February 14, 2008

Mr. Neville Atha
Morgan Stanley
International Prime Brokerage
25 Cabot Square, Canary Wharf
London E14 4QA England

Dear Mr. Atha,

We are submitting to you our report entitled "Generating Capacity through Identification of Task Drivers in Morgan Stanley International Prime Brokerage." Our final conclusions draw from the DILO studies we completed to assist your department in better understanding where their resources can be best utilized. We believe our Executive Summary and Conclusions and Recommendations, beginning on pages ii and 23 respectively, are most relevant to you. Finally, we would like to thank you again for the opportunity to carry out this project and for your assistance during our time within your office.

Regards,

Kristen E. Hodel

Luis M. Rodriguez

MORGAN STANLEY INTERNATIONAL PRIME BROKERAGE:

Generating Capacity through Identification of Task Drivers in Morgan Stanley International Prime Brokerage

A Major Qualifying Project Report:

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

By

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Kristen E. Hodel

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February 14, 2008

Approved:

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Professor Arthur Gerstenfeld

Executive Summary

The modern financial services industry has experienced enormous change since its youth in the early 20th century. It has survived two major market crashes (in October 29,1929 and October 19, 1987) and has grown to be one of the most influential and dynamic sectors of the global economy. Especially in the increasingly global economy, companies must look to be both efficient and scalable in their operations in order to remain competitive. In this context, scalability refers to a company's ability to expand its product and service offerings without needing to either purchase more equipment or hire additional employees. Companies within the financial services industry in particular, continually seek better methods to enhance their earnings and minimize their costs.

With the advent of electronic record keeping and transaction processing tools, financial services companies have witnessed an exponential increase in the volume of transactions that they process on a daily basis. Morgan Stanley is among the few companies that have been able to successfully capitalize on these changes and remain an industry leader over the years. Its International Prime Brokerage (IPB) Department is one of the groups that has experienced notable success and growth - expansion that is directly related to the success of the hedge fund businesses that it services. Although IPB has proven its ability to provide a wide range of high-quality services to its customers, there have been several projects, completed by students from Worcester Polytechnic Institute (WPI), that have sought ways to improve the efficiency of the department's operation.

One project in particular, completed in the fall of 2005, aimed to determine what high-level tasks were being performed and how much time was spent completing these at both the New York Prime Brokerage and IPB departments. The students accomplished this by conducting a series of 44 "Day-In-The-Life-Of" (DILO) time studies. A time study is, "in the evaluation of industrial performance, analysis of the time spent in going through the different motions of a job or series of jobs".[1] The purpose of conducting time studies at Morgan Stanley's IPB department was to establish which Client Service Representative (CSR) activities consumed the most time and

[1] http://www.britannica.com/eb/article-9072509/time-and-motion-study (Accessed on November 5, 2007)

(more importantly) how some of these processes could be shortened or eliminated. The results, although useful, were determined not to have a sufficient degree of granularity to produce actionable conclusions. Having recognized these limitations, Morgan Stanley's IPB solicited this follow-up project to update the 2005 findings and to add additional dimensions to the study.

METHODOLOGY

In order to provide more details concerning the flow of information into, through, and out of CSRs' hands, our team designed a new DILO data collection tool. Using this Excel-based tool, we were able to capture up to 12 different descriptive dimensions of detail for each CSR activity we observed and recorded. We conducted DILO time studies over a series of five weeks, in which time we covered 12 different representatives and focused on 11 of the hundreds of accounts that the IPB department manages. In total, we recorded some degree of information for over 100 clients. Compared to the previous DILO project, however, we conducted a more focused study, with a scope limited only to the London office, and paying special attention to the most high profile accounts. Although specific figures were not made available to us, the client selection was based loosely on the Pareto Principle, which in this context implies that approximately 80 percent of the revenues are produced by the top 20 percent of the clients. We used the DILO tool to capture a more complete picture of every action CSRs took and how each related to their entire day. We conducted the DILO studies in full-day increments per each representative, beginning with the first official task that a CSR performed, and ending when the representative logged off the system for that day. We enhanced our time studies by a number of related procedures, including e-mail analysis, Week-in-the-Life-Of (WILO) time diary studies, and informal question sessions, which were used primarily to clarify ambiguities in the data. The entire process took place over a period of six weeks.

RESULTS & ANALYSIS

A total of 127 hours and 17 minutes of activities were recorded through the DILO process over the course of the project. Our WILO studies produced the equivalent of 21 workdays of activity records, but we found these to be less accurate than the DILO studies themselves. As a result, we

used WILO data primarily to enhance or corroborate any DILO trends that we observed. The principal deliverable of the project is the complete set of records within the self contained, flexible data table, from which extensive analysis can be conducted depending on the need or desired focus. Our analysis was primarily done based on the breakdown of the total recorded activities through the use of segmentation by descriptive categories we developed. For example:

- 127 hours of activities, the largest percentage (25%) of time was spent by representatives addressing trades related issues
- 14% of the time spent on tasks defined as administrative
- 14% on corporate actions related tasks
- A surprising 14% was also spent filtering and managing e-mail.

Further drilling and analysis was done on the largest of these activity categories, in an attempt to extract trends, as well as to confirm or negate assumptions that the department had about its operations. Excel-based pivot tables and charts were used extensively to manipulate the data and view it from different angles, with different dimension combinations, and within different contexts. The Results section (Chapter 4) describes some examples of the views that can be created through the manipulation of our data. Additional notable examples of the data breakdown are documented in Appendix B and C.

CONCLUSIONS & RECOMMENDATIONS

This data will provide the department with a better understanding of not only which activities are completed in a sample day, but also how and why they are carried out. We investigated significant aspects of the representatives' daily work to provide a comprehensive representation of the activities conducted by a sample of CSRs in Morgan Stanley's IPB office.

From post-study discussions of our findings with knowledgeable department members, we were able to identify some areas of interest for further study. The excessive amount of time spent performing non-value-adding, e-mail-related tasks raises concerns that the current practices in place are not optimal. E-mails are handled according to procedures developed by each individual

or team with differing results for each method. The current procedures need to be evaluated and consolidated into an outline of best practices to facilitate reading and sorting the high quantity of e-mails representatives receive each day. Further discussion of this is found in the Recommendations and Conclusions section.

Additionally, we noticed in post-study follow-up discussions with the representatives themselves that there were some irregularities in the effects of implemented automation measures. Some representatives noted an increase in manual labor resulting after new tools or systems were put into effect. This implies that there may have been additional subtle factors involved within the process targeted by the Product Development team than originally expected. Time studies conducted both before and after the implementation of a trial system or tool would allow the department to gauge the actual effectiveness of the product developed.

Finally, certain concerns surfaced throughout the process of developing and executing these time studies that should be addressed before conducting additional ones. The current data-collection procedure for DILO time studies is very manual and time-consuming, due to the rudimentary nature of the current Excel tool. As a result, the accuracy of the data collected is hindered by the details missed in the fast-paced nature of the work being observed. The creation of an automated tool to use when performing DILO studies would greatly improve the quality of the results obtained.

Another discrepancy within our investigative process was the lack of a uniform collection structure between the clients of interest. In some cases, a client had more than one representative covering its accounts, yet we would unknowingly record data for only one of them. This results in missing data, which hinders our ability to make unbiased comparisons of the trends between clients. Assuring the integrity and uniformity of the collection scheme will enhance the usability of results obtained from future studies.

Lastly, we also found that it was difficult to have minimal knowledge of the assumptions or expectations that were of interest to the sponsors. This was an obstacle in the beginning stages of the project, when the collection tool's characteristics were being developed. Although we

mitigated this by developing a flexible tool, the studies performed earlier in the project were slightly less detailed or focused than those conducted near the end of the collection period. Familiarity with relevant issues or initiatives within the department prior to the implementation of the studies would also give rise to a more relevant set of results, and would facilitate their analysis after completion.

This data was presented to the IPB Product Development Team, responsible for designing and delivering applications that facilitate the transactions and interactions between clients, representatives, and the company's systems. By being aware of which processes create the most substantial bottlenecks in the course of a representative's workday and recognizing the drivers of this work, the Product Development team may be able to identify areas that merit additional focus. The aim would then be to develop tools that automate these processes where possible, eliminating wasted time and creating capacity for additional value-adding tasks.

Abstract

The project focused on identifying and understanding the underlying drivers of customer service representatives' daily activities within the Client Service Department for Morgan Stanley's International Prime Brokerage Division. Through the development and implementation of a tool to capture these activities, we were able to distinguish and analyze the significant drivers of work for the representatives. These were presented to our sponsor in order to more strategically direct future efforts to balance and expand capacity within the department.

Acknowledgements

We are grateful to have been able to work within the International Prime Brokerage department of Morgan Stanley. Many people were responsible in helping us ensure we had a successful and positive experience through the course of our project

As our project sponsor, Neville Atha oversaw the direction of our studies and analysis. His guidance ensured that this project was carried out in a methodical and successful manner.

We would like to that Shaughan Stephens for his efforts and time spent assisting us in coordinating and completing our studies. His advice and expertise allowed us to gather and analyze the comprehensive data required to accomplish our project.

Additionally, we would appreciate the cooperation of customer service representatives from the Gamma, Sigma, Epsilon, and Zeta teams. They pleasantly provided us with our data and clarified any questions we had during the process of our studies.

Finally, we would like to thank Professor Arthur Gerstenfeld for giving us the opportunity to work with Morgan Stanley in London. This has been an invaluable and enlightening experience as we conclude our studies at WPI.

Authorship Statement

The preliminary research, data collection and analysis, and documentation for this project were completed in full collaboration of both team members.

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1 Introduction

The modern financial services industry has experienced enormous change since its youth in the early 20th century. It has survived two major market crashes (in October 29,1929 and October 19, 1987) and has grown to be one of the most influential and dynamic sectors of the global economy. Especially in the increasingly global economy, companies must look to be both efficient and scalable in their operations in order to remain competitive. In this context, scalability refers to a company's ability to expand its product and service offerings without needing to either purchase more equipment or hire additional employees. Whereas at the dawn of the industrial age producing and delivering quantity was a company's major focus, in recent decades, an emphasis on quality control and cutting-edge technology has been a key driver for successful corporations in all industries. These include, naturally, the continually developing financial services industry.

With the advent of electronic record-keeping and processing tools, financial services companies have witnessed an exponential increase in the volume of transactions that they process on a daily basis. Morgan Stanley is among the few companies that have been able to keep up with the changes and remain an industry leader over the years. Its International Prime Brokerage (IPB) Department is one of the groups that has experienced notable success and growth - expansion that is directly related to the success of the hedge fund businesses that it services. Although IPB has proven its ability to provide a wide range of high-quality services to its customers, there have been several projects, completed by students from Worcester Polytechnic Institute, that have sought ways to improve the efficiency of the department's operation.

One project in particular, completed in the fall of 2005, aimed to determine what tasks were being performed and how much time was spent completing these at both the New York Prime Brokerage and IPB departments. The students accomplished this by conducting a series of 44 Day-In-The-Life-Of (DILO) time studies. A time study is, "in the evaluation of industrial performance, analysis of the time spent in going through the different motions of a job or series

of jobs".[2] The purpose of conducting time studies at Morgan Stanley's IPB department was to establish which Client Service Representative (CSR) activities consumed the most time and (more importantly) how some of these processes could be shortened or eliminated. The results, although useful, were determined not to have a sufficient degree of granularity to produce actionable conclusions. Both the 2005 and 2006 Morgan Stanley Major Qualifying Projects established that the New York PB and London IPB offices perform distinct functions, it was determined that performing efficiency studies on each department separately would render superior results. Lastly, the system for data collection used in these earlier studies did not note relationships between activities, and thus could not effectively detail the workflow. An understanding of CSR activity drivers and workflow is essential in order to detect redundancies, inefficiencies, and other forms of waste. Having recognized these shortcomings, Morgan Stanley's IPB solicited a follow-up project to update the 2005 findings and to add additional dimensions to the study.

