I.T. outages occur is paramount in order to expedite problem resolution since outages negatively impact customers and system availability scores.

In the past, application performance measurement and reporting at My-T-Fyne focused primarily on availability of single application instances functioning within a business group; and a business group's collective availability (see current report examples in appendix 1). Progress was made when reporting analysts at My-T-Fyne began to calculate the time of day that the outage occurred, along with the length of time it took for the I.T. customer to recover from the impact of the outage, into the system availability percentages. For example, was a retail store's Point-of-Sale (POS) system available for use 100% of the time that the store's doors were open for business? If the POS system was down for ½ hour, and sales clerks could not sell or activate equipment, the POS application may show a *system availability* score of 97.9% for the day. If the outage occurred during prime time (5:00 am to 9:00 pm Pacific Time), then the outage time increased by a multiplier of 4 – a weighting factor that appropriately reflects the lost continuity of business felt by I.T. customers. This meant the POS application receives a *weighted system availability* score of 89.5%. If it took the I.T. customer an additional 30 minutes to recover from the outage once the problem was resolved, then the application receives a *business recovery* system availability percentage of 87.5%.

System Availability is viewed as the degree to which an application, or a portion of an application, is functioning as expected whenever it was needed by the end user or customer. The basic formula for calculating system availability is: Actual Available Time (in minutes) divided

by Total Available Time. In the POS example above, the POS application is designed to be available for 1440 minutes a day (60 minutes * 24 hours = 1440 minutes). The actual availability time reflecting ½ hour of downtime is 1410 minutes. The System Availability calculation is Actual Available Time (1410 minutes) divided by Total Time (1440 minutes), which equals 97.9% System Availability score for the day. The Prime Time factor of 4 is taken into consideration by dropping the Actual Available Time from 1410 minutes to 1290 minutes (1290 / 1440 = 89.5%). Decrement the Actual Available Time by 30 more minutes to account for I.T. customer recovery time and the result is 87.5% (1260 / 1440 = 87.5%). System availability at My-T-Fyne is viewed as absolute, and the objective of System Availability reporting is to accurately portray the weight of the outage impact to the I.T. customer. Applications are both available and functioning as expected or they are not. Performance degradations are viewed as a lack of availability. If applications are not available, or if performance is degraded, they are penalized appropriately and their availability performance percentage decreases according to the scope and duration of the impact.

System Availability Reporting at My-T-Fyne is limited to applications and predefined business group availability. The POS application is one of many applications residing in the Retail Applications business group. At the end of the My-T-Fyne business day, the POS application, along with other Retail Applications, will receive an individual System Availability percentage score. The Retail Application Business group will receive a cumulative System Availability percentage score based upon the individual application availability scores. Scores will reflect any unavailability that may have occurred during the business day.

System Availability reporting that shows availability within alternate or dynamic logical groupings, trending analysis patterns, key performance indicator (KPI) summaries and KPI relationships have never been available at My-T-Fyne for I.T. customers. System Availability

reporting that includes multiple measurements in multiple dimensions, historical trending analysis, and industry comparisons, provide a more accurate insight into an I.T. environment and correlates I.T. outages to business impacts more effectively than My-T-Fyne's traditional system availability reporting methods.

The specific strategy that this research explores is identifying new and useable reports of system availability of business applications residing and operating in the production data center environment of My-T-Fyne Wireless Company.

Literature Review

Importance of Effective System Availability Management and Reporting

Because so much capital is invested in I.T. components, infrastructure, network, and software in order to enhance and improve a company's business functions, understanding how automation benefits the business is essential. Additionally, understanding how system unavailability impacts the business is also essential. I.T. leaders must accurately show the business community the value of the I.T. investment by reporting meaningful metrics that focus on agreed-upon Service Levels and Key Performance Indicators (KPI's). The value of Service Level Reporting as a communication vehicle, as well as a credibility-builder is described in the following passage in the book titled: *Foundations of Service Level Management* (Sturm, Morris & Jander, 2000).

> Service Level Reporting is an important communication vehicle between the I.T. user community and the lines of business. It is a means for demonstrating the value of I.T. services and as a way to promote the quality of the services provided by the I.T. department. Provide reports in a format that aligns with the goals of the lines of business and that is easily understood by business managers, corporate executives, demonstrates the I.T. department understands and support of key business initiatives.

Ensuring desired I.T. results is a complex process. In the passage above, authors Sturm, et al. emphasize the importance of aligning reports with business goals and objectives. Aligning I.T. deliverables to business deliverables is an effort that must be embraced throughout all facets of the company. The direction to marry I.T. objectives to business objectives should begin with the CEO. In the book *Managing I.T. as a Business,* author and former Global CIO of PriceWaterhouseCoopers describes these five concrete steps that a CEO can make to ensure that

I.T. performance measurement becomes an integral part of overall I.T. management (Lutchen, 2004):

1. Ensure that the CIO focuses not only on operational I.T. metrics, but also on relevant I.T. management and control and I.T. business value metrics.

2. Stress the importance of I.T. business value metrics to ensure that a meaningful dialogue is established between the CIO and other company executives. Ensure that the dialogue is a constructive one so the metrics are not simply used as a whip.

3. Ensure that an integrated approach is being taken concerning I.T. performance measurement and that all areas of the I.T. management lens are included in some manner on the CIO's dashboard.

4. Direct the CIO to make sure that I.T. metrics at all levels are properly owned, transparent, and fully communicated across the company to provide a basis for achieving improvement.

5. Team the CIO with a business-unit CEO or other functional leader who is particularly adept in the use of performance measurement so that the CIO can learn how to use metrics more effectively in the I.T. organization.

At My-T-Fyne, general system performance reports have been provided by the I.T. department to the user community. The report content and format were largely defined in a vacuum by leaders within the I.T. department, as opposed to the I.T. business customers themselves. As a result, reports are component based, rather than business functions based, and fail to provide an accurate portrayal of customer impact when system outages occur. Over time, I.T. customers have detected a disconnect in the I.T. personnel's' understanding of elements that are truly important to the business. Authors Sturm, et al. (2000), teach that "Proactive reporting reduces negative effect on the reputation of the I.T. department as a result of outages or degradations."

The negative effect is reduced because the business community trusts that I.T. personnel know what Key Performance Indicators (KPI's) are important to the business and are in agreement with the impact and dollar loss associated with system outages.

Regimented system availability management and reporting practices are complimentary I.T. disciplines. The ITIL Service Delivery guide describes the importance of accurate and meaningful system availability management and reporting by tying metrics directly to key business functions and indicators. "Availability Management is essential in ensuring I.T. delivers the right levels of [application] availability required by the business to satisfy it's business objectives and deliver the quality of service demanded by their customers" (ITIL Service Delivery Manual, 2001). Effective Service Level Management and availability reporting ultimately reflects on the company's reputation. Therefore, the ITIL organization declares, "it is paramount that system metrics and availability reporting reflect business drivers. System availability management and reporting should ensure that the required level of availability is provided, and should look continuously to optimize availability of the I.T. infrastructure, services, and supporting organization" (ITIL Service Delivery Manual, 2001).

Determining what data is reported to who within the company is essential when reporting information on system availability or relative unavailability. All credibility and effort can be lost if the wrong reports are given to the wrong people. When system availability is measured and reported to reflect the experience of the end-user, the report provides an accurate and representative view of overall IT service quality. Traditional I.T. availability measures, according to the ITIL organization are:

- Percent Available: component availability metric.
  - Example: 98% system component availability
- Percent Unavailable: component unavailability metric.

- o Example: 1.6 target / 1.9 actual

- Outage Duration: report in hours / minutes

- Frequency of Failure: the number of interruptions to I.T. service.

- Impact of Failure: the inability of users to perform their business function.

The above metrics exist with the basic system availability report provided at My-T-Fyne. (See appendix 1).

System Availability Report Audiences

Understanding what system availability data to provide to which level of management and customers is an essential component to the study of effective application reporting. Authors Sturm et al., recommend segregating audience types into the following categories: Executive Management, Lines of Business, Internal to I.T., Outside Customers. Report content should be appropriate for, and agreed upon by representatives from each stratum.

The Executive Management stratum should receive report information that shows how the I.T. department is providing value to the business overall and contributing to business success. System outages should relate to real costs as well as lost opportunity costs in both revenue and staff productivity. Reports aimed at Executive Management must be highly summarized and outline the quality of service experienced by company personnel, customers, and business partners.

The Lines of Business strata should receive reports that illustrate how the quality of services provided by I.T. helped them drive more business. Reports must relate service levels to transaction volumes, customer satisfaction, and personnel productivity. Business benefits may be correlated to overall service quality. System outages should reflect lost personnel productivity and opportunity costs.

The teams that are internal to I.T. need to see reports that are service oriented, so they can provide their business customers with better support. Reports showing underlying technology outages and degradations in performance are essential for this audience. Trending reports over time reflecting underlying technology outages may show performance problems with certain types of equipment and technology. Reporting on overall service delivery performance in relation to Service Level Objectives established for each line of business is an effective way to illustrate the level of support that this stratum provides. Service oriented views are important to

this audience because they enable internal I.T. support teams to make business-savvy decisions based on accurate fact and analysis.

Reports that outside customers see should only focus on the direct quality of service delivered to them when they choose to purchase a product or service. An example reporting metric for this audience is the average length of time to activate a cellular phone. Reports targeting this audience should justify why a customer should select your company's product or service instead of a competitor's product.

System Availability Report Types

At My-T-Fyne, System Availability and Performance reports provide a generalized level of system availability information to a broad audience. The authors of *Foundations of Service Level Management* (Sturm, et al, 2000) define the following individual reports and content for meaningful System Availability and Performance reporting.

The <u>Executive Summary</u> report should provide an overall assessment of service levels achieved in comparison to agreed-upon service level objectives. The quick summary should include end of period reports, and highlight service level attainment difficulties. Any system outage or degradation that impacted customers should have an accompanying support document, which explains the outage in detail including, at a minimum, the following items:

- Outage description

- User impact

- Outage duration

- Root cause analysis results

- The preventative measure taken to ensure the outage does not occur again.

