Structuring and Sustaining Excellence in Management Science at Merrill Lynch

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The Management Science Group at Merrill Lynch Private Client has had a huge monetary impact at Merrill Lynch and has influenced executive strategies, tactics, and policies. It has also been recognized internationally with several coveted professional awards. This paper examines the underlying structural aspects that led to such excellence and business impact. Behind these successes lies a thoughtful approach that is keenly focused on following a set of core values, viewing and treating people with respect, and practicing disciplined and structured processes. Of these, we value the people as the most important dimension; therefore, we give our analysts the time and freedom to self-actualize—to excel in their own way. We promote such excellence at the individual level and encourage it to spill over to the business side with huge business successes and impact. We show the “how-to”—how we can structure for excellence and sustain it.

Key words: excellence; organizational studies: leadership; professional: OR/MS implementation; self-actualization; Maslow’s hierarchy of needs.

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History and Mission of Our Group
Merrill Lynch established its Management Science Group in 1986. Initially, the group was in Merrill’s Operations, Systems, and Telecommunications unit; since 1990, it has been part of the US Private Client (USPC) unit. The group has ranged in size from 7 to 12 analysts.

Our group’s mission is to aid strategic decision making in complex business situations through quantitative modeling and analysis of clients’ characteristics and behavior, products and services, and the marketplace. Our broad charter allows us to support financial advisors (FAs), executives, and business unit heads in almost all of USPC’s core activities. Our analyses have spanned a wide range of services. These include modeling clients’ investment risk and performance, optimizing asset allocation and portfolios, evaluating investment strategies, analyzing financial planning and business strategies, analyzing drivers of client behavior, deciphering and analyzing segments of FAs and clients (e.g., analyzing whether women hold less risky assets than men), developing marketing models, measuring client satisfaction, assessing credit and liquidity risk, and developing pricing and compensation structures.

Verified Business Impact and International Recognition
Our group’s focus on business impact has influenced strategies, tactics, and policies that have enabled gains of several hundred millions of dollars in its 20 years of existence at Merrill Lynch. We describe notable public successes below.

• We modeled the planned rollout of over 10,000 personal computers and 450 local area networks with hardware costs in the tens of millions of dollars. Our analysis set an upper limit on the capital required for the servers, thus giving executives the confidence to proceed with the implementation (Berman and Nigam 1992).

• In 1997, we helped USPC to win the international INFORMS prize for the incorporation, effective use, and impact of management science (MS) on the success of the firm, and the wide-ranging application of operations research (OR) and MS methodology to its decision making (Labe et al. 1999).
• We won the INFORMS Franz Edelman Award in 2001, thus demonstrating that our peers internationally recognized us as the best in the business. To win this prize, we modeled the impact of Internet-based trading and showed that revenue at risk to Merrill Lynch ranged from $200 million to $1 billion. We helped to develop a new integrated choice strategy that enabled Merrill Lynch to seize the marketplace initiative, change the financial services landscape, and mitigate its revenue risk. As of year-end 2000, client assets reached $83 billion in the new integrated choice product offering, net new assets to the firm totaled $22 billion, and incremental revenue reached $80 million (Altschuler et al. 2002).

• Our group won the international INFORMS Wagner Prize in 2004. We modeled the liquidity risk of credit lines, thus enabling our bank to free up approximately $4 billion of liquidity. During the 21 months since the bank implemented the model, the portfolio has expanded by 60 percent to over $13 billion, and continues to be used every month (Duffy et al. 2005). This work demonstrated strong analytical content and verifiable practice successes.

• We optimized deposits and assets across Merrill Lynch’s banking entities and helped develop robust measures of liquidity risk for commercial-paper back-up liquidity lines of credit. Our solution allowed Merrill Lynch to shift assets and liabilities such that, while providing the same level of client service, it generated an annual pretax potential of approximately $85 million—most of which has already been realized (Gamble et al. 2005). This work helped Merrill Lynch Treasury win the Treasury & Risk Management’s 2005 Alexander Hamilton Award—its overall excellence award.