In order to provide more details concerning the flow of information into, through, and out of CSRs' hands, the 2007 project team designed a new DILO data-collection tool. We used this tool to capture a complete picture of every action CSRs took and how each related to their entire day. This data would provide the department with a better understanding of not only which activities were completed, but also how and why they were carried out. We investigated significant aspects of the representatives' daily work to provide a comprehensive representation of the activities conducted by a sample of CSRs in Morgan Stanley's IPB office.

This data was presented to the IPB Product Development Team, responsible for designing and delivering applications that facilitate the transactions and interactions between clients, representatives, and the company's systems. By being aware of which processes create the most substantial bottlenecks in the course of a representative's workday and recognizing the drivers of this work, the Product Development team may be able to identify areas that merit additional focus. The aim would then be to develop tools that automate these processes where possible, eliminating wasted time and creating capacity for additional value-adding tasks.

[2] http://www.britannica.com/eb/article-9072509/time-and-motion-study (Accessed on November 5, 2007)

2 Background

Before commencing work-studies for the International Prime Brokerage Department at Morgan Stanley, it was necessary to acquire a general background of the environment that we would be working in. To complement this industry and company knowledge, we also investigated several studies and techniques that we could use as precedents to help guide the development of our own project.

2.1 Financial Services Industry

A company in the financial services industry, although clearly distinct from the manufacturing or logistics companies that are more typically associated with Industrial Engineering and efficiency studies, offers an equally challenging environment in which to investigate operational efficiency. Although the products and services offered by an investment bank or broker are not generally tangible in nature, we can still measure their impact and the resources needed to deliver these in terms of time and money. Where possible, the procedures and transactions that transpire within almost all of the major financial corporations are highly standardized. As a result, the regular operation of some departments can resemble a factory or production line, with each team member or collective unit responsible for a section of an entire process. Thus, the highly structured environment found within an investment bank also lends itself to scientific observation and analysis. We studied the operating processes of Morgan Stanley Dean Witter, focusing on their prime brokerage division.

2.1.1 Prime Brokerage

A *prime broker* is a concept that is as misunderstood as the *hedge funds* that it was created to serve. While exact definitions may vary, the term *prime brokerage* refers to the package of services beyond those of traditional stock brokering that a broker may offer to special clients. Examples of these services are "securities lending, leveraged trade executions, and cash management, among other things"[3]. The need for a special selection of services to be offered arose from the development and success of *hedge funds* in the early 1980s. Because there is limited governmental regulation that applies to them, *hedge funds* come in many different sizes,

[3] www.investopedia.com/terms/p/primebrokerage.asp (Accessed December 03, 2008)

use different strategies to make their money, and are therefore difficult to define universally. They are essentially private asset managers that can trade enormous amounts of securities and derivatives without much of the Securities Exchange Commission's (SEC) scrutiny to limit (and protect) them. "Like mutual funds, hedge funds pool investors' money and invest those funds in financial instruments in an effort to make a positive return. Many hedge funds seek to profit in all kinds of markets by pursuing leveraging and other speculative investment practices that may increase the risk of investment loss".[4] Their approaches to investing are considered very high risk, and vary between funds. For example, one particular hedge fund might have accounts with a prime broker that focus solely on trading equities, while another client might have a wider variety that includes fixed income and other more complex products. As a result, each prime broker will have a distinct set of strategies for managing its clients, and will often make special arrangements to accommodate their largest, most important accounts. Interestingly, a Times newspaper article described Morgan Stanley's exceptional success as stemming from the "tremendous" growth of its existing clients rather than through winning new customers.[5] This supports the notion that like most prime brokers, Morgan Stanley is interested in finding ways to enhance the services that it offers to its most lucrative existing clients. For this reason, our team was asked to pay special attention to the processes that affect the department's top customers.

2.2 Morgan Stanley International Prime Brokerage

The International Prime Brokerage (IPB) Department where we conducted our project is one of the most successful branches of Morgan Stanley's London office. Primarily responsible for serving the client base in Europe and the Middle East, IPB has received significant recognition in recent years for its excellence in serving a wide range of clients. An April 2007 survey conducted by the renowned EuroHedge magazine listed Morgan Stanley as the top prime broker for the European hedge fund market, managing $115.5 billion for its clients.[5]Since its opening in 1990, this London-based department has capitalized on its scale and innovative, technology-

[4] http://www.sec.gov/answers/hedge.htm

[5] Times article on MS being top Prime broker in European Hedge Fund Market <business.timesonline.co.uk/tol/business/industry_sectors/banking_and_finance/article1706853.ece>

driven resources to provide the best service in the industry. Morgan Stanley offers the following standard services to its clients through its prime brokerage units:

- Client Service
- Clearance and Custody
- Securities Lending
- Financing
- Technology
- Capital Introductions
- Business Consultancy Services
- Prime Brokerage Execution [6]

Internally, the IPB office is segmented into several sub-divisions, each specializing on a particular facet of the department's operation. The areas include Sales, Capital Introduction, Business Loans, Product Development, Multi-asset Class, and Client Service. The scope of our project was limited to studying the breakdown of work distribution within the largest of these subgroups, Client Service.

2.2.1 Design of Client Service Work Teams and Roles

To effectively study the work patterns of Client Service Representatives, it is essential to have knowledge of their work environment and the effects that its structure has on a CSR's workday. Within International Prime Brokerage, the Client Service Representative area of the floor splits into seven distinct teams, each consisting of an average of six people. Individual teams are populated primarily according to client and serve some value-adding functionality. Members of a team are located in close proximity to each other in order to enhance communication. Although representatives that cover the same client always belong to the same team, not all representatives on a team will cover the same client. Because not all clients require more than one CSR to address their issues, teams are not uniform in their distribution and consequently have slightly different dynamics relative to one another. A CSR is typically responsible for six clients, and performs a series of daily checks and tasks for all them throughout the day. However, a CSR will also handle special roles, fixed and rotational, that exist within each team. These tasks usually involve taking responsibility for various team-wide checks, such as updating and distributing trade breaks statistics reports or detecting and alerting teammates of recent activity on a variety

[6] http://www.morganstanley.com/institutional/primebrokerage/index.html

of applications. Common rotational responsibilities include the taking of early and late shifts, during which at least one representative on the team must attend to any client queries or issues that arise for all of the team's clients. Other regular team-specific tasks include assigned coverage of a team member's clients in the event of that colleague's absence. All of these team-related activities could take up a significant portion of a CSR's day, and have the potential to be streamlined if found to be inefficient.

2.2.2 Training of Client Service Representatives

As described, the responsibilities of a Client Service Representative are varied and difficult to master. The training process for a Client Service Representative is a combination of formal and informal procedures that take place over the course of six months. They receive general instruction through observation and practice within their corresponding teams, but must also complete a series of formal Morgan Stanley courses. These may include workshops on client management best practices, basic business writing, along with technical tutorials on the different tools and applications used within the department. While it is estimated that it takes approximately six months for a new hire to become acquainted enough with the position to manage a client alone, the complexity and dynamic nature of the role requires an average of two years of experience to reach a level of proficiency. At this point, a Client Service Representative is familiar enough with his/her own clients to take on other team members' responsibilities in the event of an absence or emergency. As mentioned, however, the role changes with the needs of the clients, the company, and the industry. For this reason, the learning process is a continuous one.

2.2.3 Client Distribution

It is worthwhile to note that there is currently a mostly heuristic approach to the distribution of clients among the different representatives, based on the successes and failures of different strategies over the years. Some standard, unwritten guidelines can be observed. For example, a large, valuable client will always be placed in the care of an experienced representative, with multiple representatives made available if necessary. A CSR will not generally cover more than one high-profile client, although this depends on that particular client's level of demand for attention. Clients do not technically get a set number of hours allotted to them by a CSR. The

amount of time that a CSR spends serving a client is typically proportional to the amount of activity that a client has, as higher activity levels result in more CSR-relevant issues. However, there are occasions when a client notably consumes prime brokerage resources disproportionately to that client's value to the firm, or relative to other clients in the same profit bracket. In these instances, measures, such as warnings or extra fees, may be taken to balance out the disparity. Part of Morgan Stanley's interest in the distribution of activities within its prime brokerage department is to identify anomalies such as these.

2.3 Work Studies

Work studies can consist of both method and work measurement studies. Work measurement is the application of techniques designed to establish the time for a qualified worker to carry out a task at a defined rate of working.[7] One widespread work measurement technique is the use of time studies. Time studies utilize work measurement techniques for recording the times of performing a certain specific job or its elements carried out under specified conditions.[8] They are employed along with method studies to determine how work should be done most effectively.

A method study is the systematic recording and critical examination of ways of doing things in order to make improvements.[9] Before a method study is undertaken it is important to follow the basic approach for method studies, which is outlined below. These steps are a guideline for developing a methods study:

1) **Select** the work to be studied and define its boundaries.
2) **Record** the relevant facts about the job by direct observation and collect such additional data as may be needed from appropriate sources.

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[7] http://books.google.com/books?id=lHHB-3qayLUC&pg=PA286&lpg=PA286&dq=direct+observation+of+work+studies+guide&source=web&ots=rRE3DHSoMG&sig=9a6qxOd3Qf6x6SjvmYlq0SgPurk#PPA19,M1 Page 19

[8] http://books.google.com/books?id=lHHB-3qayLUC&pg=PA286&lpg=PA286&dq=direct+observation+of+work+studies+guide&source=web&ots=rRE3DHSoMG&sig=9a6qxOd3Qf6x6SjvmYlq0SgPurk#PPA265,M1 Page 265

[9] http://books.google.com/books?id=lHHB-3qayLUC&pg=PA286&lpg=PA286&dq=direct+observation+of+work+studies+guide&source=web&ots=rRE3DHSoMG&sig=9a6qxOd3Qf6x6SjvmYlq0SgPurk#PPA19,M1 Page 75

3) **Examine** the way the job is being performed and challenge its purpose, place, sequence, and method of performance.
4) **Develop** the most practical, economic and effective method, drawing on the contributions of those concerned.
5) **Evaluate** different alternatives to developing a new improved method comparing the cost-effectiveness of the selected new method with the current method of performance.
6) **Define** the new method, as a result, in a clear manner and present it to those concerned.
7) **Install** the new method as a standard practice and train the persons involved in applying it.
8) **Maintain** the new method and introduce control procedures to prevent a drifting back to the previous method of work.

Together, time and methods studies allow for the examination of current work methods in order to analyze their use and improve the use of effective resources in an organization.

2.4 Time Diaries

Time diaries have been used over the past 40 years to monitor how the public uses their time. They are used to gather information about how people spend their time but do not require an observer to shadow the subject of the study. Common uses of time diaries include measuring time spent at work, caring for family members, and personal care and travel.[10]

Time diaries have been proven more accurate than surveys, which require subjects to recall time spent over prior days or weeks.[11]

[10] http://books.google.com/books?id=9qXOQkMhrw0C&pg=PA47&lpg=PA47&dq=john+robinson+time+diary&source=web&ots=FqwUrNoQEx&sig=unn01hOu1RUapaRcxdmd8MUOUNI#PPA47,M1

[11] Art3full.pdf

Time	What did you do?	Time Began	Time Ended	Where?	List other persons with you	Doing anything else?
Midnight						
1:00 AM						
2:00 AM						
3:00 AM						
4:00 AM						
5:00 AM						
6:00 AM						
7:00 AM						
8:00 AM						
9:00 AM						

Figure 2-1: Time Diary Example

They are records of the time a person spends completing that tasks that are being studied. The dimensions under observation are recorded in the time diary throughout the day. This general structure was used as a guideline in developing various aspects of our data collection tools.