<u>Service Availability</u> reports should be shown directly mapped against agreed-upon objectives between the I.T. and Business Unit leaders. System Availability should be shown by service or application, and should represent the experience of users by organization, location, and line of business. Each line of business should receive a roll-up summary report; however, they should not receive an evaluation of individual technical system components, which is more appropriately targeted to the I.T. community.

<u>Performance</u> reports must directly relate to the customer or end-user experience. Report categories should focus on transaction responsiveness, as well as batch job turn-around. System responsiveness should be shown by applications, user groups, locations, and lines of business.

Reporting on transaction characteristic granularity should include: the degree of complexity, the importance to the business, and the value gained by improved user productivity. These metrics relate value directly with transaction responsiveness.

Transaction Volume reports can be meaningful to Senior Management as well as Lines of Business leaders because they portray workload volumes as transaction rates. Reports should include transaction volumes by lines of business, locations, and user groups. Each technology layer being touched by the execution of each transaction should be reported as:

- Transaction Volume and Network utilization

- Transaction Volume and CPU utilization

- Transaction rates on servers

- I/O rates on the database and storage subsystem

- Transaction rates across middleware environments

As these variables become known, intelligent business decisions based upon projects that impact or change these rates can be accurately quantified and evaluated.

The objective of accurate system reporting is to optimize the capability of the I.T. environment, I.T. services, and supporting organizations by accurately portraying a cost-effective and maintained level of system availability in order to satisfy business objectives. The research performed and identified in this paper supports the question of providing more meaningful system availability reporting to My-T-Fyne audiences.

Survey Methodology

A Likert-scale survey was deployed in order to determine if System Availability reporting that shows availability within alternate logical groupings, trending analysis patterns, and KPI relationships would prove useful to My-T-Fyne I.T. customers. The survey was administered via an online survey tool named *KeySurvey (www.keysurvey.com)*. This product was chosen because of it's flexibility in administration and reporting capabilities. The survey consisted of fourteen questions, eleven opinion-seeking questions of which had a seven-point answer selection ranging from "Disagree (1)" to "Neutral (4) to "Agree (7)". The opinion-seeking questions are organized into three categories: Alternate Logical Grouping, Trending Analysis, and KPI Relationships. The remaining three questions gathered the following information about the survey responder: name (optional), My-T-Fyne contributor level (V.P. or above, Director, Manager, and Individual Contributor), and free-form comments.

Due to the complexity of many of the opinion-seeking survey questions, they were worded as a statement. An example reporting metric was provided to allow the responder to gain a sense of how the data would be reported. Questions that compared System Availability reporting to stock market reporting had a preparatory statement which preceded the actual question. For example, survey question number four prompts the responder to *Think about how the newspaper reports yesterday's stock market performance at a glance before considering the following statement: Analyzing yesterday's business group performance and trending at a glance provides me with useful information. Example: Customer Care – up .5% ending at 98.3%.* This method provided the responder with a reasonable amount of explanation incorporated into the survey question.

The target survey audience was a selection of 60 My-T-Fyne I.T. customers ranging from Individual Contributors to Vice Presidents. Table 1 shows a comparison of the target responders

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in each I.T. customer stratum and how many actually responded to the survey. Each stratum received at least a 50% response score. The average response percentage is 62%.

Table 1: Responder Count Breakout:

Strata	Target	Actual	Response Percentage
Individual Contributor	14	7	50%
Manager	30	21	70%
Director	12	6	50%
Vice President	4	3	75%
Total:	60	37	62%

Table 2 shows the different survey question categories and how each survey question maps to the category. The Alternate Logical Grouping category is used to capture I.T. customer interest in seeing system availability and performance scores grouped in different ways that are currently available.

Table 2: Survey Question Categorization:

Question Category	Question Numbers
Alternate Logical Grouping	1, 2
Trending Analysis	3, 6, 7, 9, 10, 11
KPI Relationships	4, 5, 8

Table 3 shows a comprehensive list of the survey questions. Responders chose a response value on a Likert scale from 1 (disagree) to 7 (agree); with 4 representing neutral. Questions were designed in statement form in order to invoke a sense of personal attachment with the survey responder. For clarity, every survey question is accompanied by a business example which portrays how the report data could be displayed. Survey questions 7, 8, 9, 10 & 11 are inspired from observing how stock market volume, relationships of certain stocks to other stocks, and stock performance within an index are analyzed and reported. The stock market is an excellent and proven example of performance trending, tracking and reporting from which to learn.

Table 3: SurveyQuestions

System Availability Reporting - Survey Questions

Question Number	Question Text
1	Analyzing how an application is performing in relation to other applications within a single business group provides me with useful information. Example: How does POS perform within the Retail Sales business group as compared with other application residing in that same business group?
2	Analyzing how an application is performing in relation to other applications of similar size, type, and complexity regardless of business grouping provides me with useful information. Example: How does Watson application availability compare to T-Mobile.com application availability?
3	Think about how the newspaper reports yesterday's market performance at a glance before considering the following statement: Analyzing yesterday's business group performance and trending at a glance provides me with useful information. Example: Customer Care - Up .5% ending at 98.3%
4	Think about how yesterday's stock market trading volume is provided before considering the following statement: Seeing application and business group transaction volume tracked and reported on a daily basis would give me perspective about My-T-Fyne system performance for the previous day. Example: 'High Transaction Day' Retail Sales: 53,281, Customer Care: 78,399, Supply Chain: 57,224
5	Seeing relationship data between application transaction volume and system availability on a daily basis would be useful to me. Example: Retail Sales transaction volume - yesterday: 53,281 & System Availability: 99.85%.
6	Seeing relationship data between application transaction volume and system availability over a specified period of time, such as a month, would be useful to me. Explanation: Viewing (in graph form) a month of POS transaction volume data points with a month of corresponding system availability percentages overlaid.
7	Similar to 'stocks at a glance' views that are available in newspapers, seeing the 3 best performing applications and the 3 worst performing applications from the previous day would be useful to me. Example: Previous day's 3 best application performers: Samson, Watson, JPayment. The 3 worst application performers: TIBCO, iCAM, T-Star.
8	Similar to viewing stock market sensitivity (a.k.a: beta) of a particular stock, seeing application availability in relation to the business group availability as a whole would be useful to me. Explanation: POS has a System Availability beta of -1.2. This means that when the Retail Sales business group's System Availability decreases, POS decreases at a rate 20% more than other applications within that business group.
9	Seeing a monthly high/low application availability score would be useful to me. Example: POS January high/low = 100% / 97.1%
10	Seeing a variance of application availability over a period of time such as one month would be useful to me. Explanation: Variance measures the volatility, or variability, from an average. This may help an analyst understand how introducing a change to an application may cause its system availability to be affected. Example: POS January Variance = 0.01; Samson
11	Seeing a co-variance of two specified application's availability over a period of time such as one month would be helpful to me. Explanation: This statistic would validate a relationship between the two applications. Example: January co-variance between Samson and POS is 1.3 - thus indicating a possible relationship between these application's system availability performance (further analysis would be required to verify such relationships).

Actual Survey Responses

The following section shows how survey responders answered each question. The horizontal bar graph visually indicates the response distribution. The responder breakout data indicates who provided the most meaningful responses.

In table 4, the overwhelming favorable responses (over 56%) for question 1 selected option 7. The responder stratum whom most favored this question is the directors with 67%. However, managers comprise the biggest percentage of the overall total responders choosing option 7 at 62%.

Table 4: Question 1

Question Text:

Analyzing how an application is performing in relation to other applications within a single business group provides me with useful information.
Example: How does POS perform within the Retail Sales business group as compared with other application residing in that same business group?

◄ Back To Summary

	Response Percent	Response Total
Disagree 1.	0%	0
2.	2.7%	1
3.	0%	0
Neutral 4.	5.4%	2
5.	16.2%	6
6.	18.9%	7
Agree 7.	56.8%	21

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.

Responder Breakout:

Responder Strata	Number of Responders Choosing 7	Percentage of Strata	Percentage of Total
Vice President	2 of 4	50%	42%
Director	4 of 6	67%	19%
Manager	13 of 21	62%	62%
Individual Contributor	2 of 7	29%	10%

Table 5 shows over 37% of the responses for question 2 selected option 7. The responder stratum whom most favored this question is the directors with 67%. However, managers comprise the biggest percentage of the overall total responders choosing option 7 at 57%.

Table 5: Question 2:

Question Text:

Analyzing how an application is performing in relation to other applications of similar size, type, and complexity regardless of business grouping provides me with useful information.
Example: How does Watson application availability compare to T-Mobile.com application availability?

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.		Response Total
	5.4% (2)	0% (0)	5.4% (2)	24.3% (9)	21.6% (8)	5.4% (2)	37.8% (14)		37

Disagree 1.
2.
3.
Neutral 4.
5.
6.
Agree 7.

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.

Responder Breakout:

Responder Strata	Number of Responders Choosing 7	Percentage of Strata	Percentage of Total
Vice President	2 of 4	50%	14%
Director	4 of 6	67%	29%
Manager	8 of 21	38%	57%
Individual Contributor	0 of 7	0%	0%

Table 6 shows over 43% of the responses for question 2 selected option 7. The responder stratum whom most favored this question is the directors with 77%. However, managers comprise the biggest percentage of the overall total responders choosing option 7 at 44%.