Our Structured Framework for Excellence

Although this huge business impact and the international recognition generated speak for our excellence, they did not happen overnight or by chance. Behind our successes lies a very thoughtful approach coupled with persistence and attention to detail which is executed on a daily basis, and the “can-do” attitude of the group members.

The framework to our approach—our structure for excellence—evolved over time and consists of four components (Figure 1).

The heart of our approach is our focus on business results. In our business-oriented setting, we must deliver results. We accomplished this indirectly by being meticulously diligent about the other three components: (1) our core values—the values by which we live, (2) our perspectives on our analysts—the way we view and treat people, and (3) our processes—the practices we follow.

Numerous articles and books discuss aligning topics such as strategy, structure, processes, management, leadership, and values. Among the many references that we have pursued, two have hints of our structure, philosophy, and approach. Martin and Mutchler (2003) examine how a focus on process leads to attention to aligning activities, behaviors, and attitudes of people to make an overall plan succeed. Bartlett and Ghoshal (1994) emphasize that managers must focus on processes and develop people.

I believe that the proper combination and alignment of values, people, and processes deliver excellence and thus business results. Of the three, our primary focus is on our analysts; people are the most important component in any success. Therefore, in Figure 1, we represent them as the largest piece and show them as “the foundation.” The rest of this paper...
describes these three components, and details the day-
to-day approach that enabled our excellence and busi-
ness impact.

Our Core Values

We regard our core values, which we describe below,
as critical and nonnegotiable.

(1) Treat everyone with respect and dignity.
People remember far more about how you inter-
acted with them than they do about the technical
details and impact of your analyses. Therefore, we
made no exceptions for any reason; we tried to oper-
ate at the highest level of our humanness.

(2) Allow people time and flexibility to excel in the
nonwork dimensions of their lives.
Each person strives for a well-rounded, productive,
and happy life. A significant deficit in any aspect
(e.g., family, friends, spiritual, or volunteer life) affects
work life. Thus, we ensure that the workload is kept
reasonable and includes personal flexibility.

(3) Work in teams and learn to make meaningful
compromises.
Significant business impact results from solv-
ing problems that are complex, multifunctional, ill-
defined, poorly structured, and that span several
functional areas; no individual can solve such prob-
lems alone. Therefore, we stress working in teams,
leaving some of our egos behind, and spending time
in selling our ideas to others.

(4) Provide objectivity and quality as value-added
features.
OR/MS is “homeless” in that it does not have an
assigned place in the US corporate structure. There-
fore, we hallmark objectivity and quality as our value-
added features.

(5) Foster professional growth.
Because the half-life of our technical and business
knowledge base is three to five years, we allow 10–15
percent of our work time for professional growth to
better prepare our people for the future.

Our People (Our Perspectives on
Our Analysts)

Our perspectives on people parallel (not rigorously,
but directionally) Abraham Maslow’s hierarchy of
needs, which Maslow, based on studies of exem-
plary people, developed as a pyramid. The physi-
ological, safety, love, and belonging needs are at the
bottom, the esteem needs in the middle, and the self-
actualization needs at the very top. He contended
that everyone has an innate drive to fulfill his or
her potential and to self-actualize; however, it is only
when we have significantly satisfied our other four
needs that we are able concentrate on our needs of
creativity, fulfillment, problem solving, acceptance of
facts, lack of prejudice, and such that lead to self-

Maslow is quoted in several university texts and
leadership lectures. Among the many references that
I have found, I deem Conley (2007) as very practical
in that he shows how he applied a simplified Maslow
hierarchical paradigm for customers, employees, and
investors to his company’s business practices. We
have incorporated Maslow’s work holistically—as a
model for wholeness and well-being—but focused on
our analysts only.