3 Methodology

Upon arrival at Morgan Stanley, we established that the mission of the project was to identify, categorize, quantify, and prioritize the most important drivers of activity for Client Service Representatives (CSRs) at Morgan Stanley International Prime Brokerage. The ultimate aim of this process was to understand the underlying drivers of customer service representatives' daily activities.

More specifically, our first objective was to identify and understand the nature of the tasks a CSR performs by monitoring and tracking CSR activity over an entire week. We logged CSR activities in detail while they performed their daily activities and then instructed them to chart their own tasks over a week. Through the analysis of this data, we were able to identify and categorize the most important drivers of CSR activities. We then compared these drivers among the CSRs to look for trends that would indicate the best practices throughout the International Prime Brokerage Department.

3.1 Design of Day-in-the-Life-of (DILO) Study

We designed the DILO study to collect a comprehensive view of the daily, regular work carried out by CSRs. These daily tasks varied, and included activities such as routine report checks, communication with a client's administrator regarding specific queries, or use of instant messenger to contact a colleague in the Operations division to action a client request. For each action made by a CSR throughout the day, all critical details were recorded. These critical data points were established after a process that included preliminary discussions with the project sponsors and a rehearsal DILO study during the second week.

Introductory meetings were held with the project sponsors to ascertain what information was being sought, what purpose this data would serve for the department, and how it would differ from the previous DILO project that had been conducted. The sponsors clarified that they were interested in comprehending not only which activities the CSRs spent the most time on, but also understanding what the drivers of this time-consuming work were. This information would then

allow the department's Product Development team to identify areas of a CSR's work which could be automated.

Our DILO study was modeled after traditional time and method models as discussed in Chapter Two. In response to these criteria, we developed a series of 12 essential descriptive data fields. These are listed and described in Table 3-1.

Table 3-1: DILO Data Fields

Linked Action	A prior action that came before the current action
Previous Action	The medium or tool that drove the current action, occurred just prior to the current one
Trigger Who	The person or group that drove the CSR to take action
Trigger What	The medium that drove the current action
Medium	The medium through which the task is accomplished
Tool	Prime Brokerage tools used to complete the activity
Client	The client that the action serves
Client Type	They type of contact that drove the action for a specific client
Transmission To	The client or department correspondence is sent
Action Category	The topic the action covers
Product	The product handled during the action
Elapsed Time	The amount of time spent on each activity

We constructed the DILO tool with enough flexibility to allow the inclusion of additional data points as the project progressed. This was necessary because it was not possible, with our limited background in the field, to understand entirely what client service representatives did until some studies were actually conducted. We designed the tool in Excel, as this was the most practical and effective medium to use within the allotted timeframe.

C	D	E	F	G	H	I	L	M	N
START TIME	Linked Ac	What Trigger	Previous Action	Who Trigger	Medium	Tool 1	Client	Client Type	Transmission to:
06/11/2007 08:00		E-mail		Team	E-mail	Outlook	Old Mutual	Manager	N/A
06/11/2007 08:06		Daily Task		Self	PB Tool	PQ	WMG	Manager	N/A
06/11/2007 08:08		Previous Actior	PQ	Manager	Phone	PQ	WMG	Manager	Manager
06/11/2007 08:08		Daily Task		Self	E-mail	Outlook	N/A	N/A	N/A
06/11/2007 08:13	SS 5	Previous Actior	Outlook	Operations	E-mail	Outlook	RMF	Investor	Operations
06/11/2007 08:13		E-mail		Operations	E-mail	Outlook	Tosca	Manager	Manager
06/11/2007 08:15		Daily Task		Self	E-mail	Outlook	N/A	N/A	N/A
06/11/2007 08:16	SS 8	Previous Actior	Outlook	Operations	E-mail	Outlook	CQS	Manager	Operations
06/11/2007 08:17		Daily Task		Self	E-mail	Outlook	N/A	N/A	N/A
06/11/2007 08:20		Previous Actior	Outlook	Manager	E-mail	Outlook	WMG	Manager	Manager
06/11/2007 08:21		Daily Task		Self	E-mail	Outlook	N/A	N/A	N/A
06/11/2007 08:22	SS 12	Previous Action		Operations	PB Tool	PQ	WMG	Investor	N/A

Figure 3-1: DILO Tool in Excel

To begin understanding the flow of work though the CSRs we tested the initial design of our tool by sitting with a CSR for one day. After this preliminary study, we refined the DILO tool by reconfiguring fields to facilitate its ease-of-use. Fields were added to capture better relationships between actions. These changes allowed us to capture a more complete depiction of the flow of information into and out of the CSRs' hands.

Subjects were selected with the assistance of the project sponsors. They represented the top thirteen revenue-generating clients as well as miscellaneous smaller clients. The study focused on the department's top thirteen clients in accordance with the Pareto principle, also known as the 80-20 rule. The Pareto principle is a "rule of thumb" which expects that "In business, dramatic improvements can often be achieved by identifying the 20% of customers, activities, products or processes that account for the 80% of contribution to profit and maximizing the attention applied to them."[12] The DILO and WILO studies investigated smaller clients as well to understand the balance of resources within the department. In total, we carried out twelve DILO studies.

3.2 Conducting the DILO Studies

On the day prior to conducting a DILO study, we met with the CSR to familiarize them with the data we would be collecting and the types of questions we would be asking. We requested that our names be added to their group and client e-mail lists so that we could analyze them the day following our DILO study. Additionally, we ascertained which clients they dealt with so that we

[12] http://en.wikipediaorg/wiki/Pareto_principle

could prepare and adapt the tool accordingly. During the DILO studies, we were able to meet with the CSR and ask questions regarding the specific data we needed to gather. The following day, the CSR forwarded all the e-mails they sent throughout the day of the study to us. We proceeded to filter and organize the data to ensure that it was consistent and complete after concluding each DILO study. Action categories were consolidated and ranked to capture the correct hierarchy of the tasks completed. Any missing data was cross-referenced with e-mails and the CSR if necessary.

3.3 E-mail

On the same day that a DILO study was conducted, any e-mails sent to the corresponding CSR's groups and aliases were rerouted to the team for reference and additional analysis. These e-mails ensured that data recorded during the DILO could be revisited and validated in the event of a discrepancy. They also served to determine how long (and how many separate emails) an issue takes to be resolved – from the moment in which it is received to the moment at which the final response is given.

3.4 Design of Week-in-the-Life-of (WILO) Study

The goals of the WILO studies were to validate the data collected through the DILO study and to gather additional records of how CSRs spent other time during their week that we were not able to observe. Since CSRs have a busy schedule, the WILO could not ask the representatives to record as much data as we had recorded. We developed a spreadsheet in the time diary method that allowed representatives to record their activities on an hourly basis. It is provided in Appendix D. We chose to concentrate on five dimensions, client, tool, medium, product, and trigger. Using the time diary method, the CSRs were instructed to record the five dimensions for each activity they undertook. They filled in the current time along with the relevant dimensions. We asked CSRs to record their activities for an additional three days following the DILO study. The WILO study included instructions for each category in which we needed data and CSRs were informed of the information we needed as we went through the DILO study on the first day of the week.

4 Results and Analysis

After completing the collection of data as described in the Methodology, we were able to observe the following results. We compiled our DILO data through the observation of twelve different representatives, amassing 127 hours, 17 minutes of details on the activities performed by these employees. Our WILO studies produced the equivalent of 21 workdays of activity records, but for reasons that will be detailed later, we found these to be less complete than the DILO studies themselves. Due to the extensive, multidimensional nature of the raw information collected, there are a considerable number of possible field combinations to present in the form of pivot tables and charts. However, we found that many of these were not relevant to the needs of the sponsor firm or to our project objectives. We have thus limited our analysis to a more general context, while selectively focusing on particular trends or noteworthy areas. A more complete presentation of data analysis is located in the appendices of the report, but for sake of practicality, is not exhaustive in nature. The following sections discuss our findings of the work distribution for the recorded subjects with the aid of figures and tables, as we analyze and highlight the importance of the results.

4.1 WILO Results

As mentioned earlier, after attempting four distinct approaches for conducting Week In The Life Of studies, we were not able to collect enough significant data from the CSRs using a self-collection method. Over the course of our project, we found that the Time Diary method described in the Methodology was the easiest for representatives to use. Unfortunately, our design was not fully compatible with the hectic work styles of the CSRs, and thus we were not able to capture the level of detail required to comprehensively compare the WILO back to the DILO. Most representatives found it difficult or impossible to deliver consistent and complete results to us, regardless of the format. As a result, WILO data analysis was limited, and served more to complement or corroborate DILO findings when possible. Significant instances of this will noted throughout the report. Consequently, we decided to focus our analysis on the DILO data that we were able to compile.

4.2 DILO Results: General Task Distribution

In the Methodology, we listed the various fields that we populated within our tables for each recorded activity. We can examine how long representatives spent using a particular medium, tool, client, or performing a specific type of activity. To get an idea of how the aggregate data for all representatives split up, we began by dividing the total time recorded into the corresponding Level 1 activity categories that we defined**.** We developed these general categories to differentiate the issues that CSRs addressed throughout their day. The pivot chart in Figure 4-1 shows the breakdown, by high-level category, of all recorded entries as percentages of the total observed time. It should be noted that this and any subsequent breakdowns might not be accurate

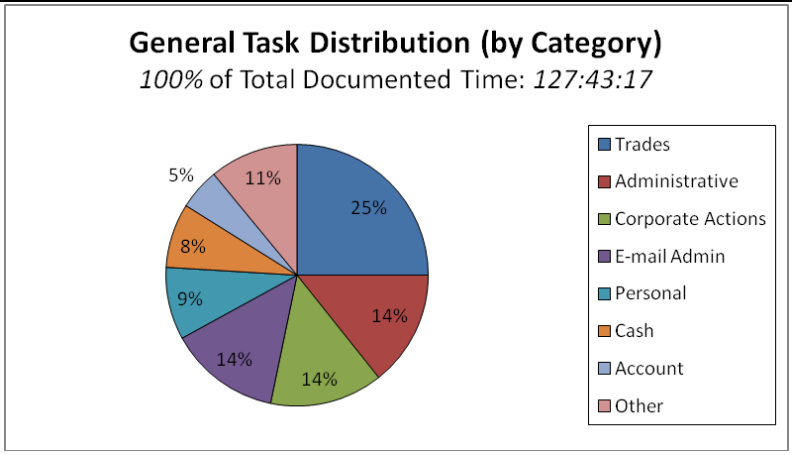


Figure 4-1: Aggregate Categories Breakdown

representations of all representatives or of any one particular client. The analysis done is based off only one day of observation for each person, whereas statistically valid conclusions require multiple instances to be compared. However, our analysis still serves as a reference for identifying significant outliers. It also serves to compare the findings with the department's predetermined expectations. Looking at this first pie chart, we are able to see, for example, that Trades (trade-related) activities, with 31 hours and 47 minutes, consumed the most time. Administrative and Corporate Actions tasks each accounted for around 18 hours of the total observed time, and E-mail Administration alone utilized about 17.5 hours of CSR time. Several things stand out from this first breakdown. Whereas Trades activities were expected to take up a significant portion of the total time, time spent E-mail Administration was surprisingly high. The

third largest consumer of CSR time, E-mail Administration is a non-value-adding activity that this first cut identifies for further analysis. Each of the most substantial categories resulting from this aggregate data breakdown requires further investigation, at a more granular level.