Table 6: Question 3

Question Text:

Think about how the newspaper reports yesterday's market performance at a glance before considering the following statement:
Analyzing yesterday's business group performance and trending at a glance provides me with useful information.
Example: Customer Care - Up .5% ending at 98.3%

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.		Response Total
	2.7% (1)	0% (0)	2.7% (1)	10.8% (4)	21.6% (8)	18.9% (7)	43.2% (16)		37

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.
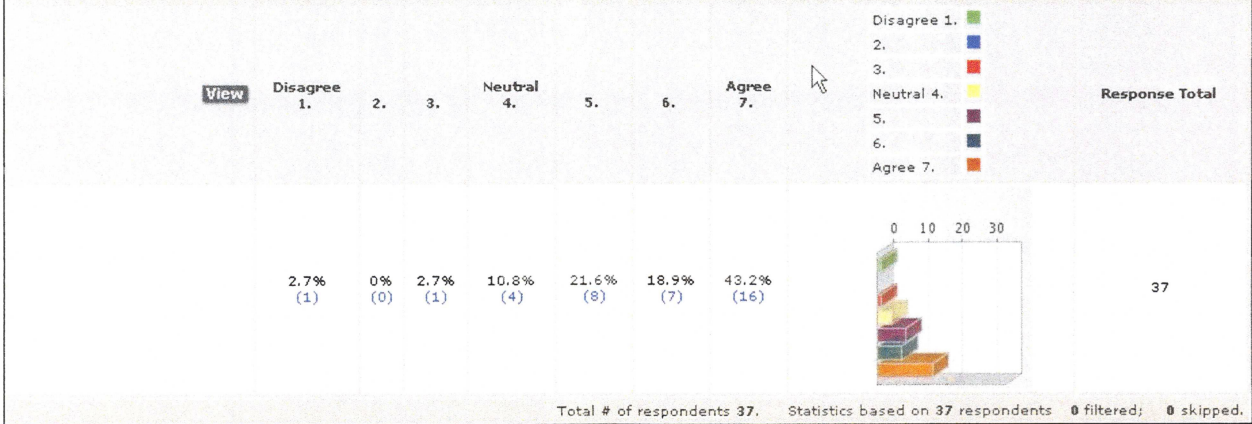
Responder Breakout:

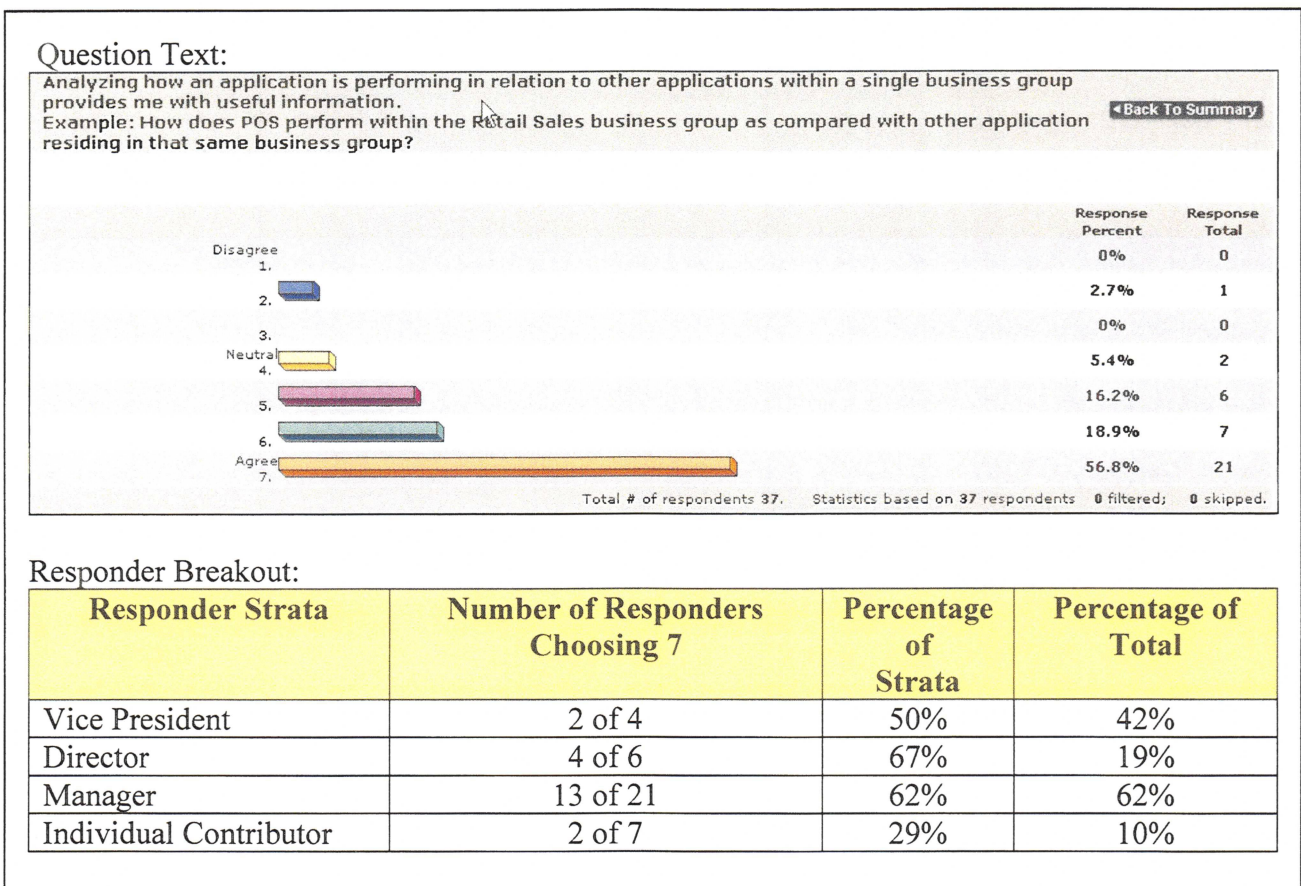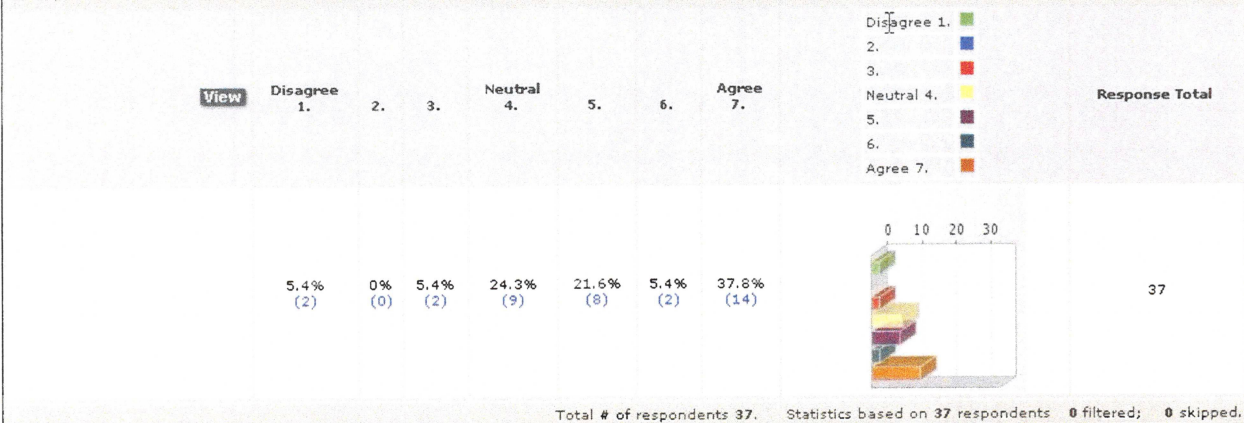| Responder Strata	Number of Responders Choosing 7	Percentage of Strata	Percentage of Total
Vice President	3 of 4	75%	19%
Director	3 of 6	50%	19%
Manager	7 of 21	33%	44%
Individual Contributor	3 of 7	43%	19%

Table 7 shows over 50% of the responses for question 2 selected option 7. The responder stratum whom most favored this question is the directors with 83%. However, managers comprise the biggest percentage of the overall total responders choosing option 7 at 53%.

Table 7: Question 4

Question Text:

Think about how yesterday's stock market trading volume is provided before considering the following statement:
Seeing application and business group transaction volume tracked and reported on a daily basis would give me perspective about T-Mobile system performance for the previous day.
Example: "High Transaction Day" Retail Sales: 53,281, Customer Care: 78,399, Supply Chain: 57,224

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.	Response Total
	0% (0)	0% (0)	5.4% (2)	5.4% (2)	18.9% (7)	18.9% (7)	51.4% (19)	37

Disagree 1.
2.
3.
Neutral 4.
5.
6.
Agree 7.

0 10 20 30

Total # of respondents **37**.   Statistics based on **37** respondents   **0** filtered;   **0** skipped.

Responder Breakout:

Responder Strata	Number of Responders Choosing 7	Percentage of Strata	Percentage of Total
Vice President	3 of 4	75%	16%
Director	5 of 6	83%	26%
Manager	10 of 21	33%	53%
Individual Contributor	1 of 7	14%	5%

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Table 8 shows over 48% of the responses for question 2 selected option 7. The responder stratum whom most favored this question is the Vice Presidents with 75%. However, managers comprise the biggest percentage of the overall total responders choosing option 7 at 61%.

Table 8: Question 5

Question Text:

Seeing relationship data between application transaction volume and system availability on a daily basis would be useful to me. Example: Retail Sales transaction volume - yesterday: 53,281 & System Availability: 99.85%.

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.		Response Total
	0% (0)	0% (0)	0% (0)	13.5% (5)	10.8% (4)	27% (10)	48.6% (18)		37

Disagree 1.
2.
3.
Neutral 4.
5.
6.
Agree 7.

0 10 20 30

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.

