LINKS Service Quality Management Simulation

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Introduction

In the LINKS Service Quality Management Simulation, competing firms market and deliver "support services" (e.g., computing/IT support, financial management, health care, repair, or maintenance services) to household (consumer) and major accounts (business) customers through a direct sales channel in multiple market regions. Your management team competes against other firms in the support services marketplace. Working with your management team, **your goal is to improve your firm's overall financial, operating, and market performance**.

The LINKS Service Quality Management Simulation engages participants in all aspects and challenges of service quality management:

- Human Resources Management (hiring/firing/retaining and deploying service personnel).
- Marketing Management (segmentation, market selection, targeting, and portfolio management).
- Service Operations Management (productivity, capacity management, and forecasting).

Research resources are available to LINKS firms, including service quality metrics, employee and customer satisfaction surveys, and competitive benchmarking studies.

LINKS firms are challenged to effectively integrate business processes to create value for customers and shareholders. LINKS highlights the interrelationships among marketing activities, organizational capabilities, and service operations (human resource management and technology), while enhancing and challenging participants' management, analysis, planning, and strategy skills. Your management team will also encounter challenges and opportunities arising in organizational and group settings.

The key to success in LINKS is a carefully developed long-run strategy with appropriate expertise being applied to sales forecasting, market monitoring, financial analysis of alternative strategies, planning, and marketing and operations decision making. A second major imperative is superior execution of strategy in a dynamic competitive environment. Large doses of common sense and managerial acumen will be needed throughout the LINKS exercise.

In addition to this manual, you may access support resources on the LINKS website:
http://www.LINKS-simulations.com

Why Use Simulation?

"I hear and I forget; I see and I remember; I do and I understand." – Confucius

Why use simulations in management education? Why not use traditional classroom lectures, perhaps combined with case studies? Adults learn best by doing. "Doing" involves taking responsibility for one's actions, receiving feedback, and having an opportunity to improve through time. In management education and training settings, management simulations foster learning in a non-threatening but competitive environment of the kind that real managers face every day.

Like a flight simulator, a management simulator allows more rapid time compression, quick feedback to the learner, and is a low-risk process (except to one's ego). A well-designed

management simulator can provide the student with a realistic education and training experience in the relative safety of the simulation's operating environment. And, perhaps more importantly, the lessons learned in a management simulation occur within hours or days, not the months, quarters, or years associated with real life.

Here are the classic reasons to favor management simulations in adult-learning environments. Compared to traditional lecture/case/discussion educational events, simulations:

- Reflect active rather than passive participation, enhancing learning motivation.
- Apply key management concepts, especially coordination and planning.
- Require analysis and decisions in the context of market-based feedback in the presence of thoughtful, vigilant competitors.
- Provide rapid feedback, encouraging participants to learn from their successes and failures within a relatively low-risk competitive dynamic environment.
- Provide learning variety through novel learning environments.

What Will You Learn?

"The ability to learn faster than competitors may be the only true sustainable competitive advantage." – Arie P. De Geus

The LINKS Service Quality Management Simulation learning objectives include:

- Developing and executing a strategy that creates value for customers and for shareholders.
- Matching demand and supply (capacity) in a competitive environment.
- Managing service personnel (hiring/firing, training, compensation, and deployment)
- Interpreting business performance metrics (e.g., employee job satisfaction and customer satisfaction survey data)
- Enhancing and encouraging fact-based analysis and decision making
- Experiencing competitive dynamics in an evolving marketplace.

Since the LINKS management simulation learning environment is built around teams, small group functioning and decision making skills are emphasized in the background throughout this simulation exercise. Since most workplaces include project teams, the management simulation learning environment provides hands-on experience in identifying key principles and practices associated with high-performing teams.

LINKS Overview

Within LINKS, there are two support services categories (market segments): Household (i.e., individual consumers and family units) and Major Accounts (i.e., businesses and governments). While sharing many elements in common from an operational perspective, these two market segments represent completely different end-users. **Household and Major Accounts support services categories in LINKS are separate vertical markets that do not overlap.**

Marketing activities articulate "promises" to potential customers of LINKS support services. Support services are delivered by customer service representatives (CSRs). Firms support their CSRs somewhat differently depending on their organizational capabilities (derived from how services are designed).