4.2.1 Aggregate Breakdown: Trades

The bulk of Morgan Stanley IPB's services to its clients revolve around trade-related transactions. We found that 31 hours were associated with processing trades. Trade breaks and fails were the largest component of this category as shown in Figure 4-2. Each representative spent an average of one hour and six minutes on trade breaks and fails. Additionally, trade

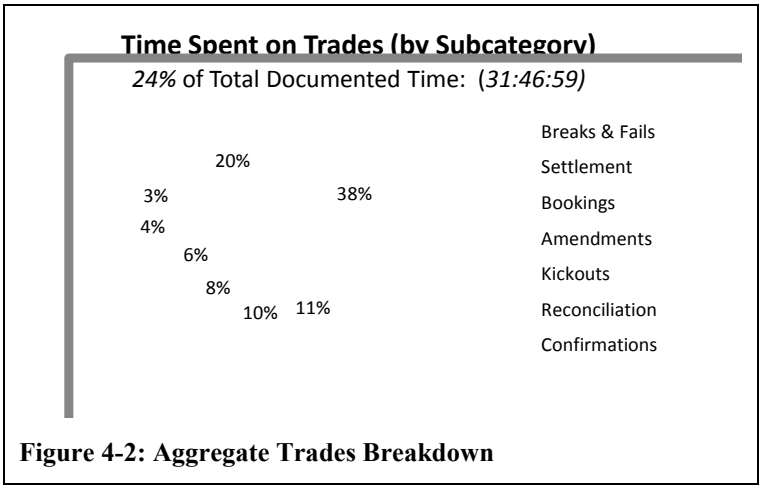


Figure 4-2: Aggregate Trades Breakdown

settlements, bookings, amendments, and kickouts were notable. To look at the underlying factors behind trade breaks and fails we looked at which clients were parts of this, as shown in Figure 4-3. It is clear that we observed the most time spent on trade breaks and fails with Bluecrest and Cheyne. We observed representatives that covered Cheyne for three days, so it is logical that they would comprise a large component of this category. In contrast, Bluecrest was observed for only two days. The Bluecrest data is skewed because at least three and half hours of the four hours were from one representative alone. This CSR was clearing month-end breaks that had to be completed that day. They spent time on 11 separate breaks and fails issues and spent close to two hours clearing off a break sheet for Bluecrest. We were able to compare this to one day of WILO data that we collected and we found he spent only one hour and 13 minutes on trade-related issues on a following day.

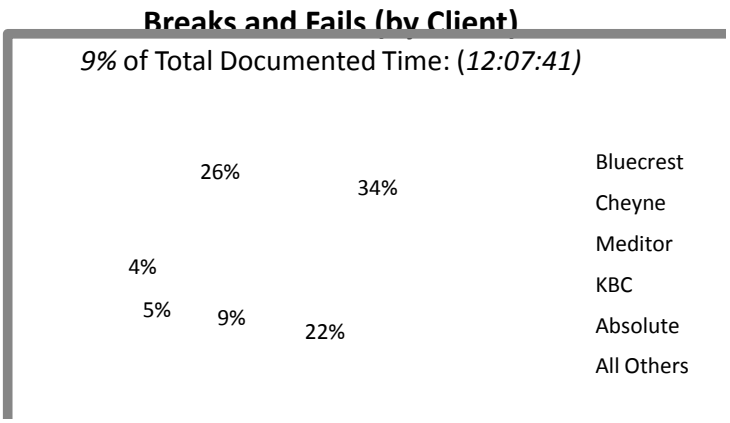


Figure 4-3: Aggregate Breaks and Fails Breakdown (by Client)

Other clients that had less trade breaks and fails to resolve included Meditor and Absolute. The time observed for Meditor was 40 minutes related to a Cash Equities break. Absolute had only 30 minutes of breaks and fails issues. We found that this time was less than the average daily time spent by representatives so we did not deem it significant enough to delve into further. Another approach we took to trade breaks and fails was to examine them by the product served. Cash equities took up 63% of this time that is equivalent to over seven hours of our total observed time. Bonds took less than 1.4% of our total recorded time (one hour and 47 minutes) and were not deemed significant.

Although swap trade breaks and fails represent slightly over one hour of our total observed time, we chose to investigate how different clients handled swap trades because swaps as a product were more prevalent when looking at our total study. There is an automated tool for swaps called SAS that is used by some clients in our study. We compared how this tool affected the number of queries relating to swap trades. Four of our observed clients use SAS, two of those being Aspect and Meditor. We asked the representatives that manage these clients how the implementation of SAS had affected their work. The representative covering Aspect noted that the number of queries was reduced. The representative managing Meditor observed that the time she spent on swap queries increased significantly. This was due to client and broker's trades not matching up which resulted in more queries from the client. We did not find this to be a significant time in our study but this could also be happening elsewhere in the department when processes are automated.

4.2.2 Aggregate Breakdown: Administrative

We recorded Administrative tasks when a representative performed an activity (other than personal or e-mail administration) that did not action a specific product. They are illustrated in Figure 4-4. This included any instances of client meetings, running reports, arranging coverage of clients within the team, and ensuring clients had access to the necessary systems. We were able to define some as tasks that were adding value to the client. Value-adding activities helped the client obtain additional data (Reports and Documentation) or was time spent generating more

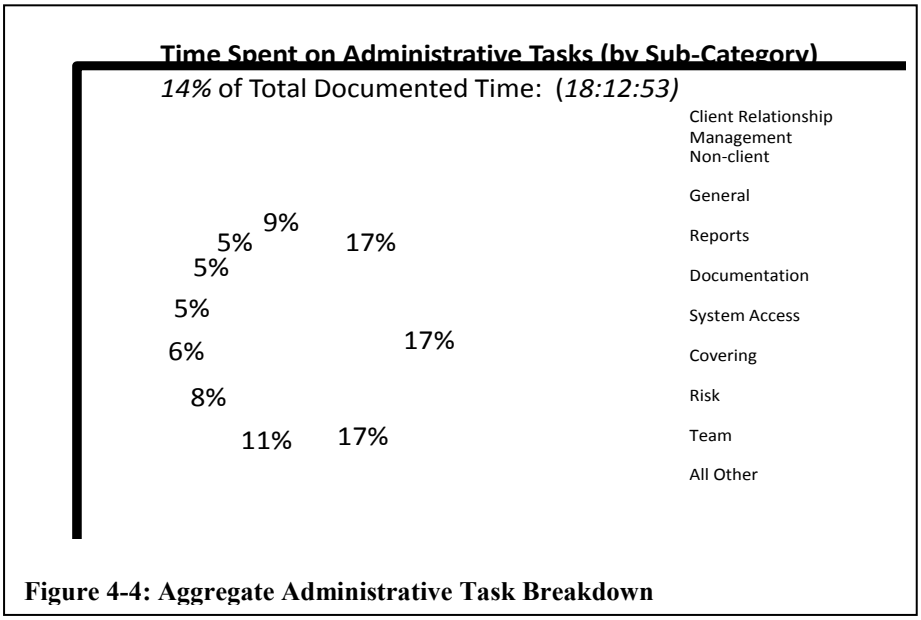


Figure 4-4: Aggregate Administrative Task Breakdown

business for the department while meeting with clients (client relationship management). Non-client activities mainly included IT issues. General tasks involved a specific client but no additional details were recorded. Some of this time is potentially value-adding. Swap trades came up again since swap reporting almost completely made up the two Reports and Documentation categories. Throughout our studies, we heard that swaps took up a lot of the representatives' time. Over all we found 8% of the total time was spent on swap queries. Finally, all others included instructions, ad-hoc meetings, and authorizations.

4.2.3 Aggregate Breakdown: Corporate Actions

In our follow up discussions with our sponsor we learned that the action of looking for notifications and auctioning them has already been automated through the Corporate Actions Notification System (CANS). Representatives use this to review upcoming deadlines, review

settlement reports, and done with breaks. We chose to concentrate further analysis on outliers identified by our sponsors and ourselves.

Corporate Actions accounted for 13% of the total time we recorded, or 18 hours. The breakdown in Figure 4-5 shows all the corporate actions activities recorded. The largest portion is general

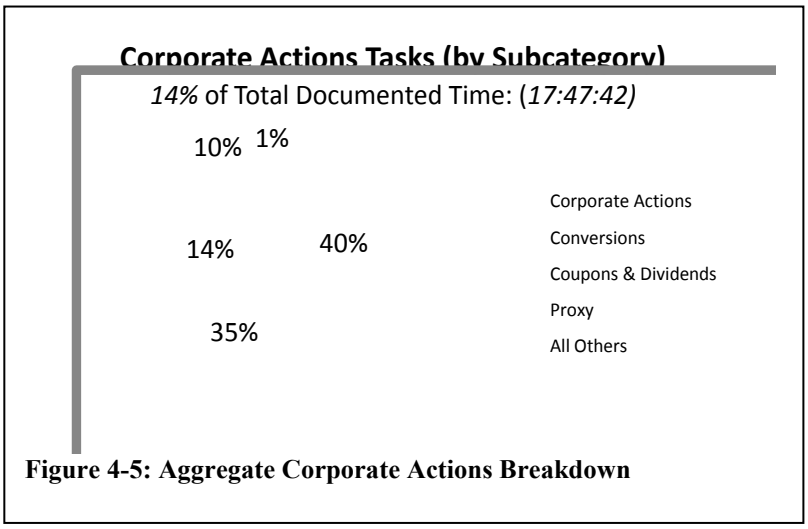


Figure 4-5: Aggregate Corporate Actions Breakdown

corporate actions, which includes looking for notifications and actioning election deadlines. The second largest section, over six hours, was spent on corporate action conversions.

We analyzed this category because it was a significant amount of time and we had observed some representatives. We have further divided conversions by client and representative. Figure 4-7 shows that the top three clients were Cheyne, GLG, and Ferox. We spoke with the CSRs for

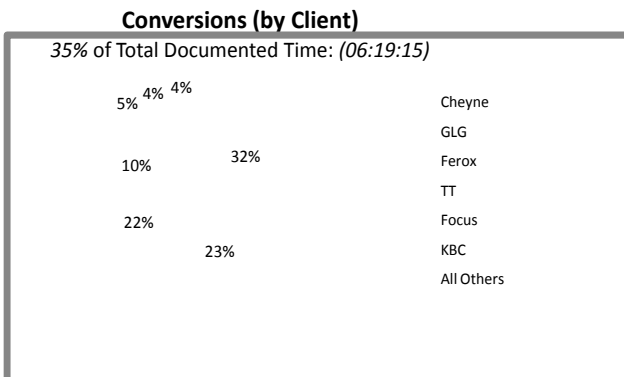


Figure 4-7: Aggregate Conversions Breakdown (by Client)

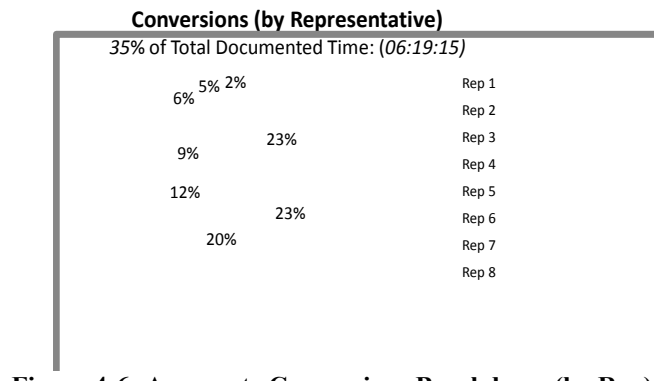


Figure 4-6: Aggregate Conversions Breakdown (by Rep)

each of these clients to understand how exactly they were spending their time. As shown in Figure 4-6 three representatives spent over one hour and 15 minutes of their day on corporate

actions with one more representatives spending 45 minutes. Representatives One and Three handled just one conversions while Representative Two was processing two, and finally Representative Four processed four conversions. This shows that there is a significant difference in how conversions can be processed. One can take an hour and 15 minutes of a day while another can take a calculated time of 10 to 15 minutes.

Another angle that the graphs cannot illustrate is how long the conversion process took over the course of the day. From the first instance of the CSR working on the conversion process to the final instance in the day it took each of the four representatives over seven hours. Representative One changed tasks over 40 distinct times to return her focus to that one conversion. We observed this occurring multiple times in our study with other processes representatives must navigate as well. This analysis displays an example of what can happen when an issue arises during the conversion process. We found this in three days of the 12 we observed which leads us to believe that it is a common occurrence throughout the department.