Responder Breakout:

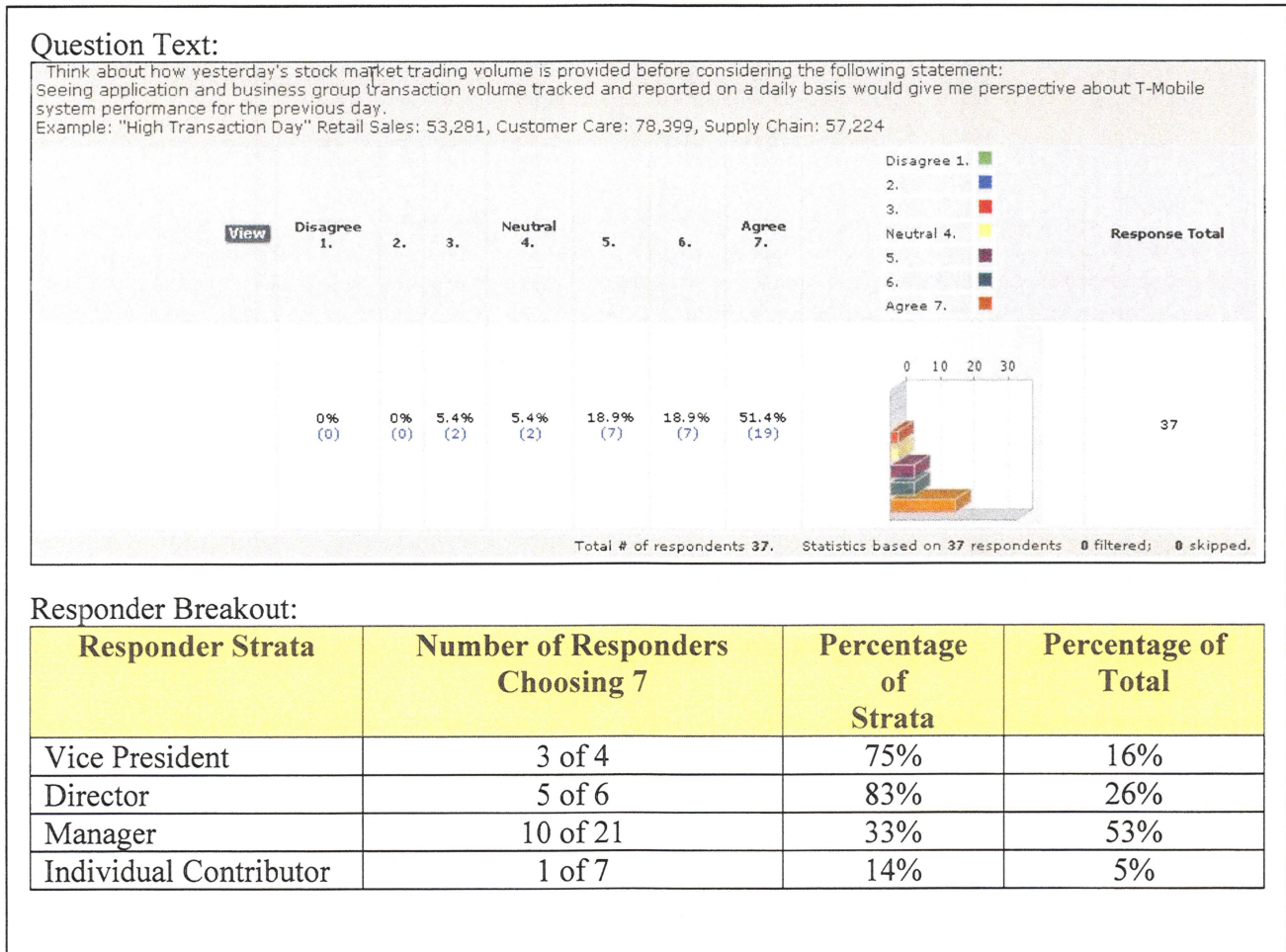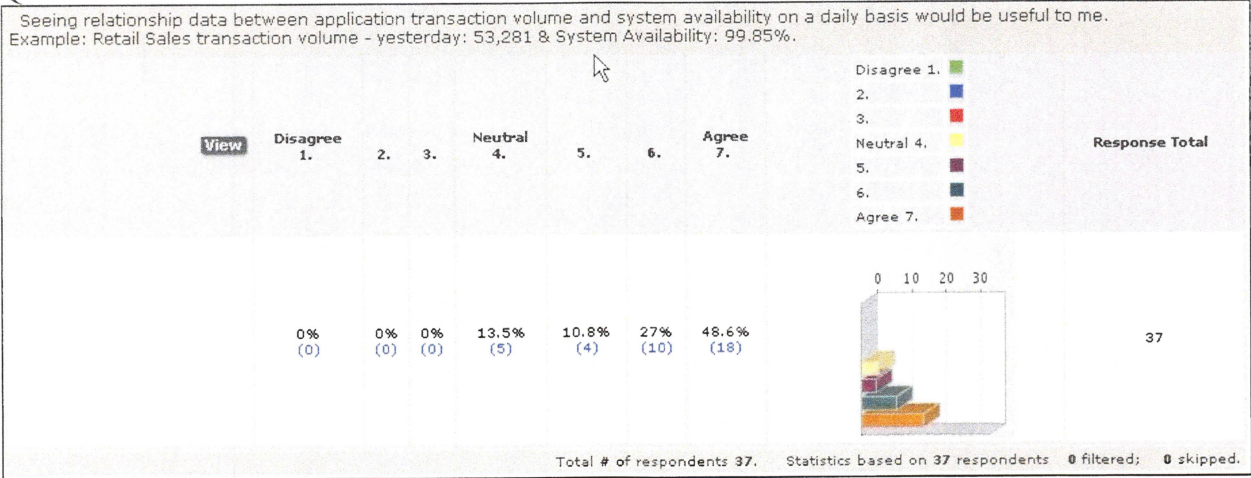| Responder Strata	Number of Responders Choosing 7	Percentage of Strata	Percentage of Total
Vice President	3 of 4	75%	17%
Director	3 of 6	50%	17%
Manager	11 of 21	52%	61%
Individual Contributor	1 of 7	14%	6%

Table 9 shows over 59% of the responses for question 2 selected option 7. The responder stratum whom most favored this question is the Vice Presidents with 75%. However, managers comprise the biggest percentage of the overall total responders choosing option 7 at 64%.
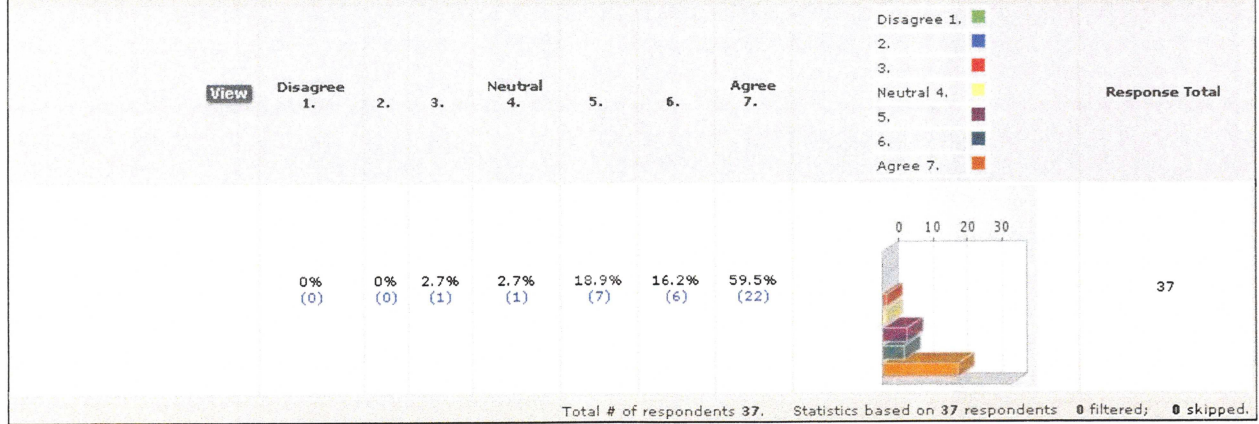
Table 9: Question 6

Question Text:

Seeing relationship data between application transaction volume and system availability over a specified period of time, such as a month, would be useful to me.
Explanation: Viewing (in graph form) a month of POS transaction volume data points with a month of corresponding system availability percentages overlaid.

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.	Response Total
	0% (0)	0% (0)	2.7% (1)	2.7% (1)	18.9% (7)	16.2% (6)	59.5% (22)	37

Disagree 1.
2.
3.
Neutral 4.
5.
6.
Agree 7.

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.

Responder Breakout:

Responder Strata	Number of Responders Choosing 7	Percentage of Strata	Percentage of Total
Vice President	3 of 4	75%	14%
Director	4 of 6	67%	18%
Manager	14 of 21	67%	64%
Individual Contributor	1 of 7	14%	5%

Table 10 shows over 43% of the responses for question 7 selected option 4 (neutral) or lower. The responder stratum whom least favored this question is the Individual Contributors with 57%. However, managers comprise the biggest percentage of the overall *neutral or lower* responses at 63%.

Table 10: Question 7

Question Text:

Similar to "stocks at a glance" views that are available in newspapers, seeing the 3 best performing applications and the 3 worst performing applications from the previous day would be useful to me.
Example: Previous day's 3 best application performers: Samson, Watson, JPayment. The 3 worst application performers: TIBCO, iCAM, T-Star.

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.		Response Total
	2.7% (1)	13.5% (5)	0% (0)	27% (10)	21.6% (8)	10.8% (4)	24.3% (9)		37

Disagree 1.
2.
3.
Neutral 4.
5.
6.
Agree 7.

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.

Responder Breakout:

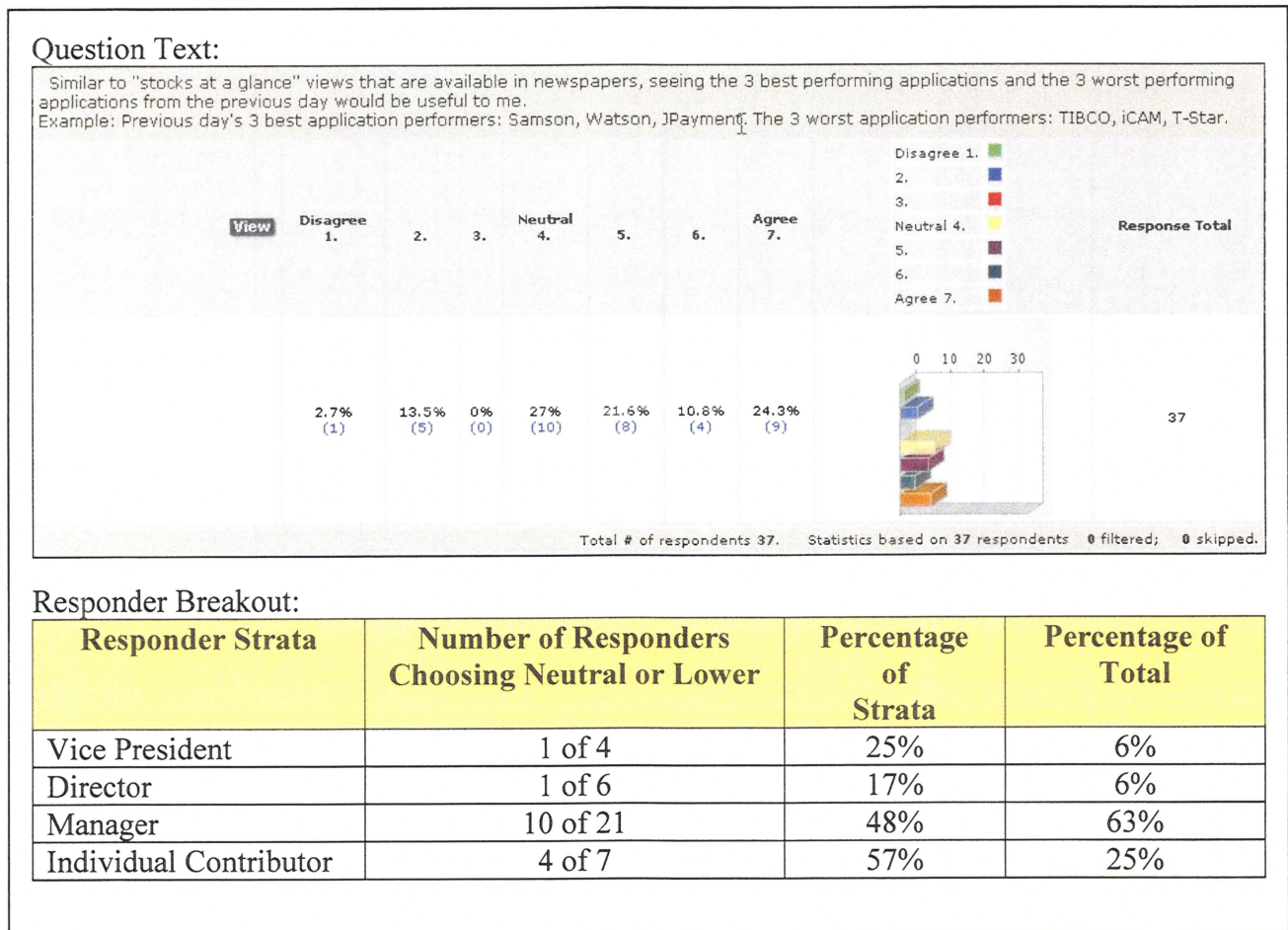| Responder Strata	Number of Responders Choosing Neutral or Lower	Percentage of Strata	Percentage of Total
Vice President	1 of 4	25%	6%
Director	1 of 6	17%	6%
Manager	10 of 21	48%	63%
Individual Contributor	4 of 7	57%	25%

Table 11 shows the responders for question 8 selecting option 5 or higher were at 62%. The responder stratum whom most favored this question is the Managers with 71%. And, the Managers comprise the biggest percentage of the overall responders of 5 or higher at 65%.
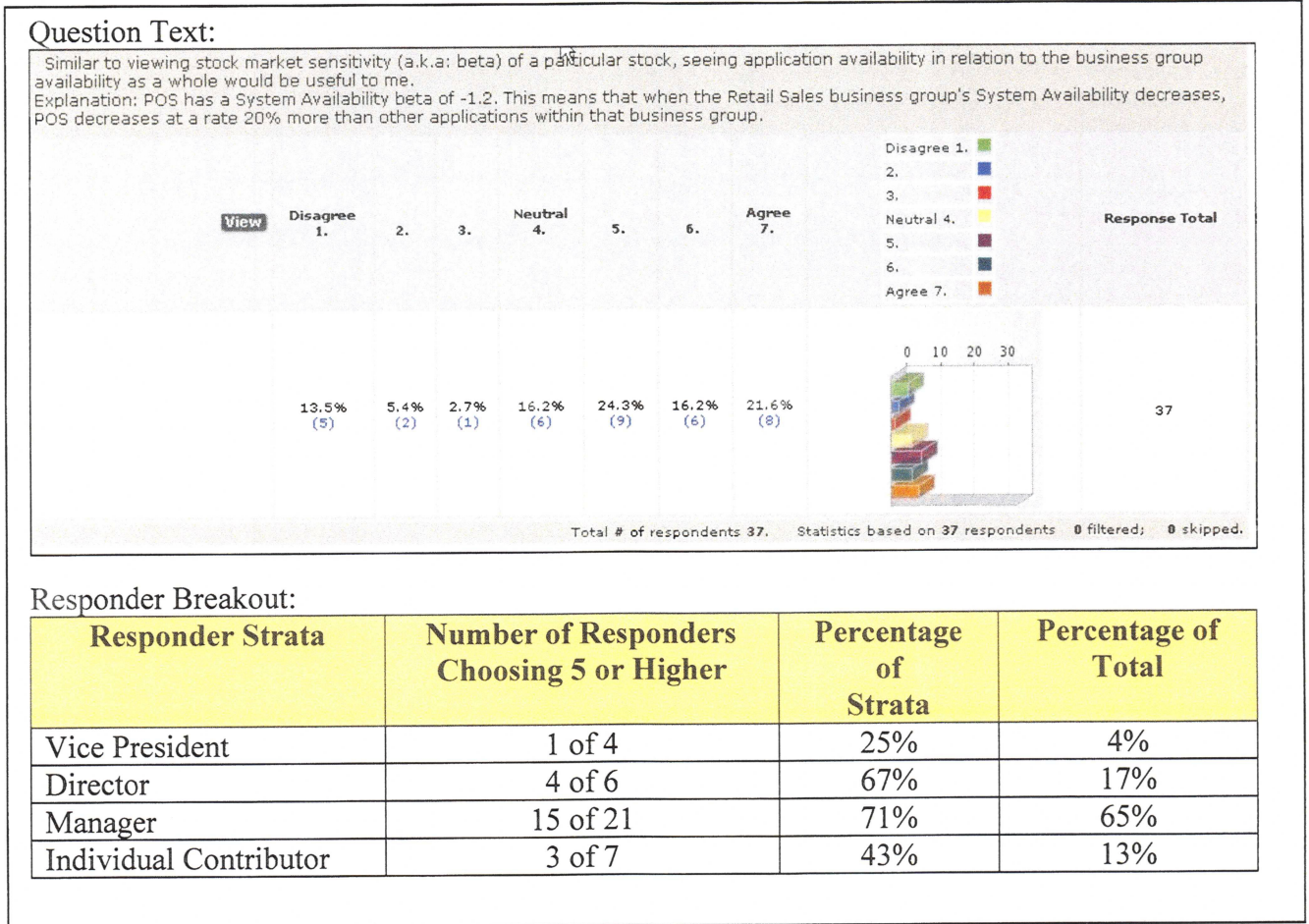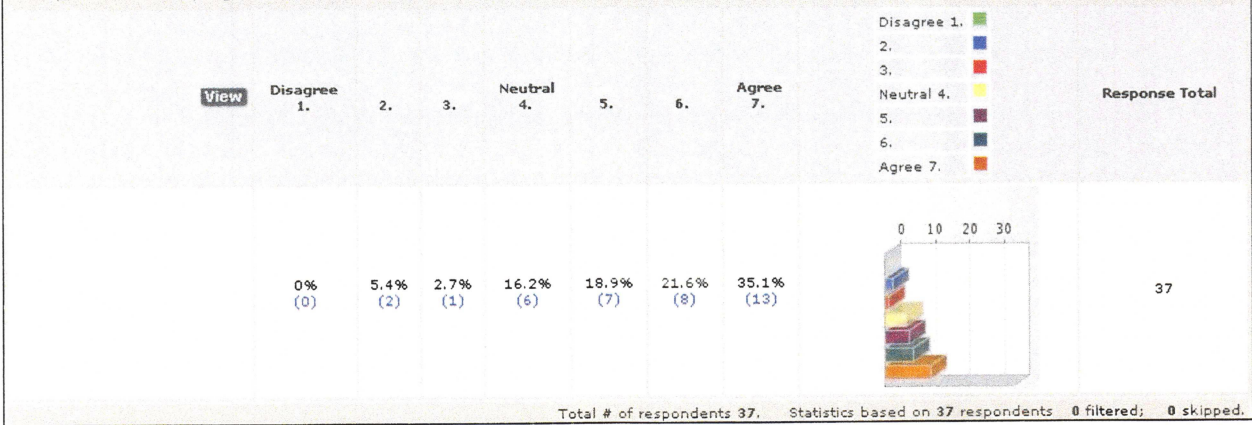
Table 11: Question 8

Question Text:

Similar to viewing stock market sensitivity (a.k.a: beta) of a particular stock, seeing application availability in relation to the business group availability as a whole would be useful to me.
Explanation: POS has a System Availability beta of -1.2. This means that when the Retail Sales business group's System Availability decreases, POS decreases at a rate 20% more than other applications within that business group.

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.		Response Total
	13.5% (5)	5.4% (2)	2.7% (1)	16.2% (6)	24.3% (9)	16.2% (6)	21.6% (8)		37

Disagree 1.
2.
3.
Neutral 4.
5.
6.
Agree 7.

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.

Responder Breakout:

Responder Strata	Number of Responders Choosing 5 or Higher	Percentage of Strata	Percentage of Total
Vice President	1 of 4	25%	4%
Director	4 of 6	67%	17%
Manager	15 of 21	71%	65%
Individual Contributor	3 of 7	43%	13%

Table 12 shows the responders for question 9 selecting option 5 or higher were at 75%. The responder stratum whom most favored this question is the Managers with 90%. And, the Managers comprise the biggest percentage of the overall responders of 5 or higher at 68%.