Each LINKS firm in your support services industry has two services: one service targeted at the Household market segment (service 1) and one service targeted at the Major Accounts market segment (service 2). LINKS uses “f-s” terminology to describe specific firms and their service offerings. For example, service 3-2 is firm 3’s second service (a Major Accounts support service).

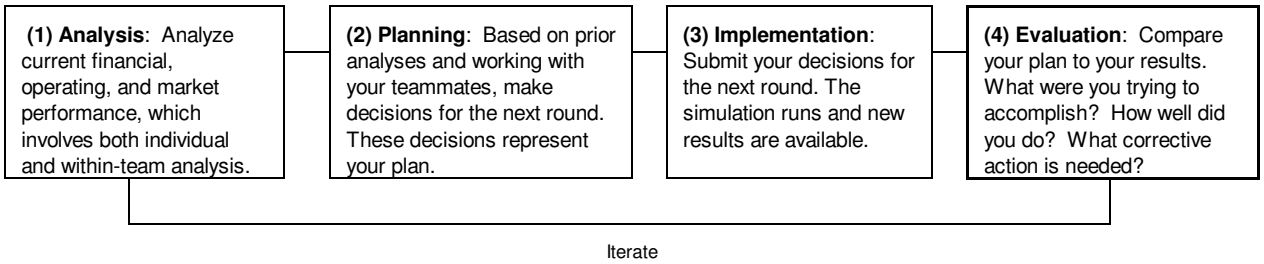
Each decision period in LINKS is one calendar quarter. Within LINKS, each calendar quarter in the year is assumed to have an equal number of calendar days. There is no known time-of-year seasonality in LINKS markets.

You assume control of your LINKS firm at the end of quarter 3. Thus, your first decisions will be for quarter 4. Although your firm has been operating for a number of years, detailed information is only available about the recent past.

All firms in your industry started quarter 1 identically. This is consistent with an industry that has evolved over time so that (ultimately) all competitors now emulate each other. Decisions in quarters 1-3 were constant throughout these three quarters. However, due to the normal random forces in the various markets in which your firm operates (e.g., employee attrition), the financial and market positions of the firms in your industry will vary somewhat at the end of quarter 3.

In each decision quarter, your management team accesses the previous quarter's results, analyzes and evaluates recent performance, and plans and implements on-going marketing programs and operations capabilities. The LINKS analysis-planning-implementation-evaluation cycle is shown in Exhibit 1. This cycle repeats throughout your LINKS exercise enabling your team to learn from experience.

Exhibit 1: LINKS Analysis-Planning-Implementation-Evaluation Cycle



The LINKS currency unit is the LCU, the "LINKS Currency Unit." The LCU is abbreviated "$" and pronounced Ldollar ("el-dollar"). The "LINKS Currency Unit" (LCU) is a Euro-like multi-country currency.

Market Demand Patterns

Customer demand in LINKS is measured in terms of (one-time) service usage. Firms measure demand by counting transactions or "units" of service. Long-term contracts for support services do not exist in the LINKS support services industry. Customers may have single or multiple transactions with a given service firm within a given quarter.

Demand for each support service is influenced by its marketing program. For example, lower prices and more marketing spending stimulate higher demand. There is no known time-of-year seasonality within LINKS support services. As with all goods or services, some customers are relatively heavy users of support services while others would never purchase support services even with a price of $0. Customers may use your firm's support services, purchase from a competitor, rely on internal (i.e., in-house or do-it-yourself) support service, or do without.

Customer demand for support services in the Household and Major Accounts market segments may respond somewhat differently to the marketing variables at your firm's disposal. Thus, what might work well for one service in one geographic market might not work well for other services in other geographic markets. For example, customers may be quite sensitive to price for a service offered in a particular market, while they are somewhat insensitive to prices in other markets

LINKS Decisions

You assume control of your LINKS firm at the end of Quarter #3. Your first decisions are for Quarter #4. Your predecessor management team left you no historical records other than the Quarter #1-#3 financial and operating reports.