4.2.4 Aggregate Breakdown: E-mail Administration

One of the most striking trends observed within the aggregate breakdown of our data was the activity related to E-mail Administration. In total, E-mail Administration consisted of 17.5 hours of our total study. We documented this time when a representative ended their previous task and commenced looking through their e-mail inbox. Recording ended when they started responding to that e-mail or when into a PB application. This activity is considered to be almost completely non-value adding, as it includes mostly filing and deleting of non-relevant emails that populate a representative's inbox. Although it is considered to lack value in the department it is a necessary task at this point in times because the CSRs' work is driven by checking their e-mail. We found that it was a default activity especially at the end of the day when they might be waiting for just one response for a client or another internal department.

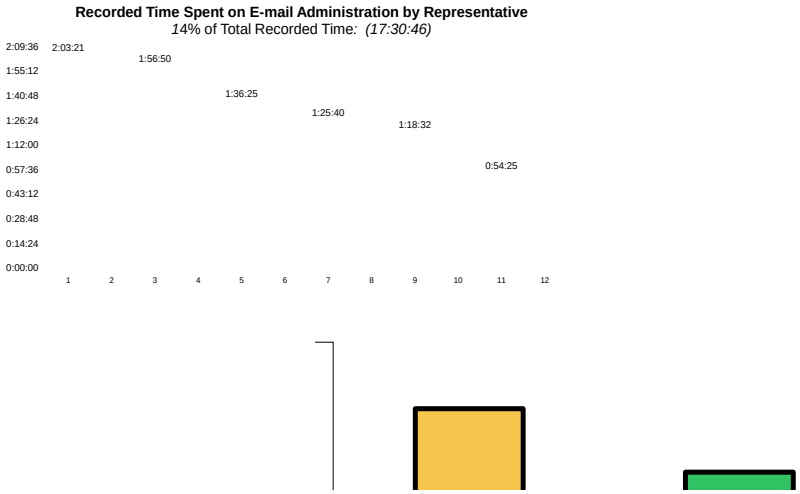


Figure 4-8: Aggregate E-mail Administration Breakdown

We examined how each representative handled these e-mails. In Figure 4-8 you can see that the most time spent in one day was just over two hours while the least time spent was 53 minutes. The average across all 12 representatives was one hour and 25 minutes. We attempted to find any trends relating to why some representatives spent more than twice as much time as others.

To start with we knew that two of the representatives that spent around two hours handling e-mails were two of the most experienced representatives we observed. This might lead to the belief that they should have the most efficient practices, but it must be noted that they are also in charge of arranging coverage for a client that requires multiple representatives. They might spend a lot more time making sure that all tasks are being taken care of for their client. Since we had collected all the e-mails the representatives had received from their clients on the day we observed we performed an analysis to determine if the number of e-mails received was correlated to the time spent on e-mail administration. We found that there was no correlation between the two. Furthermore we attempted to see if the time spent was correlated to the number of e-mails from all their clients, their largest client, the team mailing group, and from operations. Across all these scenarios, no correlation was found.

Finally we looked at how e-mails were managed when there was more than one representative covering a client. Many teams divided up the different tasks to separate mailing lists such as “cheyneswaps” or “cheynecash” to handle swaps and cash respectively. One CSR is responsible for handling all swap trades and another is in charge of cash. This facilitates the filing of e-mails

since the e-mails received from different mailing lists can be filed according to rules before the representative reads them. This also helps when a CSR is covering for a colleague. If they are only taking over their swap trades for the day they will only need to subscribe to that one mailing list.

Alternatively, we found other representatives had only one mailing list established for each client. These groups either had assigned roles similar to the example above or they just communicated in an ad-hoc fashion to action to e-mails from the client. When we compared these practices back to the times we had observed spent on e-mail administration we were not led towards any best practices for handling e-mails. Two of the representatives (covering Blue Crest) with the lowest times recorded just kept in constant communicate to handle the needs of their client. On the other hand two of the CSRs that spent the most time on e-mail had mailing lists that were broken down by task. Because of these incongruities we could not specify which teams had the best practices for reading and sorting e-mails

5 Conclusions and Recommendations

5.1 E-mail Administration

The task of reading and sorting e-mails is a significant amount of time during a representative's day. Because this averaged over 10% of the representatives' day, we recommend investing significant time and resources into a viable solution for reducing redundancies in e-mail administration. In a post-data-collection meeting with Jon Bartleson, the Assistant Director of Computing Services at WPI, we discussed possible angles by which to approach a solution to the e-mail issues that we noted. A variety of approaches can be taken to reduce the non-value-adding time spent in one's inbox. Morgan Stanley can take a hardware approach, a software approach, a best practices approach, or a combination of these.

As mentioned in the background section, large clients can have more than one representative covering them. As a result, each member of the team covering the client is responsible for actioning a specific type (possibly several) of query from that client. Everyone on that client's email list receives all the messages and queries from that client, and every person reads through each one to identify content relevant to their role. Ideally, the system would filter incoming messages and automatically file them by client and product (or issue), reducing the time that a representative spends manually sorting through the content of an e-mail. Within workgroups, the system would also indicate automatically when an e-mail has been actioned by a teammate, and file it accordingly. The current Access e-mail system allows users to set up rules that identify incoming mail and action it according to the user's directions. This would eliminate the need for every member of a team to sift through messages that contain queries directed at their teammates. However, in order for this to work, the clients must also follow a set of best practices in formatting their queries. Certain unique keywords need to be present for Access to "know" which e-mails pertain to whom, and this would require the client's cooperation. This step may not be easy to complete, as it is in Morgan Stanley's interest to reduce the inconveniences that their clients have to face in receiving their service. Server modifications could also be made to filter incoming e-mails specific to a particular team of representatives as an alternative to the software aspect.

As mentioned, an ideal system would automatically file the previously actioned e-mails. This could be accomplished in a variety of ways. In one option, all e-mails serving a specific client could be sent to a shared mailbox instead of a mailing list. The CSR would then only need to review and sort the e-mail relevant to their work, but not e-mails that were already taken care of by teammates. These actioned e-mails could be stored in sub-folders within the inbox so they could be easily accessed by representatives if need in the future. This would also facilitate the coverage of clients when a representative is missing. The covering representative would only need to gain access to one new inbox instead of possibly three or four mailing lists for each client.

Inclusion in excessive mailing lists may also be factor contributing to the volume of e-mails that a CSR receives. While we did not quantify and categorize all the emails that representatives did not action, we noted that a notable amount of time was spent sorting and deleting non-client-specific e-mails. Part of this traffic may be avoidable by simply establishing a department-wide mailing list relevance check, eliminating membership in redundant or unnecessary lists.

These suggestions are starting points, rather than comprehensive solutions to reduce the amount of time that representatives spend managing their inboxes. However, the significant amount of time spent on these non-value-adding tasks suggests that it is an issue that should be investigated with more attention.

5.2 Automation of Processes

An important theme we saw recur as we conducted our studies was that of automation. The IPB department has a Product Development team that specializes in maintaining the current and developing new applications to better suit the needs of the business and of its clients. The team is responsible for the rolling out and customization of the many tools that CSRs and clients use to facilitate the processing and tracking of transactions, along with access to account records. New tools are created when a substantial need is identified, usually to address an apparent inefficiency. This often happens in an effort to automate a process that normally requires high

levels of manual intervention. In order to minimize costs related to a particular process, Morgan Stanley needs to optimize the distribution of labor attributed to that process. Prime Brokerage is not a self-contained department within the office space where CSRs are located. They also receive support from Operations, which may be in another part of the same building, or in another country altogether. Because employees in these other supporting departments usually have lower hourly wages than a CSR, it becomes important to limit, when possible, the time a CSR spends addressing the manual portions of a process. In essence, tools such as Internal Cash Entry (ICE) are developed to either eliminate the manual aspects of processes altogether, or to divert the costs from the CSR side to the Operations side by lowering the time a CSR must spend on a particular type of issue.

Although not all processes are automatable, there is no procedure currently in place by which to measure a newly developed tool's level of effectiveness post-implementation. Through a series of post-study interviews with the representatives we observed and recorded, we discovered that there were instances when a new automation system actually caused the number of queries on that topic to go up for CSRs. In other words, the new "improvement" actually made the procedure more labor-intensive as a result. However, these issues are not always made known, and the new implementation is simply assumed effective. A standardized set of pre and post-implementation time studies, conducted after the expected learning period, would enable Morgan Stanley to gauge the true effectiveness of the tools in which they invest their resources. In doing so, the department will be able to better understand which aspects of the process are actually causing resources to be consumed, and will enable Product Development to focus their efforts in the future. Ideally, fewer mistakes would be made in the development stage, which, as a result, will save money in the future.

5.3 Improving Future Time Studies

In order to provide more detailed data in subsequent studies we have outlined a number of recommendations that would help in this effort. Firstly, an automated tool would allow the team collecting the data to concentrate less on how they collect and what they are observing. The method we used was labor intensive and had no quality checks built into it. A future tool would

reduce the amount of effort needed and have constraints applied to each dimension to ensure the quality of the data collected. While designing the data collection device our tool can be used as a model since we were able to capture all the relevant dimensions that were required for analysis of the tasks completed by CSRs.

Additionally, we have found faults in how we were instructed to collect data about multiple clients. In many instances, we were not able to compare clients directly. This happened in cases when we spent multiple days on one client such as Cheyne. When we surveyed Cheyne we got a complete depiction of everything the three CSRs do to serve Cheyne, but we were not able to compare this data to any other clients since we did survey any other client in as much detail. In addition, when we observed only one CSR from a multiple representative client we were not able to compare these CSRs because each CSR performs different functions for their client. For example, the representative for Marshall Wace was primarily responsible for swaps while the CSR for Lansdowne was chiefly responsible for corporate actions. These responsibilities cannot be directly compared between the two. In the future DILO studies should observe all representatives that serve a client. This would allow for direct comparison between the clients. Also, since we found that most self-recording methods did not result in detailed enough data to compare to our DILO studies, we recommend that several DILOs be conducted for each representative. Multiple DILO studies for each representative will give a more accurate depiction of their average day, and would produce a uniform set of data to analyze.

Finally, special attention should be paid to all details of e-mail processing that occurs within a representative's day. An automated tool would allow the individual conducting the study to capture the volume and description of all e-mails that a representative simply filters throughout the day. This data would provide further insight on the measures that can be taken to reduce the quantity of e-mail that a representative must spend time on to filter manually. The DILO process we developed can serve to provide these and other detail about the processes a Client Service Representative conducts throughout a workday.

5.4 Conclusion

This series of DILO studies was able to give the IPB department a detailed depiction of how work is done by its customer service representatives. We were able to collect and present the data on multiple levels to assist them in their goal of improving processes for these representatives. This data brought to light much inefficiency within the department including how representatives handle their e-mails and the varying effects of automating processes. Improved time study procedures would allow for further investigation into these problems. The number of issues presented here requires more focused investigation to fully understand how commonplace they are and the proper techniques to eliminate them. This project established a foundation for the IPB department from which to further improve upon the excellent customer service they provide to their clients.

Appendix A: Description of DILO Tool

The DILO tool was constructed using Microsoft Excel. We chose this program due to both team members' familiarity with its use, as well as to maintain the flexibility of the tool through new scenarios we encountered during our studies. As opposed to restricting the design of our tool, we chose to develop a collection of best practices to use in conjunction with the DILO tool. These practices are outlined below in order for the reader to understand and potentially use our tool.

Each field served to provide us with a data point specific to each action a CSR performed.

Action ID: This served as a unique identifier for each action a CSR took. The Action ID was useful when recording how actions were related to each other throughout the day.