In our group, we represent the hierarchy of skills
and needs of individuals also as a five-step pyramid,
with the more basic, mandatory skills and needs listed
at the bottom. Proceeding upward from the base, the
skills and needs are: (1) data and systems skills: abil-
ity to integrate and analyze vast amounts of data;
(2) MS and functional knowledge: knowledge of MS
tools and the nature of our company’s business and
industry; (3) ability to deal with people: ability to
communicate well, negotiate, listen, resolve conflicts,
smile, make eye contact, and carry on a conversation;
(4) positive attitude: “can-do” spirit and persistence;
and (5) self-actualization and responsible behavior:
self-drive to make a difference (in both business and
personal matters), strong sense of personal account-
ability, and respect for all.

In keeping with our core values, our acceptance of
Maslow’s hierarchy, and our belief that actual behav-
ior is more important than any other characteris-
tic, even a positive attitude, we put self-actualization
and responsible behavior at the highest level. I am
too much of a pragmatist and too much of a scienc-
tist to believe that “one can have it all.” Therefore,
I chose to focus on these few core values and on the
self-actualization needs of the analysts in our group.
Over time, I practiced them with greater courage of
my convictions and took personal accountability for the consequences. Failures provide us with opportunities to learn lessons, adapt, and reinvent for the next challenge. Thus, I also contributed to my own self-actualization.

Our Processes

Using our framework (Figure 1), we now show the processes we adopted—our actual behavior and the “how-to” part of our structure for excellence.

(1) Focus on business impact and implementation from the beginning.

We express our drive to make a difference by working on projects that promise high levels of business results and impact. When we receive a new project request, we work with our clients to get specific and quantitative answers to two questions: “Whose life will this change?” and “By how much?” The answers provide critical information. They help pinpoint the executive who will ultimately implement the solution and the potential beneficiaries; we then ensure that they are part of the project from its start. They help us to clarify how business practices, tactics, or strategies will change depending on various possible outcomes. We continue to probe until we determine a bottom-line value for the potential impact.

I recall a senior executive who called me into his office to advocate a particular pet project that addressed the sizing and effectiveness of a unit for which he was responsible. My preliminary investigations showed that the project involved too many qualitative factors. As we were brainstorming and trying to understand the problem quantitatively, I had an idea to help shift the focus to implementation. I asked him, “What actions will you take if we do the analysis and find that the results are the most positive?” I then sat back and listened. After a while, I asked him a second question, “And what actions will you take if we do the analysis and find that the results are the most negative?” Once again, I took notes as he talked. Finally, I interrupted, “I’m sorry, I can’t tell the difference!” That took him by surprise. However, as we discussed some of his points, he soon realized that the analysis would serve no business purpose. He was kind enough to give me credit for that insight and never mentioned that project again.

Being driven by business impact also means that we take a very broad view of what constitutes OR/MS. To solve a business problem, we use the most effective combination of modeling techniques available. We do not care if it involves optimization, simulation, statistics, or just a spreadsheet with carefully constructed formulae. We also make a distinction between modeling and models. To solve a business problem, rather than be seduced by mathematics, we emphasize modeling over models and solutions over toolsets. We do not hesitate to mix and match (e.g., use optimization techniques with simple heuristics and rule-based approaches) to accurately represent the reality of the business situation.

Choosing to have a high business impact also means that we seek problems that are complex or ill-structured. We have gradually built a reputation such that people say, “If the problem is very complex or has never been solved, then go talk to the management science group.” It is a great position to be in.

In summary, we involve senior executives and focus on impact right from the beginning; we implement the analysis, produce business results, and quantify the impact. The problems we encounter at this management level are exciting in their complexity and far-reaching impact.

(2) Focus on our own analysts.

It always, always boils down to the people! In addition to treating everyone with respect and dignity every day, we deliver on this by ensuring that our analysts’ workload remains reasonable. By putting self-actualization and responsible behavior at the highest level, we acknowledge that we are driven to make a difference, be it in business or personal dimensions (such as, family, friends, spiritual, and volunteer life). Accomplishments in nonwork areas will not happen if we spend our time on business and work projects only. To make time for all aspects of our lives, we work hard and keep our business workload sane.