Table 12: Question 9

Question Text:

Seeing a monthly high/low application availability score would be useful to me.
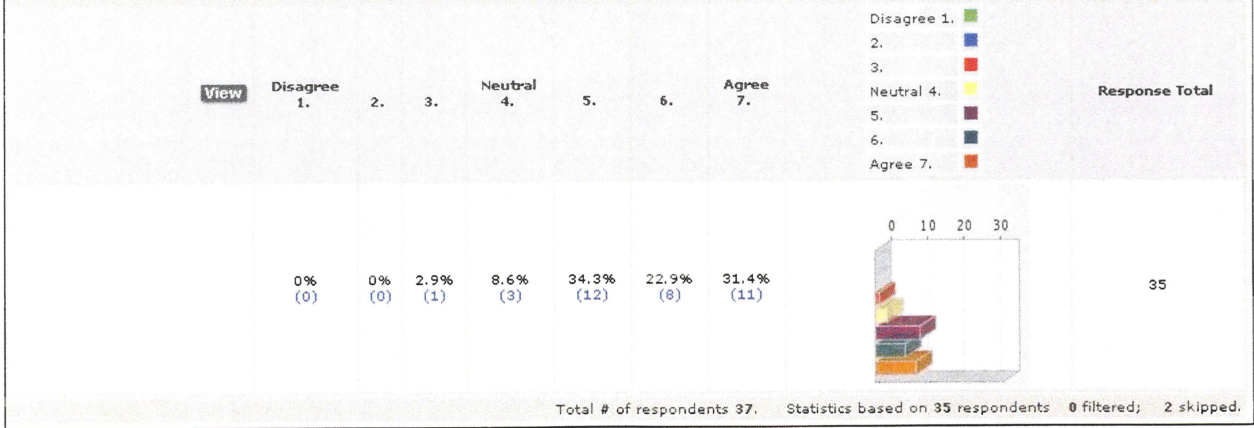Example: POS January high/low = 100% / 97.1%

	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.		Response Total
View	0% (0)	5.4% (2)	2.7% (1)	16.2% (6)	18.9% (7)	21.6% (8)	35.1% (13)		37

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.
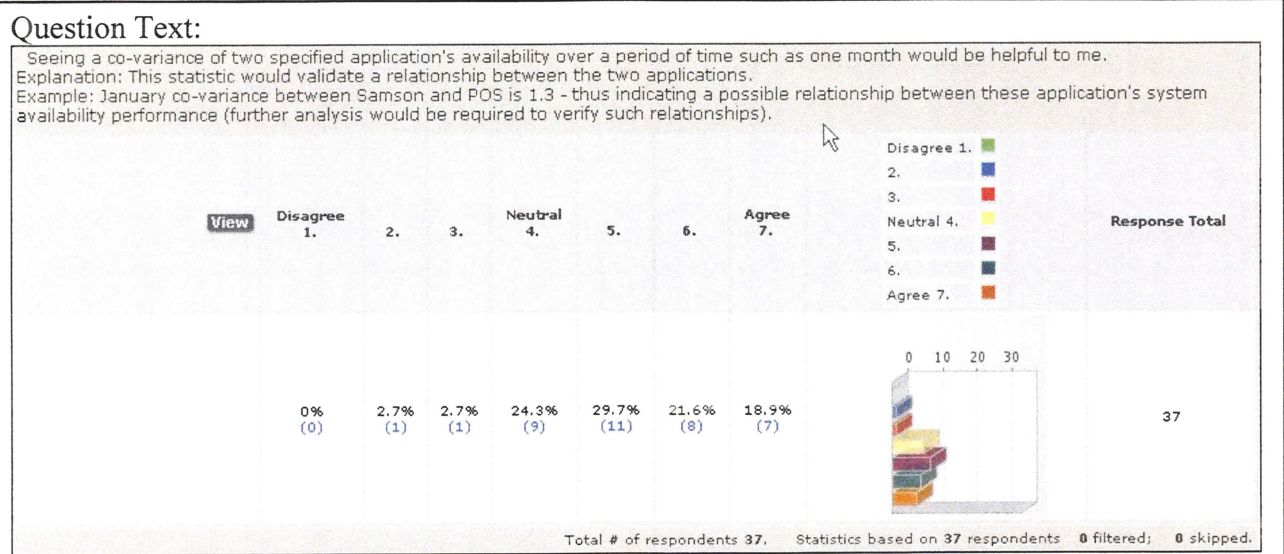
Responder Breakout:

Responder Strata	Number of Responders Choosing 5 or Higher	Percentage of Strata	Percentage of Total
Vice President	2 of 4	50%	7%
Director	5 of 6	83%	18%
Manager	19 of 21	90%	68%
Individual Contributor	2 of 7	29%	7%

24

Table 13 shows the responders for question 10 selecting option 5 or higher were at 88%. The responder stratum whom most favored this question is the Managers with 90%. And, the Managers comprise the biggest percentage of the overall responders of 5 or higher at 63%.

Table 13: Question 10

Question Text:

Seeing a variance of application availability over a period of time such as one month would be useful to me.
Explanation: Variance measures the volatility, or variability, from an average. This may help an analyst understand how introducing a change to an application may cause its system availability to be affected.
Example: POS January Variance = 0.01; Samson January Variance = 1.4

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.	Response Total
	0% (0)	0% (0)	2.9% (1)	8.6% (3)	34.3% (12)	22.9% (8)	31.4% (11)	35

Total # of respondents 37.   Statistics based on 35 respondents   0 filtered;   2 skipped.

Responder Breakout:

Responder Strata	Number of Responders Choosing 5 or higher	Percentage of Strata	Percentage of Total
Vice President	3 of 4	75%	10%
Director	5 of 6	83%	17%
Manager	19 of 21	90%	63%
Individual Contributor	4 of 7	57%	13%

Table 14 shows the responders for question 11 selecting option 5 or higher were at 69%. The responder stratum whom most favored this question is the Managers with 81%. And, the Managers comprise the biggest percentage of the overall responders of 5 or higher at 65%.

Table 14: Question 11

Question Text:

Seeing a co-variance of two specified application's availability over a period of time such as one month would be helpful to me.
Explanation: This statistic would validate a relationship between the two applications.
Example: January co-variance between Samson and POS is 1.3 - thus indicating a possible relationship between these application's system availability performance (further analysis would be required to verify such relationships).

View	Disagree 1.	2.	3.	Neutral 4.	5.	6.	Agree 7.		Response Total
	0% (0)	2.7% (1)	2.7% (1)	24.3% (9)	29.7% (11)	21.6% (8)	18.9% (7)		37

Legend: Disagree 1. / 2. / 3. / Neutral 4. / 5. / 6. / Agree 7.

0 10 20 30

Total # of respondents 37.   Statistics based on 37 respondents   0 filtered;   0 skipped.

Responder Breakout:

Responder Strata	Number of Responders Choosing 5 or higher	Percentage of Strata	Percentage of Total
Vice President	2 of 4	50%	10%
Director	4 of 6	67%	15%
Manager	17 of 21	81%	65%
Individual Contributor	3 of 7	43%	12%

Table 15 shows the optional free form survey comments that many responders provided.

Table 15: Survey Comments:

2	If we can capture criticality of the App to the Business Group & also to TMO as a whole would be useful.
6	Dashboard of key metrics by group or discipline tracked over a given period of time and mapped to application performance and or systems availability to provide a view of how an organization can impact the business availability.
8	The most important relationship I need to be able to see is between system availability and company performance. I know that this is hard to determine but it is truly what the management needs to know. The second most important would be to compare system availability to some standard. If you could find a telcom industry standard, comparing ourselves to it would be great. Definitely an improvement over comparing us to us.
9	The ability to correct mis-reported outages against a system is very important to me.
13	In general, system availability views that provide performance/availability relative to a standard or relative to a volume, especially when reported as a trend over time, are useful for evaluating overall health and monitoring for capacity planning.
14	I also think being able to forcast future system usage or availability would be quite helpful.
16	Rolling 13 month system availability. Overall and by individual application. Hardware and OS software failures by device type or OS.
17	Thanks Chris! You bring up some great ideas here! I think most of what you suggest could be useful to our "key players". I'm looking forward to hearing your summation of our answers!
20	transaction volume against system utilization
23	The weakest point in system availability seems to be the 'user impact' variable. This is apparently highly subjective, at least for some applications. In my App. Support team we are working to contribute to increased accuracy and objectivity in this value and I think all support teams should do this.
26	Metrics on interaction of applications within our infrastructure. For example, show how 3 databases and invidual users are consuming resources within a single set of server/disk/dataabase infrastructure.
28	Comparing my application to several other applications for a given time period.
30	Cumulative information for a business group would be useful- for example: Business group a use systems: 1,2,3 - the performance and availability of each is important but the cumulation of it as well (combined system 1 2 3). If an application handles different type of transactions, some transaction may be more important than other for the business group and therefore the transaction data should include all transactions or particular transactions. i.e: Samson handles transactions such as Activation, change of address, etc. An activation is far more important in terms of business than a change of address. The loss of change of address is not business critical while the loss of an activation is. Time interval are critical - specificied by business group and system- In care for example most calls happen between noon and 2 pm (PST), a reduced performance IVR or cisco at that time is far more impacting than at midnight.
33	Application components often need measured separately from each other. For example, if one piece of functionality is unavailable within any given app, this should be captured and reported appropriately (versus the whole app is down).
35	I would love to see more graphs, and more historical data. I also would like to see a complexity factor for each application.
37	i like todays reports and these new approaches look good.

Analysis of Survey Results

Analysis of survey results consists of independently evaluating each set of responses for each survey question with regards to determining its individual merit. Once that merit was identified, further analysis specified defining the outstanding criteria, and identifying who responded to the outstanding answers. Examples of noteworthy response patterns are: Survey questions yielding responses that are strongly skewed to the 'agree (7)' category, survey questions that may have a high 'neutral (4)', or high 'disagree (1)' response pattern. Evaluating the most popular questions and the corresponding responder strata provided insight into the kind of information important to each employee group. At My-T-Fyne, I.T. customers in all strata receive a one-size-fits-all System Availability report, which provides minimal data. Refer to Appendix 1 for an example of a recent My-T-Fyne System Availability report. The following section describes the conclusions obtained by observing the My-T-Fyne survey responses.

Most Popular Survey Questions

The primary analysis focuses on evaluating responses to determine question popularity. This view indicates the survey questions for which responders chose the highest possible rating, thus indicating a potential focus for immediate reporting improvement action steps. Using the filter criteria of evaluating which survey questions yielded a response rate of 50% or above for response option seven generated the following results:

Table 1 - Survey Analysis: most popular questions (questions receiving > 50% agree rate (7))

1 (57%)	Analyzing how an application is performing in relation to other applications within a single business group provides me with useful information. Example: How does POS perform within the Retail Sales business group as compared with other application residing in that same business group?
4 (51%)	Think about how yesterday's stock market trading volume is provided before considering the following statement: Seeing application and business group transaction volume tracked and reported on a daily basis would give me perspective about My-T-Fynesystem performance for the previous day. Example: 'High Transaction Day' Retail Sales: 53,281, Customer Care: 78,399, Supply Chain: 57,224
6 (60% - most popular)	Seeing relationship data between application transaction volume and system availability over a specified period of time, such as a month, would be useful to me. Explanation: Viewing (in graph form) a month of POS transaction volume data points with a month of corresponding system availability percentages overlaid.