Start Time: An excel macro was used to record the current time when a CSR switched from their previous activity to begin a new one. By calculating the difference between recorded times, we were able to determine the elapsed time of each action.

Linked Action: This field was populated in order to track any chain of events related to the same issue over the course of the study day. The Action ID of the originating action was listed in this field for that action and any subsequent actions that were directly related to the same issue.

Trigger Who: The Trigger Who details the party that caused the CSR to take on the current action. Entries in the field include Self, Team, Operations, Internal, Manager, Broker, Investor, and Administrator.

Trigger What: This trigger field documents the action or media that drove the current action. Possible values for this field include Daily Task, E-mail, Phone, Instant Messenger, Face-to-Face, and Previous Activity.

Medium: This served to record the method by which the action was accomplished. Entries in this field include E-mail, Phone, Instant Messenger, Face-to-Face, PB Tool, and Other (for personal time).

Tool: The Prime Brokerage tools that the CSR utilized to accomplish any tasks were recorded.

Client: The Client field was used to take note of which client the current action was directly addressing. If no client was serviced by the action, N/A was recorded. If all of the CSR's clients were being serviced (i.e. in a daily report check), the CSR's name was noted.

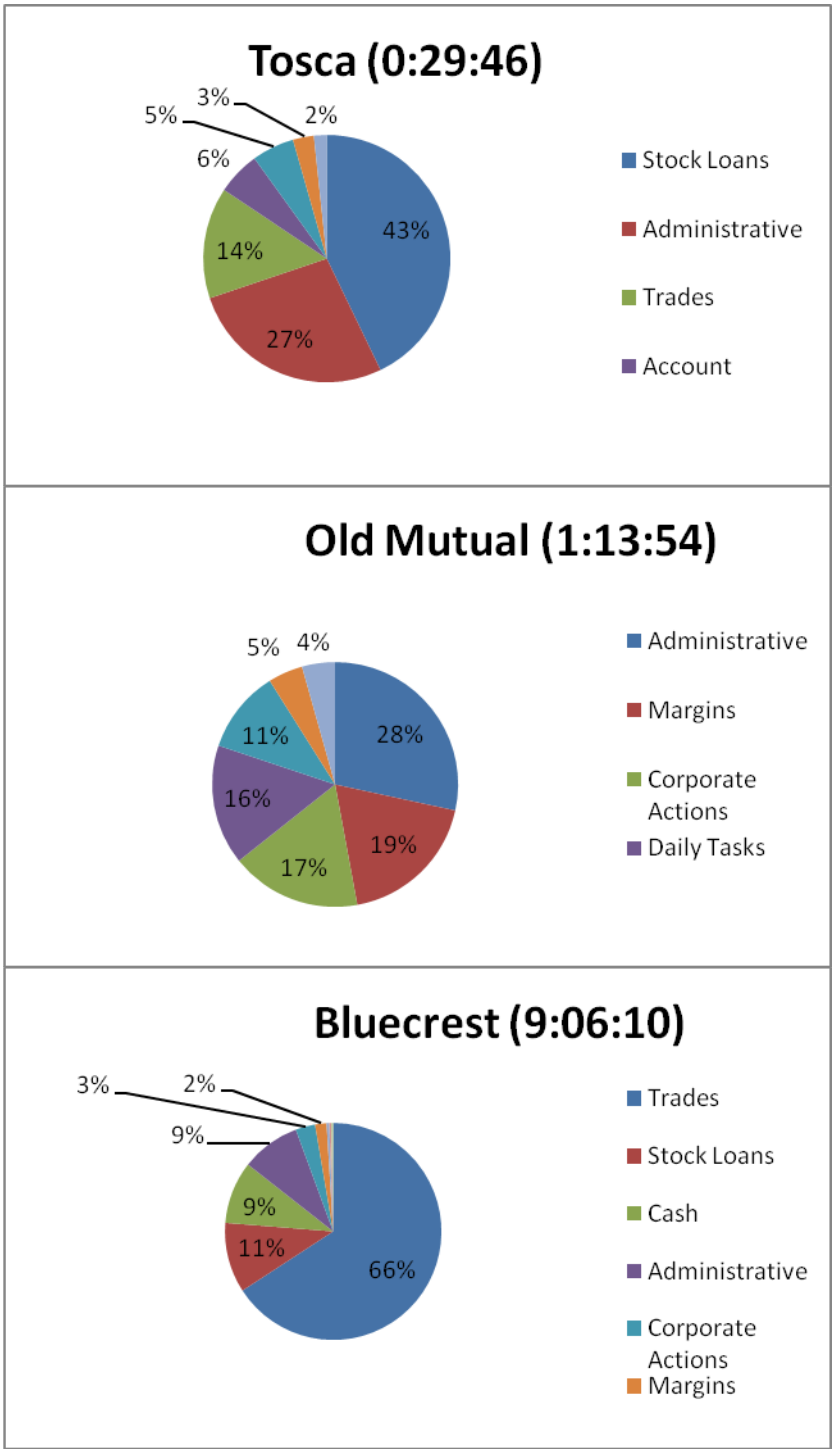
Client Type: Recorded to capture the different contacts that a CSR communicates with regarding a specific client. Aside from the team that manages the Client's accounts, the CSR also communicates with the Client's Investors, Brokers, and Administrators.

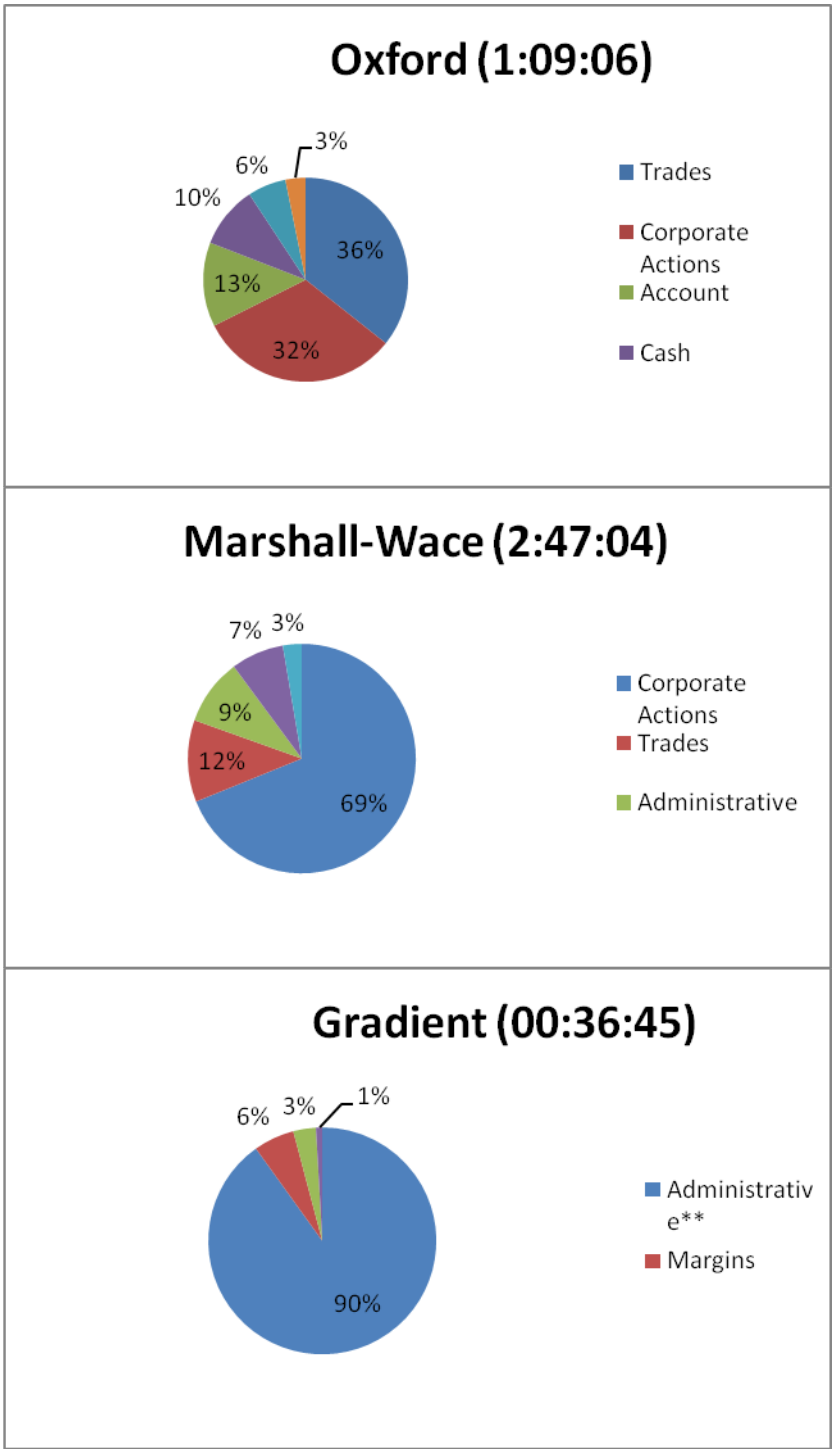
Transmission To: This field takes note of which Client or group the CSR calls, writes to, or has a conversation with. It is used only when the CSR makes a phone call, sends an e-mail, or initiates a face-to-face interaction with someone (meeting or conversation). This tracks the other half of the action that the Trigger Who and Trigger What fields begin.

Category: A hierarchical list of the tasks CSRs complete was developed to capture the variety of activities they complete. This encompassed everything from their Personal time, handling Breaks and Fails, and ensuring that Trades were settled properly. These were developed and refined after each DILO study in order to capture all the actions CSRs carry out.

Product: This field documents the variety of products that clients are using to carry out their daily business