At the beginning of LINKS, teams take over management responsibilities of existing firms with on-going marketing, human resource, and operations decisions in place. Whether these current decisions are good, bad, or so-so is unknown. However, your firm is currently profitable, so things can't be completely awful. You will have to live with uncertainty when LINKS begins. You are expected to learn quickly. The strong current financial and market position of your firm means that continuous negative profitability would be viewed as an obvious sign of poor management.

In each quarter, LINKS firms make a range of marketing, human resource, and operations decisions that interact with each other, requiring close coordination between marketing programs and operations capabilities. A number of research studies are available in LINKS. Firms may choose to order these research studies in any quarter, incurring the associated research study costs described later in the LINKS participant's manual.

LINKS has a continuous decision framework built into it. All decisions from the previous quarter carry over intact into the present quarter, unless a firm changes a decision. All LINKS decisions are standing orders and they continue to be in force until explicitly changed.

You'll submit your decision input changes and research study orders no later than the designated input submission deadlines specified by your LINKS instructor. You'll access the LINKS Simulation Database (via the LINKS website, http://www.LINKS-simulations.com) and use your firm's LINKS passcode to access your LINKS division's data/decisions, retrieve past financial reports, and make decision input changes for each quarter in your LINKS event.

Decisions

Your firm has two support services in two categories (segments). Service 1 is provided to Households and service 2 is provided to Major Accounts (i.e., business and government customers).

Service Design and CSR Productivity

In the LINKS Service Quality Management Simulation, the design of your two services is fixed and no changes in service design are possible.

LINKS support services have standardized designs across all market regions. There are no regional variations in LINKS support services design. For example, service 3-1 is the same Household support service design (configuration) in all market regions in which it is marketed.

In LINKS, service design (configuration) is described as a seven-character code with the following elements and interpretations:
(1) Service Category: "H" for Household, "M" for Major Accounts
(2) CSR Technical Training: 0-9 (hours per month)
(3) CSR Service Skills Training: 0-9 (hours per month)
(4) Service Appointment Scheduling: 1-7 (days)
(5) Scheduling Style: 0-4 (appointment scheduling “window” in hours)
(6) Service Call Duration: 1-3 (1=”minimum”, 2=”more than minimum”, 3=”maximum”)
(7) Service Call Format: 0 or 1 (0=”telephone service”, 1=”on-site visit”).
For example, service “H243121” is a Household support service with 2 hours/month of Technical Training and 4 hours/month of Service Skills Training for CSRs assigned to this support service, Service Appointment Scheduling of 3 days (support service provided within 3 days of the service request from customers), a Scheduling Style with a 1-hour appointment “window” for support service calls, a more-than-minimum Service Call Duration is provided to solve the customer’s service request, and an “on-site visit” Service Call Format.

CSRs (customer service representatives) deliver support services. Each CSR has 22 8-hour days of service capacity per month (i.e., 176 hours of service capacity per month or 528 hours of service capacity per quarter). The design (configuration) of a support service influences the available service capacity of your CSRs assigned to that support service. For example, if a particular support service includes a service design of 4 hours/month of CSR Technical Training, then the available capacity of the CSRs associated with that support service would be reduced by 4 hours/month (12 hours/quarter) from the standard capacity of 176 hours of service capacity per month or 528 hours of service capacity per quarter.

The design of each service influences customers’ preferences for it, as well as the costs associated with providing the service. Generally speaking, customers prefer in-person/on-site, quicker, and predictably-scheduled service from skilled CSRs. Of course, customers also prefer lower-cost support service to higher-cost support service, all else being equal. Your management team will have to learn how much customers are willing to pay for particular service attributes and then develop and implement a plan to profitably serve them.

Service design influences variable costs per support service call and CSR productivity.