This is not easy. Because of our track record of verified, high business impact, the demands for our analyses exceed our supply. Therefore, we work closely with our supervisory and executive management in selecting which projects to accept and which to defer. We have developed a hierarchy of project types to help us prioritize. Negotiating for and trying to maintain a reasonable business workload level is a
continuous process; however, we believe it is worth fighting for because we value the wholeness and overall “humanness” of people.

I helped to establish such work expectations by going home at 5:30 pm each day. It was my explicitly stated desire to have dinner with my family every evening. However, everyone knew that I had an additional reason: I also wanted to accomplish, enjoy, and excel at the other dimensions of my life. Equally important, I wanted my example to empower my analysts to take time to pursue their nonwork activities. This took courage; however, after a while even the executives realized that I was going to follow through on my values and so they accommodated me. I am convinced all this would not have been possible had we not had the business results and executive support that we had garnered through our projects. This is how we chose to cash in the “brownie points” we had accumulated based on our project work and business impact. It can be done and we do it.

As another example, let me cite two rules that we follow in handling personal vacations: (1) schedule your vacation when you want it, and (2) when on vacation, do not call us. Vacation time is personal time and should not be mixed with work considerations. In our group, two analysts work on each major project, and so one can substitute for the other. This greatly facilitates our ability to implement the first rule. However, implementing the second rule took some effort, especially with newly hired members. I recall that in the early 1990s, a newly hired analyst called me on the first day of his vacation to make sure that things were going well with his projects. Although his thought was commendable, it was against our rules. Our assistant took the call and was aghast to hear from him. She reminded him of our rule and then added, “Well, I’ll do you a favor and won’t tell Raj about this because he wouldn’t be happy to hear that you called.” Our newly hired analyst obviously did not understand and replied, “No, no, it’s not a problem. I have the time.” Our assistant admonished him once again and hung up on him! He got the message; a few years later, he told me that he truly appreciated that rule.

The approach of putting our people first does have costs that we must include in our decision making. Leaving the office at 5:30 pm identifies one, in the eyes of some, as nonexecutive-management material, and as someone who is not “loyal” to the company. Therefore, one who follows our rules might hit a career ceiling; however, that ceiling could be quite high. My personal philosophy—that I cannot have it all—permitted me to focus on the few things that I really cared about. Each person must make his or her own choice. I made mine and am willing to bear the costs. To this day, I feel strongly that this choice was a major factor in our group’s sense of contentment; it gave us energy and enthusiasm to seek business excellence on a daily basis.

(3) Employ a total (i.e., soup to nuts) approach.

We employ a total approach in our projects; our analysts participate in all phases, including initial client discussions. They develop written proposals (detailed later in our contracting process) for all new projects. We collect data from many sources, combine it, and ensure that data’s integrity because, for the complex problems that we tackle, no other group at Merrill Lynch is available to us to merge the data from multiple functional areas. In addition, because we regard data as the oxygen supply for our models and analyses, we want to control that data.

Our analysts are also involved in all the later phases, including modeling, model development, analysis, generating recommendations, explaining and selling recommendations to our clients and decision makers, and writing reports. Having analysts who are strong in both “hard” technical skills and “soft” people skills eases the implementation of this approach.

Because at least two analysts work together on the majority of our projects, they are exposed to a wide variety of problems; they also have someone with whom they can formally bounce ideas. This benefits the individuals involved and, because it also allows one analyst to cover for the other, gives us the organizational flexibility to accept new projects and accommodate personal vacations.

(4) Use a disciplined contracting process.