Appendix B: Top Twelve Client Breakdown by Activity Category

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36%
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Trades
Corporate Actions
Account
Cash
Marshall-Wace (2:47:04)
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3%
9%
12%
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Trades
Administrative
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90%
Administrative**
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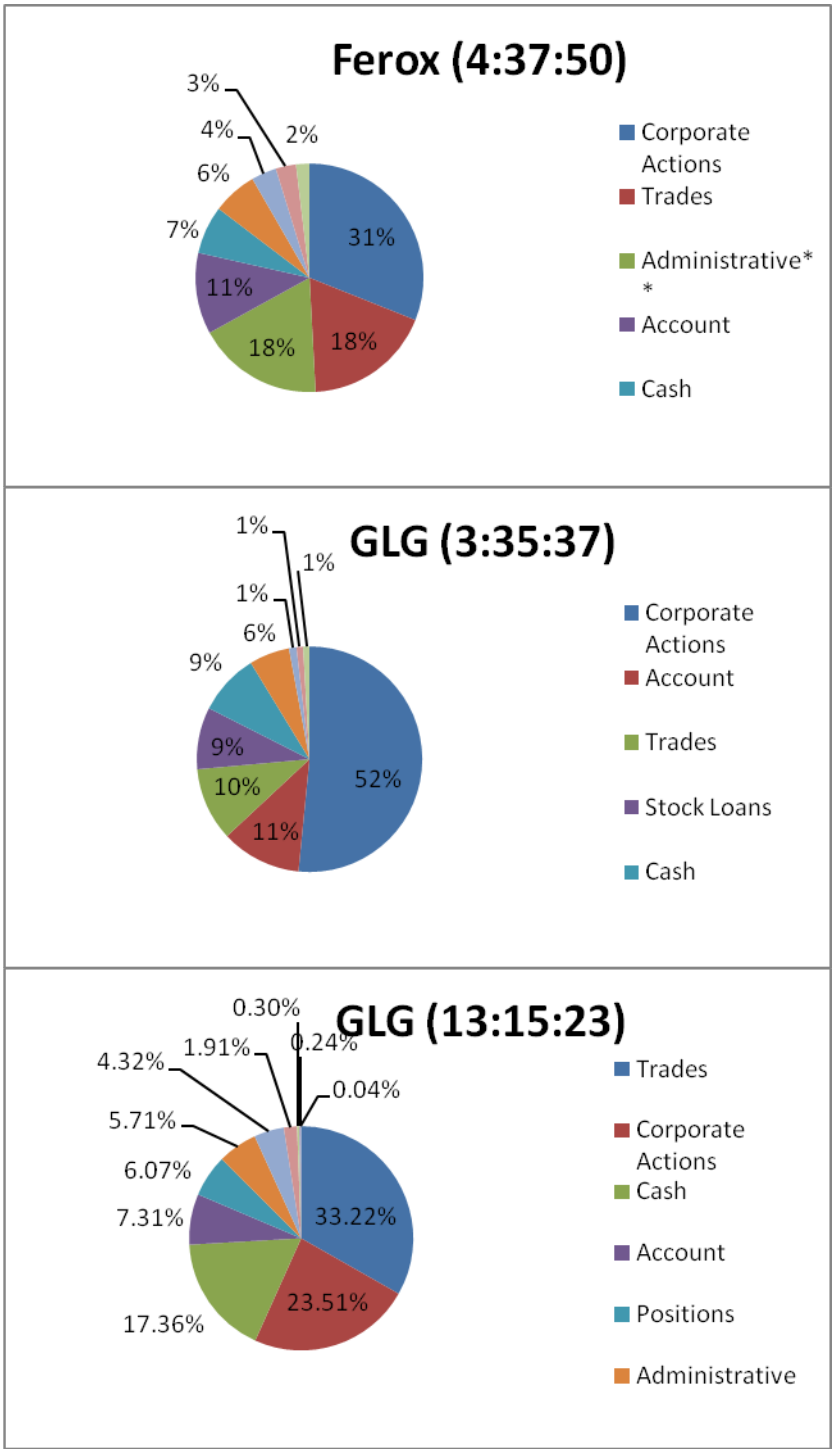
Ferox (4:37:50)
3%
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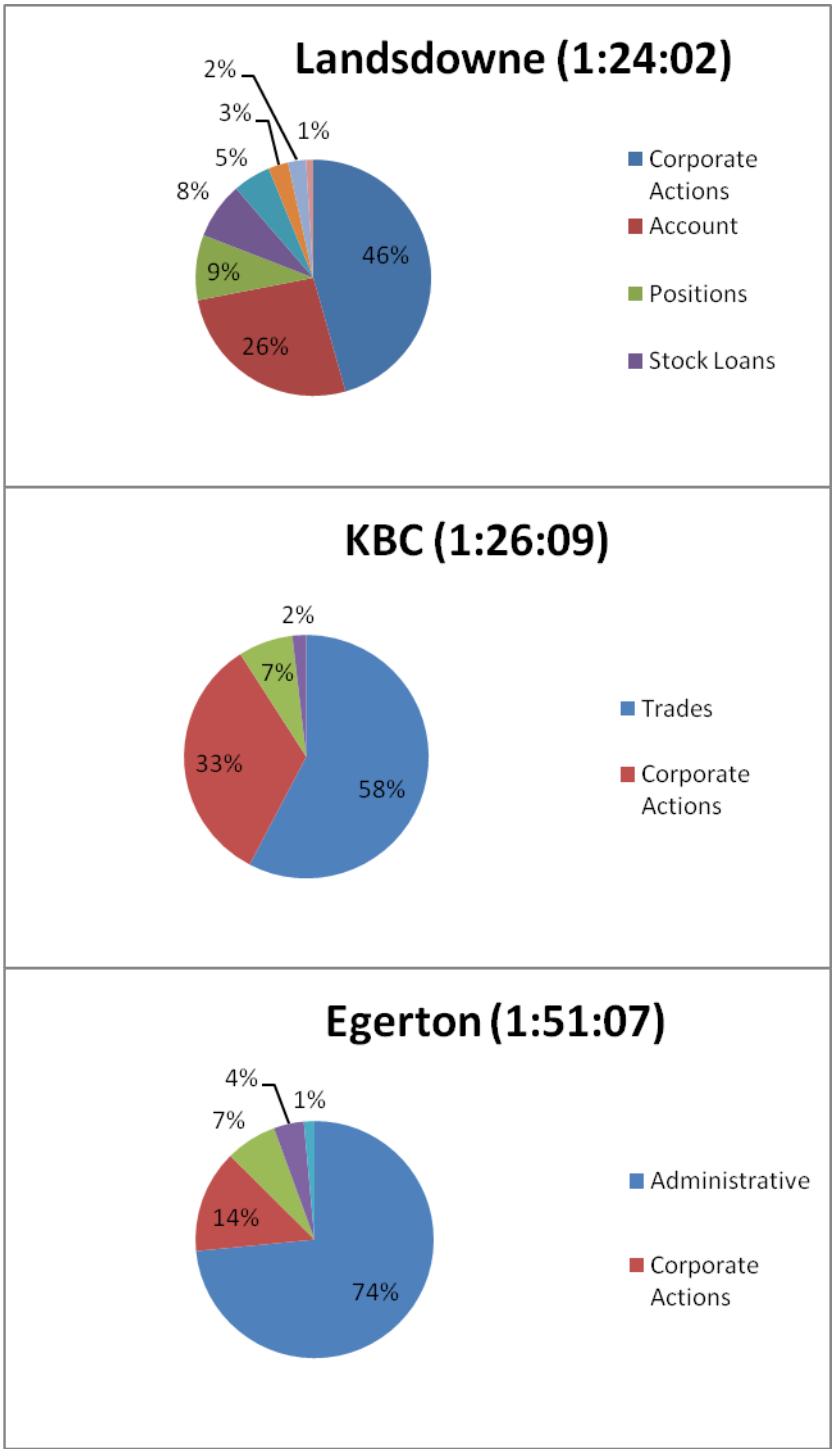
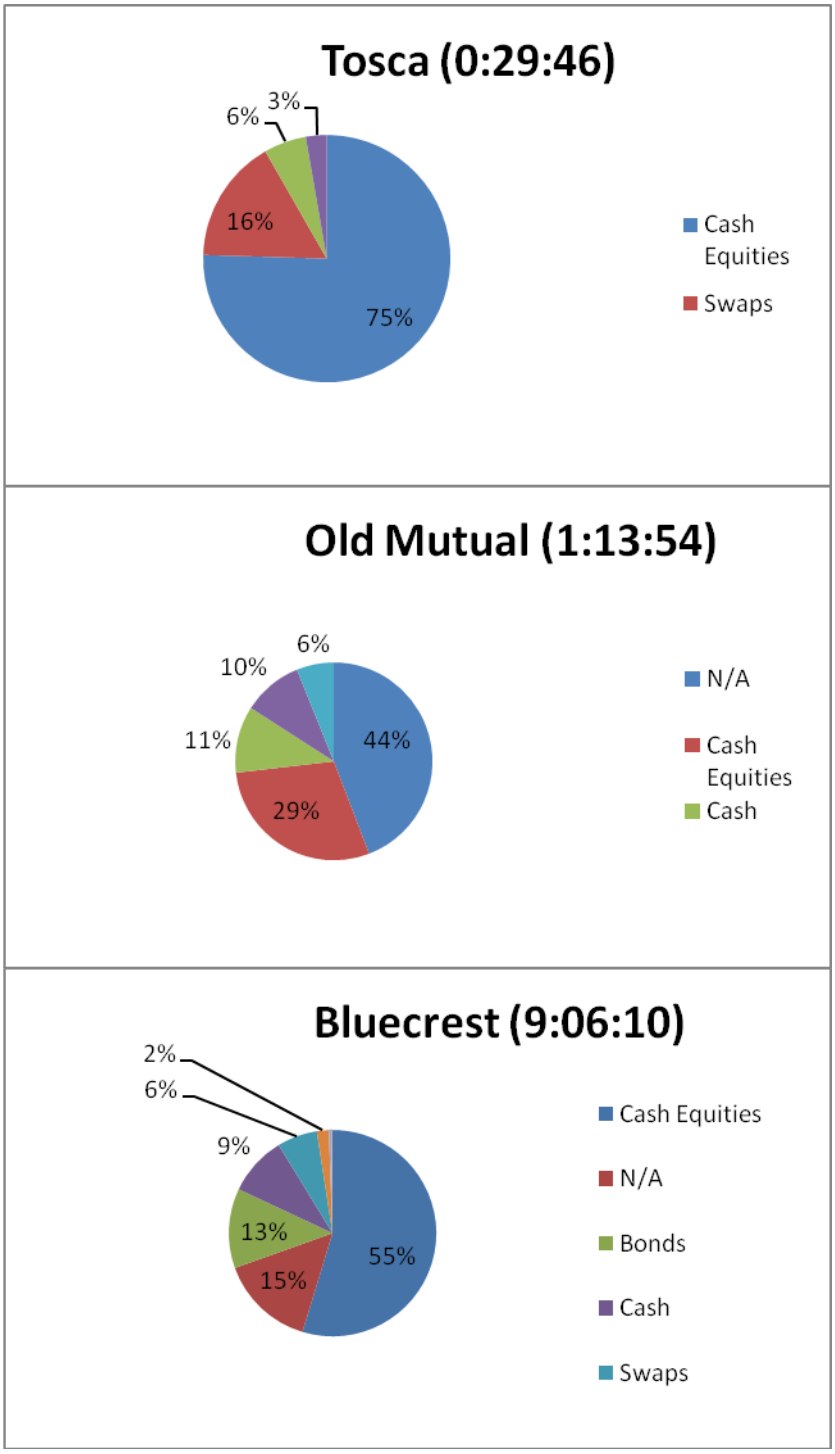
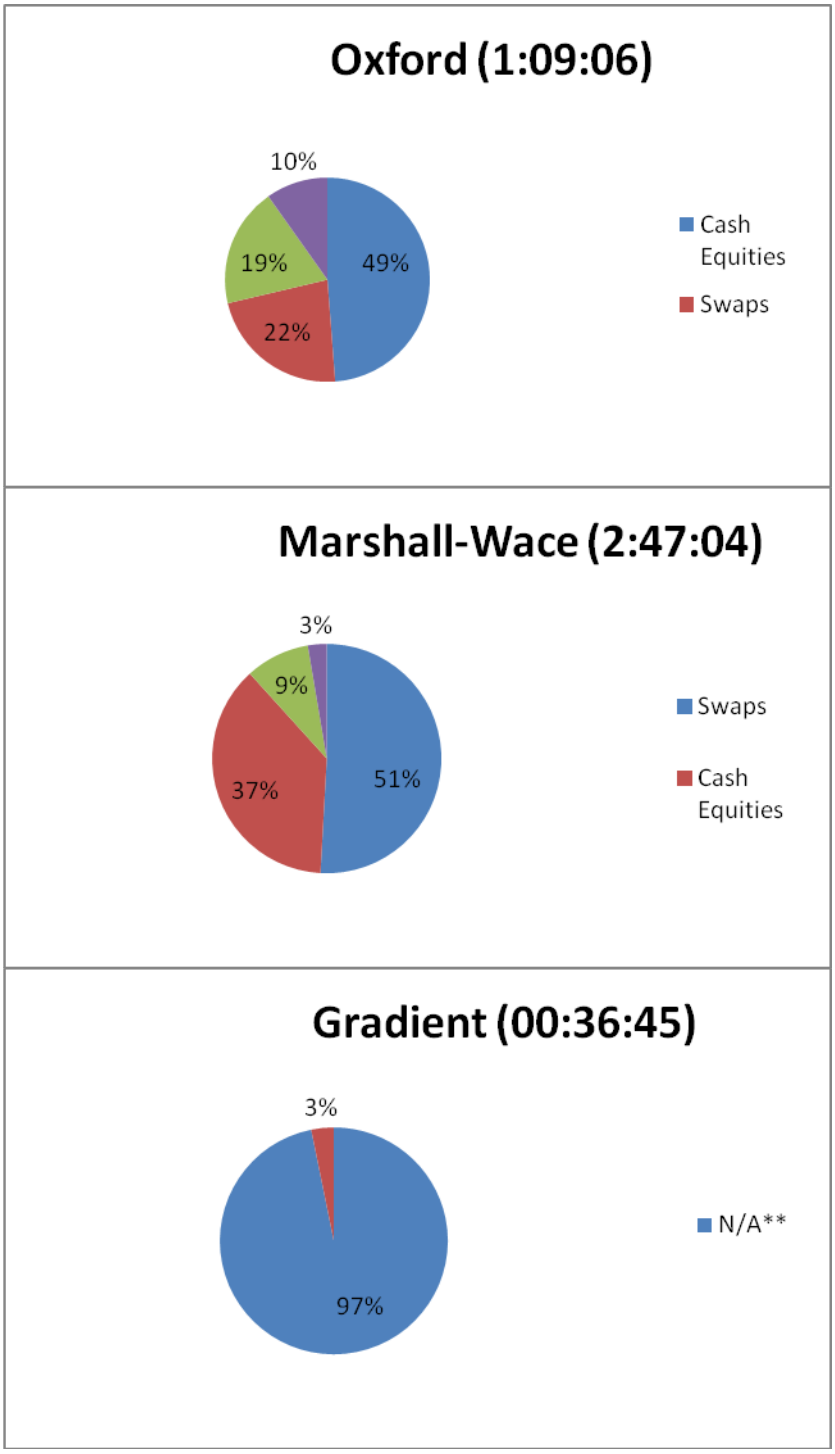
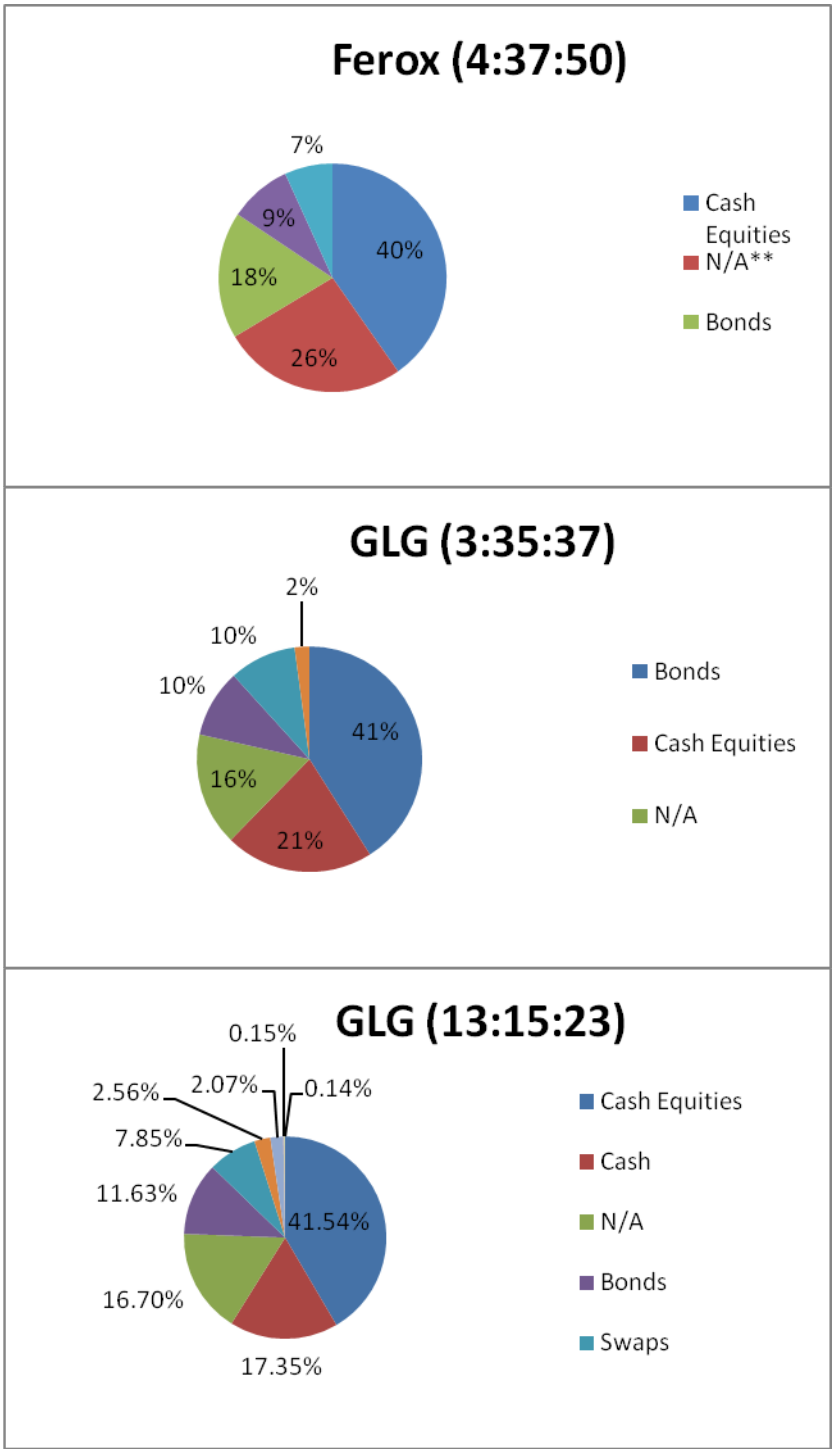
18%
Corporate Actions
Trades
Administrative**
Account
Cash
GLG (3:35:37)
1%
1%
1%
6%
9%
9%
10%
11%
52%
Corporate Actions
Account
Trades
Stock Loans
Cash
GLG (13:15:23)
0.30%
1.91%
0.24%
4.32%
0.04%
5.71%
6.07%
7.31%
33.22%
23.51%
17.36%
Trades
Corporate Actions
Cash
Account
Positions
Administrative