Most Popular Questions – Responder Averages:

The table results below can be read as follows: 50% of the total Vice President responders say that they agree with question 1.

Responder Strata	Question #1	Question #2	Question #3	Average %
Vice President	50%	75%	75%	67%
Director	67%	83%	67%	72%
Manager	62%	33%	67%	54%
Individual Contributor	29%	14%	5%	16%

Summary analysis on key concepts identified in table1 indicate that the System Availability views most valuable to responders are those that provide the following results: a comparison between multiple applications that support a common business function, show a daily transaction volume for applications and business groups, and show transaction volume in relation to system availability over a period of time.   The strata of responders rating these three questions the highest include: an average of 67% of the Vice President populous, an average of 72% of the Director populous, an average of 54% of the Manager populous, and an average of 16% of the Individual Contributor populous.   These popular views take the traditional benchmark system availability percentage and give it meaning and perspective by providing a comparison to other commonly used metrics.

Responder Strata Observations

Thirty-Seven of sixty people responded to the survey, equating to 62%. The biggest group of responders were the from the Vice President stratum with a 75% response rate; however, only 4 Vice Presidents were targeted. The Manager stratum, consisting of 30 target responders obtained a 70% response rate, meaning 21 managers completed the survey. Directors, consisting of a target response group of 12, obtained a 50% response rate. Individual Contributors consisting of a target response group of 14 obtained a 50% response rate.

Vice President Response Observations:
Survey response data focusing on the Vice President stratum reveals that they consistently agree

that reporting views showing meaningful comparisons, as well as application volatility, are useful to them (see table 2). Providing a variance of application availability over a period of time shows how volatile an application is in comparison to other, more stable, applications. Understanding which applications are the most volatile over a specified period of time, such as a month, can assist correlations between the frequency of application changes and other system anomalies. As correlations are identified, effective adjustments can be made to gain maximum system availability and efficiencies. Table 2 shows the questions that at least 75% of Vice President Responders rated 'agree (7)'.

Table 2 – Responder Strata Observations: Vice Presidents deemed these views most important

	Key concepts are highlighted
3	Think about how the newspaper reports yesterday's market performance at a glance before considering the following statement: Analyzing yesterday's business group performance and trending at a glance provides me with useful information. Example: Customer Care - Up .5% ending at 98.3%
4	Think about how yesterday's stock market trading volume is provided before considering the following statement: Seeing application and business group transaction volume tracked and reported on a daily basis would give me perspective about My-T-Fyne system performance for the previous day. Example: 'High Transaction Day' Retail Sales: 53,281, Customer Care: 78,399, Supply Chain: 57,224
5	Seeing relationship data between application transaction volume and system availability on a daily basis would be useful to me. Example: Retail Sales transaction volume - yesterday: 53,281 & System Availability: 99.85%.
6	Seeing relationship data between application transaction volume and system availability over a specified period of time, such as a month, would be useful to me. Explanation: Viewing (in graph form) a month of POS transaction volume data points with a month of corresponding system availability percentages overlaid.
10	Seeing a variance of application availability over a period of time such as one month would be useful to me. Explanation: Variance measures the volatility, or variability, from an average. This may help an analyst understand how introducing a change to an application may cause its system availability to be affected. Example: POS January Variance = 0.01, Samson January Variance = 2.1

Director Response Observations:

Survey response data focusing on the Director stratum reveals that they consistently agree that reporting views showing transaction volumes, monthly high/low availability scores, and a variance of application availability over time are useful to them (see table 3). Directors and Vice Presidents were the only strata to give a consistently high rating for question 10, which deals

with showing application availability variance. Question 10 describes providing a reporting

metric which would give insight into how much an application is unavailable in comparison to

the relative stability of others. For example, the Retail Sales business group consists of 26

applications. The volatility metric may show how stable one of the 26 applications is in

relationship to the remaining 25 applications. Many of the applications are managed and

supported on an individual basis, as opposed to a collective business group management

approach. The knowledge about application variance could lead to process and coding

efficiencies that span applications and are applied at the business group level. Then, business

groups can be better managed as a functional unit.

Table 3 – Responder Strata Observations: Directors deemed these views most important

	Key concepts are highlighted
4	Think about how yesterday's stock market trading volume is provided before considering the following statement: Seeing application and business group transaction volume tracked and reported on a daily basis would give me perspective about My-T-Fyne system performance for the previous day. Example: 'High Transaction Day' Retail Sales: 53,281, Customer Care: 78,399, Supply Chain: 57,224
9	Seeing a monthly high/low application availability score would be useful to me. Example: POS January high/low = 100% / 97.1%
10	Seeing a variance of application availability over a period of time such as one month would be useful to me. Explanation: Variance measures the volatility, or variability, from an average. This may help an analyst understand how introducing a change to an application may cause its system availability to be affected. Example: POS January Variance = 0.01, Samson January Variance = 2.1

Manager Response Observations:

Survey response data focusing on the Manager stratum reveals that they consistently agree that

reporting views providing statistical analysis of system performance is useful to them (see table

4). Question 8 addresses translating an application's availability score into a number that

portrays it's availability in relation to others in a business group is comparable to analyzing the

beta of a particular stock's performance in relation to other stocks residing within an index. For

example, tracking beta for applications residing in the Retail Sales business group may show that

application A's availability decreases at a rate of 20% more than application B, which may be

more stable. Question 9 provides a high/low application availability score over a period of time.

Question 10 provides a statistical metric showing how much an application's availability deviates from the average for a business group. Comparing multiple variance scores for multiple applications within a business group may provide insight to application owners regarding how an application behaves in comparison to others. Further extrapolating variance scores in relation to other activities such as application coding changes or increase in customer or user transaction volume may affect application availability in such a way that is portrayed in variance tracking numbers. Question 11 takes the variance factor one step further and offers a co-variance statistic, which specifically tracks the availability of two selected applications. The higher the co-variant number, the increased likelihood of the existence of a behavioral relationship between the two applications. This metric may allow observations such as: whenever the Point of Sale application is unavailable, so is the activations system. Some relationships between applications are obvious and proven over time, while others are not.

Table 4 – Responder Strata Observations: Managers deemed these views most important

	Key concepts are highlighted
8	Similar to viewing stock market sensitivity (a.k.a: beta) of a particular stock, seeing application availability in relation to the business group availability as a whole would be useful to me. Explanation: POS has a System Availability beta of -1.2. This means that when the Retail Sales business group's System Availability decreases, POS decreases at a rate 20% more than other applications within that business group
9	Seeing a monthly high/low application availability score would be useful to me. Example: POS January high/low = 100% / 97.1%
10	Seeing a variance of application availability over a period of time such as one month would be useful to me. Explanation: Variance measures the volatility, or variability, from an average. This may help an analyst understand how introducing a change to an application may cause its system availability to be affected. Example: POS January Variance = 0.01, Samson January Variance = 2.1
11	Seeing a co-variance of two specified application's availability over a period of time such as one month would be helpful to me. Explanation: This statistic would validate a relationship between the two applications. Example: January co-variance between Samson and POS is 1.3 - thus indicating a possible relationship between these application's system availability performance (further analysis would be required to verify such relationships).

Individual Contributor Observations

The only survey question that the Individual Contributor stratum agreed the most upon was number 7, which addresses showing the 3 best performing and 3 worst performing applications from the previous day (table 4). This particular view portrays over time applications that are

always at the top or bottom of the chart. There is an inherent incentive provided with this metric.

No manager or Individual Contributor wants to be responsible for an application that is

continually on the "three worst performers" list.

Table 4 – Responder Strata Observations: Individual Contributors deemed these views most important

	Key concepts are highlighted
7	Similar to 'stocks at a glance' views that are available in newspapers, seeing the 3 best performing applications and the 3 worst performing applications from the previous day would be useful to me. Example: Previous day's 3 best application performers: Samson, Watson, JPayment. The 3 worst application performers: TIBCO, iCAM, T-Star.

Survey Questions Receiving "Disagree" Responses

Most of the survey questions received favorable responses. However, five questions received at

least one response equal to "disagree" (table 4).   The least popular question, receiving five

"disagree" votes, is question 8, which addresses application beta, a measurement for how volatile

an application is within a given business group, as compared to other applications residing in that

same business group. Ironically, question 8 ranks as one of the favorites of the Manager

Responder strata.

Table 4 – Survey Questions receiving "disagree" responses

1	Analyzing how an application is performing in relation to other applications within a single business group provides me with useful information. Example: How does POS perform within the Retail Sales business group as compared with other application residing in that same business group?
2	Analyzing how an application is performing in relation to other applications of similar size, type, and complexity regardless of business grouping provides me with useful information. Example: How does Watson application availability compare to T-Mobile.com application availability?
3	Think about how the newspaper reports yesterday's market performance at a glance before considering the following statement: Analyzing yesterday's business group performance and trending at a glance provides me with useful information. Example: Customer Care - Up .5% ending at 98.3%
7	Similar to 'stocks at a glance' views that are available in newspapers, seeing the 3 best performing applications and the 3 worst performing applications from the previous day would be useful to me. Example: Previous day's 3 best application performers: Samson, Watson, JPayment. The 3 worst application performers: TIBCO, iCAM, T-Star
8 *(5 disagree votes)*	Similar to viewing stock market sensitivity (a.k.a: beta) of a particular stock, seeing application availability in relation to the business group availability as a whole would be useful to me. Explanation: POS has a System Availability beta of -1.2. This means that when the Retail Sales business group's System Availability decreases, POS decreases at a rate 20% more than other applications within that business group

Comments Evaluation

Sixteen survey responders provided comments, which align with the following functional

categories: Granularity in Criticality (2 comments), Time Tracking & Trending (2 comments),

Forecasting (1 comment), Comparisons (3 comments), Presentation (1 comment), Infrastructure

(3 comments), User Functionality and Views (2 comments).