Over time, we have learned that asking many questions up front saves us and our clients much grief later. Determining the business impact by asking “Whose life will this change?” and “By how much?” is critical; however, it is only one part of our structured, disciplined contracting process.
In addition to determining the business impact, we take time to understand the context of the problem we are being asked to address. We then submit a written proposal outlining the business background, objective(s), business impact, approach, data requirements, methodology, resources needed (e.g., from our group, our client, and the beneficiaries), and a project timeline. This enables us to be explicit about our deliverables and schedules. We begin work only when we have received approval from our client. This contracting process explicitly states the expectations of both parties, develops and documents a common understanding of the issues, and fosters a partnership. Our group and our clients benefit. We feel that such a process is necessary if we desire verifiable business results and are dealing with complex problems that span several functional areas.

(5) Provide objective analyses.

We recognize that in the US corporate structure, OR/MS does not have an assigned place in the organization; we are “homeless.” Therefore, we stress objectivity and quality of work as our value-added features. Our training in OR/MS—a scientific discipline—makes our objectivity come naturally. We do our best to let the data speak for itself; we also ensure that all functional areas are represented to guarantee that the data are complete and reflect their different viewpoints. However, we realize that in many situations the same data will support (or at least not negate) different hypotheses; therefore, we are careful when we say that there is only one answer. While objectivity is ultimately subjective, we strive to be as objective as possible.

Objectivity has its problems; some clients might view us as not being on their side of the table. Sometimes, we must deliver bad news or unexpected results, question “accepted truths” and conventional wisdom, and be “loyal” to the data and analyses—not to an individual. However, by focusing on business results and having a constructive attitude, we have been able to overcome the hurdles of being objective.

We have built our reputation for objectivity one project at a time. Consequently, we have been called in to analyze some critical, high-impact situations just because a senior executive asked, “And what does Management Science have to say about this?” While we are constantly vigilant to the trust we have built up, we passionately embrace objectivity and quality by choice.

(6) Allow time for training and professional growth.

We distinguish between workload and project load and, as we mentioned earlier, strive hard to keep our workload reasonable on a daily basis. Our profession relies heavily on mathematics, statistics, computer science, and information systems technologies for implementation. Additionally, in USPC, we deal with the business of individual financial investments that involve several new products in the global marketplace. Recognizing this, I assert, as a practical guideline without proof, that the half-life of our knowledge base is three to five years. Thus, half of the knowledge we utilize in our work today will be useless in three to five years. While we can argue exact numbers, the more important issue is how we address this reality. Devoting 10–15 percent of our work time to training and professional growth is our solution.

We make a training budget available to allow each analyst to attend two conferences or seminars each year. We also give analysts complete freedom to select their professional growth opportunities within their training budget. They can choose active involvement in professional societies, writing papers, or pursuing industry and technical certifications. We permit them to seek their self-actualization as they choose. However, because we emphasize personal accountability, we require that each year they explain how their efforts benefitted them, and how they added value to the group and to Merrill Lynch.

We realize that emergencies arise occasionally. However, we believe that, whether they are business or personal, they should happen rarely; once or twice a year is our benchmark. A business emergency that requires work every weekend is not an emergency; it is a sign of grave mismanagement. We choose our projects carefully, dare to say “no” to some, and do a few things very well. Once we select a project, we meet business requirements in a timely and responsive manner.

(7) Use a rigorous interview process.

Finding analysts who have the self-drive to make a difference, personal accountability, respect for all, and strong “hard” technical and “soft” communications and people skills might seem impossible; having
a carefully thought-out, structured interview process helps immensely.

After sorting through resumes, we narrow the field of candidates by doing telephone interviews; if possible, a few analysts meet the selected candidates for lunch. We then invite the applicants who pass this screening for a full-day interview with our group. Each applicant must present a formal, project-related presentation and meet with each of our analysts for a 30 to 45-minute one-on-one interview. We formally rate each candidate using eight characteristics (not equally weighted) and seek written comments from the analysts. Finally, all our analysts evaluate the candidates in an open discussion.

Some of the values that we seek show up on a resume. Being an eagle scout, the captain of a school team, or a concert master, or having a PhD indicates an underlying drive to excel over a sustained period. In my opinion, the particular area in which a person chooses to excel is less important than a demonstrated, sustained drive to excel. However, some of the other traits that we value—self-drive to make a difference and excel, a sense of personal accountability, and respect for all—might be less obvious on a resume; thus, we use the extended interview process and involve all our analysts.