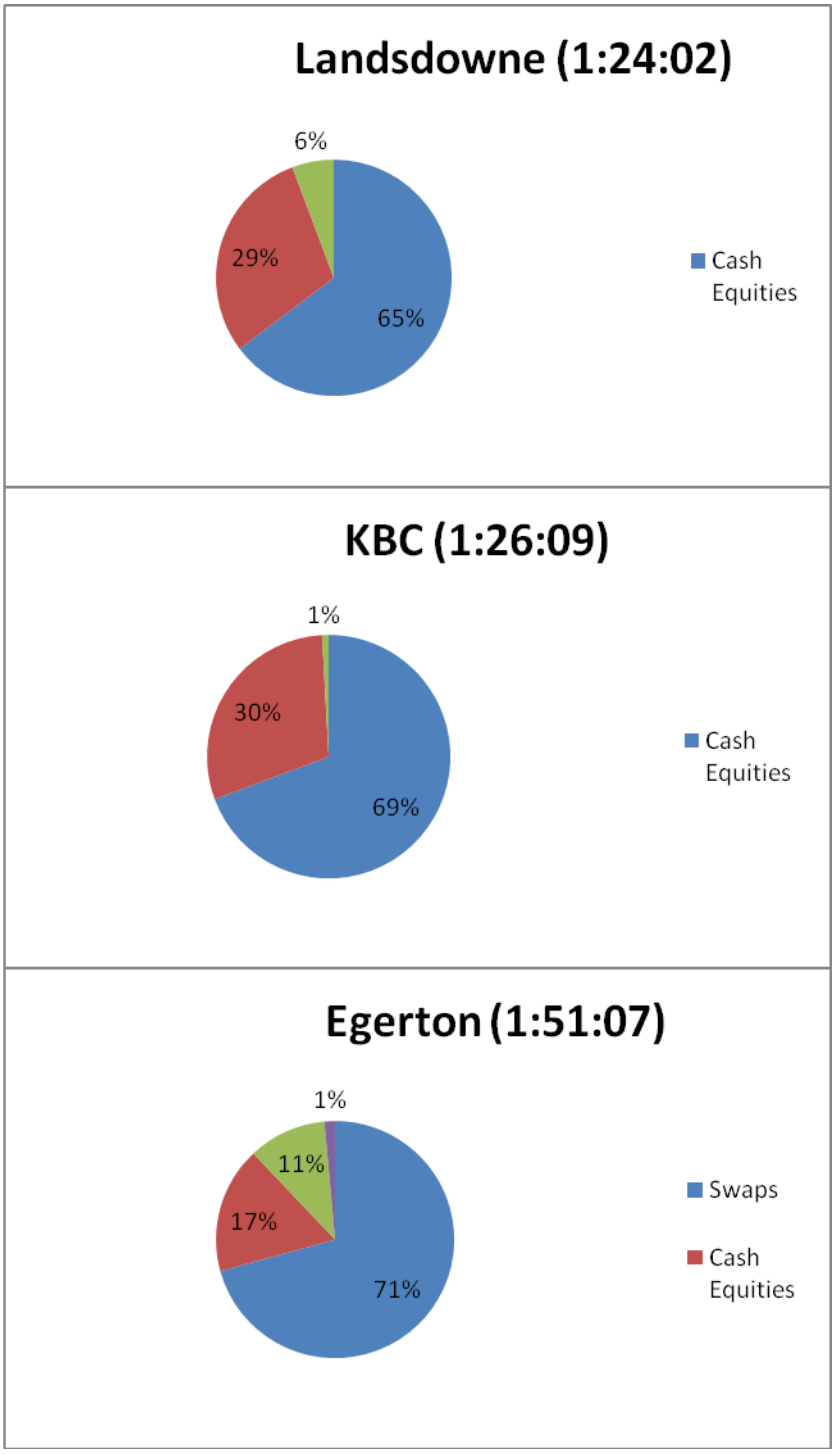

Landsdowne (1:24:02)
2%
3%
1%
5%
8%
46%
9%
26%
Corporate Actions
Account
Positions
Stock Loans
KBC (1:26:09)
2%
7%
33%
58%
Trades
Corporate Actions
Egerton (1:51:07)
4%
1%
7%
14%
74%
Administrative
Corporate Actions

Appendix C: Top Twelve Client Breakdown by Product




Oxford (1:09:06)
10%
19%
49%
22%
Cash Equities
Swaps
Marshall-Wace (2:47:04)
3%
9%
51%
37%
Swaps
Cash Equities
Gradient (00:36:45)
3%
97%
N/A**


Ferox (4:37:50)
7%
9%
40%
18%
26%
Cash Equities
N/A**
Bonds
GLG (3:35:37)
2%
10%
10%
41%
16%
21%
Bonds
Cash Equities
N/A
GLG (13:15:23)
0.15%
2.56%
2.07%
0.14%
7.85%
11.63%
41.54%
16.70%
17.35%
Cash Equities
Cash
N/A
Bonds
Swaps


Landsdowne (1:24:02)
6%
29%
65%
Cash Equities
KBC (1:26:09)
1%
30%
69%
Cash Equities
Egerton (1:51:07)
1%
11%
17%
71%
Swaps
Cash Equities

Appendix D: WILO Template

Name: _____		Date:	_____
		Start Time:	_____
Please fill in according to the items outlined below:		End Time:	_____
Client	The client the action serves		
	Lansdowne, Gartmore, Ferox, Managed Accounts, All (for actions completed for all your clients, such as daily checks of N&R)		
Category	The topic the action/task covers		
	see attached list for commonly encountered categories		
Medium	The medium through which the task is accomplished		
	E-mail, Phone, Instant Messgr, Face-to-Face, PB Tool (N&R, Mainframe, PQ, etc)		
Product	The product addressed or handled during the activity		
	Cash Equity,Swaps, Futures & Options, FX		
Trigger	What drove you to start this activity		
	E-mail from team, phone call from client, daily check		

Time	**Description**