Two responder comments requested that the criticality of the application within a business group be considered when calculating System Availability percentages. Currently at My-T-Fyne, all applications are viewed as equally critical. However, in reality, if a less important application is unavailable, it shouldn't be weighted as heavily as a critical application. Another important aspect identified in the responder comments is that application availability needs to be correlated much closer to actual company performance. For example, if the Point of Sale application is unavailable, reporting the number of lost sales or the delay in activations during that window of unavailability may also be important. Other comments focused on I.T. infrastructure granularity, meaning that if an application is unavailable; provide reporting which shows what underlying components were also unavailable (such as servers, databases, network connections). In summary, the comments tended to ask for more trending analysis and historical reporting.

Recommendations

The research problem discussed identifying more effective ways of reporting system availability at My-T-Fyne. Current system availability reports are antiquated, and not targeted to appropriate audience levels. Updating system availability reporting so that it reflects what is important to the lines of business at My-T-Fine not only provides useable data views, but also builds credibility between the I.T. department and the business units. The industry research and the independent survey results validate that changes are needed to provide more directly applicable and tighter focused system availability reports to varying reporting audiences. The ability to accurately report on system performance and availability is essential in order to measure value, return on investment, and portray worth to the business groups who often finance I.T. purchases. Authors of a recent study to identify metrics for assessing information technology performance in the service sector confirmed the following assessment regarding the value of pertinent system performance monitoring (Teo, Wong & Chia, 1999):

> Organizations need to measure their I.T. performance for three reasons. First, it is an aid to the credibility of the I.T. function. Second, it helps to improve productivity as areas of improvement can be identified and worked upon. Third, it can be a catalyst for organizational transformation, supporting company and functional review, and action planning. The key to achieving each one of these is to have effective I.T. performance metrics that can provide valuable information about the I.T. function and its impact on corporate performance.

In order to improve System Availability Reporting at My-T-Fyne, a phased-base approach is recommended. The initial phase should focus on building a credible, yet basic report foundation that is audience and needs based and maps back to each line of business. The second phase should provide more complex, statistical analysis based reports that were identified through the survey. The final phase should be to develop a repeatable schedule that prompts checking in

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with representatives from each audience to ensure proper level of useable information is provided.

Phase One

Provide reports that align with lines of business and functional business groups that are easy to understand and contain meaningful Key Performance Indicators. Prior to producing new line of business reports, members from the reporting team must meet with members of each line of business to discuss and agree upon what key performance indicators exist and what units of measure are appropriate for each. Identifying KPI's is an essential step to gaining a functional understanding of the line of business, as well as gaining credibility.

Similar to building reports for the different lines of business, reports for different audience levels must be built. And likewise, meetings with representatives for each audience level are essential to understanding which information is important to include. Other indicators, such as report frequency, and report retention history are also important to determine during these initial conversations. Creating the following audience level reports are recommended:

- Executive Management:

  Include data that portrays how I.T. services provide value to the business. Outage information should relate to dollar costs and lost productivity. Specify where to look for more detailed information.

- Line of Business:

  Provide information on how I.T. services helped each line of business to drive more and new business. Relate service levels to transaction volumes. Correlate business benefits to overall service quality.

- Internal I.T.:

Provide reports showing underlying technology outages. Produce report trends that show outage frequency over time. Compare overall service delivery to agreed-upon Service Level Objectives for each line of business.

- Customer Reports

Provide information that reflects on the direct quality of service delivered to them. New reports targeting specific operational functionality should also be created. Create individual reports that provide specific operational information:

- Service Availability Reports:

Show availability mapped against agreed-upon objectives between the I.T. and Business Unit leaders. System Availability should be shown by service or application, and should represent the experience of users by organization, location, and line of business. Provide a roll-up summary report for each line of business.

- Performance Reports:

Provide information that portrays the customer or end-user experience by system, lines of business, and user locations. Report categories include transaction responsiveness, and batch job turn-around.

- Transaction Volume reports:

Provide information that portrays workload volumes as transaction rates. Specify transaction volumes by lines of business, locations, and user groups. Each technology layer being touched by the execution of each transaction should be reported as:

- Transaction Volume and Network utilization
- Transaction Volume and CPU utilization

- Transaction rates on servers

- I/O rates on the database and storage subsystem

- Transaction rates across middleware environments

Phase Two

After the basic foundational level of reports described in phase one are complete and implemented, phase two report development can begin. These reports provide statistics and comparisons of application performance information, as well as performance history and trending analysis. Creation of reports that provide the following information is recommended based upon the My-T-Fyne survey results:

- A comparison between multiple applications residing within a business function or line of business.

- The daily transaction volume for applications and business groups over specified periods of time.

- The variance of application availability over time.

- Monthly high / low system availability scores.

Phase Three

After phase one and two are complete, phase three can begin. Phase three focuses on implementing a process to regularly review report usefulness with selected audience representatives. Upgrade and expand on report functionality and quality based upon need. Executing these three phases at My-T-Fyne will integrate the most directly applicable survey and research findings into the My-T-Fyne I.T. department.

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Appendix 1: Current My-T-Fyne System Availability Report

The tables below show example data from the current system availability report at My-T-Fyne. The data is application and business group oriented and does not support business key performance indicators. The data does reflect different impact metrics:

- Availability: Reflects application downtime.
- Weighted: Downtime including time of day calculation (a multiplier of four is used when outage is prime time vs. off-peak hours)
- Business Recovery: Reflects weighted availability time plus the time it took for the business unit to recover from the outage.

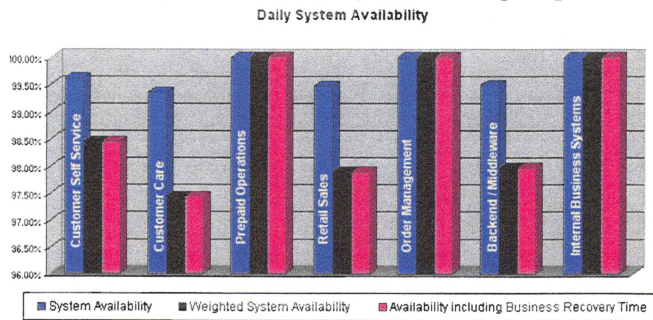*Table 1: Daily availability by business group*

Daily System Availability

Table 2: Percentage by business group.

Sunday, February 26, 2006

Availability by Business Group			
Business Group	Availability	Weighted	Business Recovery
Cust. Self Service	99.61%	98.45%	98.45%
Customer Care	99.36%	97.45%	97.45%
Prepaid Operations	100.00%	100.00%	100.00%
Retail Sales	99.47%	97.89%	97.89%
Order Mgmt. / ERP	100.00%	100.00%	100.00%
Backend / Middleware	99.49%	97.97%	97.97%
Internal Business	100.00%	100.00%	100.00%
Overall	99.71%	98.82%	98.82%

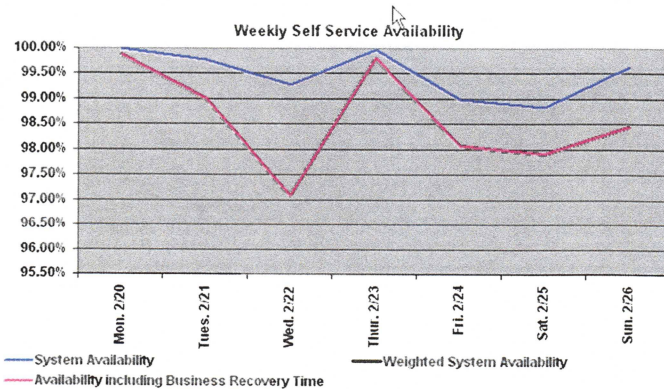*Table 3: Individual business group availability by day for one week.*

Weekly Self Service Availability

Table 4: Percentage view by individual business group for one week.

Weekly Cust. Self Service Availability			
Day of Week	Availability	Weighted	Business Recovery
Mon. 2/20	99.97%	99.87%	99.87%
Tues. 2/21	99.75%	98.99%	98.99%
Wed. 2/22	99.27%	97.08%	97.08%
Thur. 2/23	99.95%	99.80%	99.80%
Fri. 2/24	98.97%	98.07%	98.07%
Sat. 2/25	98.81%	97.90%	97.90%
Sun. 2/26	99.61%	98.45%	98.45%
Weekly Average	99.48%	98.59%	98.59%

Appendix 2: Glossary

Application	A software program that performs a related set of business functions. Example: A Point of Sale (POS) application provides automated services for retail stores to sell product and process payments.
Availability	The percentage of time an application is available to and fully functional for the target user community.
Beta	A term commonly used in the stock market world to describe the measure of a fund's or a stock's risk in relation to the market or to an alternative benchmark. A beta of 1.5 means that a stock's excess return is expected to move 1.5 times the market excess returns. As applied in theory to application software performance, it could refer to the volatility of an application as it compares to other applications within a particular business group.
Business Group	A group of related applications that function independently or together to support a unique line of business.
End user	The person or customer that interacts with the software by entering in data commonly through a set of screens.
I.T.	Information Technology
ITIL	Information Technology Infrastructure Library. An independent and objective organization that compiled a 'library' of proven best practices for disciplines within the traditional I.T. department.
Responder	A person who answered the System Availability Reporting survey questions.
Response Option	Selections 1 through 7 on the System Availability Reporting survey.
Root Cause	The primary, most fundamental reason that an application outage occurred.
Root Cause Analysis	The discovery process of finding the primary, most fundamental reason that an application outage occurred.
Service Level Management	The I.T. industry name of the identification, measuring, and reporting on the level of service an automated process or support team should provide, and that it's customers should expect.
Strata	The layers of Survey Responders: Vice President, Director, Manager, Individual Contributor.
System Reliability	An I.T. industry term to the reliability of a software system. More than simply addressing availability, Reliability encompasses data security, data integrity, as well as system availability and performance.
Variance	A measure of the spread of the values in a distribution. The larger the variance, the larger the distance of the individual cases from the group mean. Deviation from a standard or norm.