To determine such traits in an interview, my favorite request is: “Tell me a personal story.” Then I sit back and listen carefully. More than a dozen years ago, a candidate responded by talking about his passion for the oboe. He told me how he became interested in the oboe, made his own reeds, and took lessons; then, to improve his playing ability, he ordered a $7,000 custom-made oboe that had a seven-year waiting period. A couple of years before his oboe’s scheduled delivery date, he contacted the associate principal oboist at the New York Philharmonic Orchestra and signed up for lessons with her to start when he received the oboe. What drive and perseverance to excel at such a high level! No wonder we hired him; of course, that excellence permeates his work projects.

(8) Miscellaneous (but important) processes.

Our structured processes use some miscellaneous ones that I believe are important to mention.

Do technology transfer: “We love to give our models away.” This is our way of saying that after ensuring that our implementation is effective, we will train the user group to run the models and analyses. This enriches the user community and frees us to pursue new projects. Resting on our laurels is not part of our self-actualization; seeking greater business impact is.

Grant power of the technical veto: Any analyst in our group can challenge the technical merits of a modeling approach and stop development of a project. Integrity of data, modeling assumptions, interpretations of the model results, and such are all considered valid reasons. A technical veto leads to an open meeting where, by keeping personalities out of the discussions, we successfully find better solutions, or at least understand more deeply why we are doing what we are doing.

Do project planning with clients: Once or twice a year, we hold formal planning sessions with our major clients. To prepare for this, we work with the client organization and jointly assemble a list of potential projects and estimates of the business impact and resources required. At a formal meeting, we solicit the opinions of the leaders of the user groups and develop a prioritized project list. This helps both groups to plan projects, set expectations, and develop an excellent business relationship.

Seek formal client evaluation: Once a year, I meet one-on-one with each major client for a formal and frank evaluation of our group and individual group members. I solicit comments on all aspects of our analyses, not only on the quality and quantity, by asking open-ended questions. I share these comments with our group, and we use them as learning opportunities. I started this practice in 1991 soon after I was asked to head the group, which had just been reduced to half. Although it was painful at times, I started this evaluation process with each major client. At that time, it was a rare business practice. However, through this process, I have received comments and constructive insights that I would have never obtained otherwise. Nonetheless, it remains one of the most difficult parts of my job.

Promote brainstorming sessions: We encourage brainstorming sessions, which any analyst can schedule. These sessions open communications, foster camaraderie, and lead to better models. We end most of them with a formal team process check; each participant rates the session on factors that include being on-track, participation, listening, leadership,
and quality of discussions and decisions. The exact scores are less important than the ensuing open discussion that addresses how to correct the low scores. What one learns through such open discussions and process checks is amazing.

Summary: Values, People, and Processes
The critical driver that helps us to excel is allowing our analysts to self-actualize in their own way, while keeping our focus on business results. True to our values, we have structured our processes in a holistic manner to enable our analysts to be multifunctional, work on multiple projects, and handle complex problems with a passion, while using a quantitative, fact-based, objective approach. We work in close cooperation with our clients to frame the issues, and we allow time for training and personal growth. Our focus on the wholeness of our people is the key. I repeat: It always, always boils down to the people!

Conclusion
It is a source of great satisfaction to me that our Management Science Group succeeded in influencing strategies, tactics, and policies at Merrill Lynch, with verified gains of hundreds of millions of dollars. In addition, we were recognized internationally, not once but four times, for our business results and outstanding accomplishments—for all-around excellence.

Most importantly, over the years, my ability to help analysts within our group and myself in our personal, business, and professional self-actualization has given me great happiness and contentment. I had a hand in nurturing, enabling, and sustaining excellence. I was part of making a difference in our analysts’ lives. Although we had our trials and tribulations, I always passed my own ultimate test—I slept well and soundly each night.

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References