- **Service Category**: There are two service categories, "H" for support services targeted at Households and "M" for support services targeted at Major Accounts. Service 1 is a Household support service and service 2 is a Major Accounts support service.
- **CSR Technical Training**: Each support service may have 0-9 hours per month of CSR Technical Training for CSRs assigned to the support service. Indirect implications for CSR productivity arise with each hour of training reducing available CSR capacity by an hour.
- **CSR Service Skills Training**: Each support service may have 0-9 hours per month of CSR Service Skills Training for CSRs. Indirect implications for CSR productivity arise with each training hour reducing available CSR capacity by an hour.
- **Service Appointment Scheduling**: Service appointments are scheduled within 1-7 days of a customer's request for support service. Customers prefer quicker scheduling of support service calls. However, there are direct and indirect cost implications associated with quicker service appointment scheduling.
  - Direct Costs: Variable costs per Major Accounts support service call equal 0.5(8-SAS)(8-SAS) where SAS is the level of Service Appointment Scheduling in days. For Major Accounts support service calls, the least expensive Service Appointment Scheduling option (7-day service) incurs variable costs per service call of 0.5(8-7)(8-7) = $0.50; the most expensive Service Appointment Scheduling option (1-day service) incurs variable costs per service call of 0.5(8-1)(8-1) = $24.50. The variable costs associated with Household support service calls are one-half of the associated variable costs for Major Accounts support service calls.
  - Indirect Costs: CSR productivity is influenced by Service Appointment Scheduling. To provide sufficient standby/reserve CSR capacity to service shorter Service Appointment Scheduling programs, available CSR service time is reduced by 1.5(7-SAS)(7-SAS) hours per quarter where "SAS" is the Service Appointment Scheduling level associated with a support service.
- **Scheduling Style**: Support service calls are scheduled within appointment-time "windows" (e.g., between 100pm and 300pm on a particular day). Appointment-time "windows" of 0-4 hours are possible, with a 0-hour "window" corresponding to a specific appointment time (i.e., no appointment-time "window" but rather a specific appointment time). Customers prefer narrow appointment-time "windows" but there are cost implications associated with narrow-"window" scheduling. Variable costs per service call equal 3(4-SS) for Household support services and 4(4-SS) for Major Accounts support services, where SS is the level of Scheduling Style. Thus, a 2-hour appointment-window scheduling style has associated variable costs of $6 for Household support services while a 0-hour appointment-window scheduling style has associated variable costs of $16 for Major Accounts support services.
- **Service Call Duration**: Support service calls average one hour in duration to handle customers' support service requests. However, this minimum level of support service call (level 1) may not provide as much hands-on customer support and empathy as might be desired. More-than-minimum (level 2) and maximum (level 3) Service Call Durations are possible with associated consequences for CSR productivity. More-than-minimum (level 2) Service Call Duration increase support service calls by an average of 6 minutes and maximum (level 3) Service Call Durations increase support service calls by an average of 15 minutes. Variable costs for service call duration for Household support services are $5.00, $10.00, and $17.50 for levels 1-3, respectively. Corresponding variable costs for service call duration for Major Accounts support services are $5.00, $12.50, and $25.00 for levels 1-3, respectively.
- **Service Call Format**: Support service calls may be conducted over the telephone (level 0)

or via an on-site visit (level 1). Variable costs per service call associated with telephone support service are $10 while the corresponding variable costs per on-site service call are $20. CSR productivity for on-site support service calls is reduced by the average travel time of 20 minutes between on-site support service calls.

Service Operations Decisions

In LINKS, support services are delivered by CSRs (customer service representatives) in each region. Service employee decisions include CSR salary, CSR hiring and firing, CSR transfers among regions, and CSR time allocations in each market region to your support services. Your firm maintains a separate CSR staff in each market region in which you operate.

A firm's utilization level of its CSRs is the largest driver of its service quality. Higher CSR utilization is associated with lower perceived service quality due to service queuing, lack of time for CSRs to provide high-quality service, and related issues associated with high utilization levels (including CSR turnover).

There is a natural lag between perceived service quality and CSR usage (utilization) since perceived service quality is a survey-based measure. Customers are surveyed about their service quality perceptions of all support services for which they have personal recent experience. **It follows that the current quarter's perceived service quality is based on actual CSR usage (utilization) from the previous quarter.** Balancing the trade-offs among CSR usage (utilization), cost, and service quality perceptions will be an on-going challenge for your team.

FYI: Customer Interaction Costs

Estimates of representative customer interaction costs (in $US) are listed below:

- Self-Service (Voice Recognition, Web Interaction): $0.1-$0.4
- Direct-Mail Contact: $0.25-$5
- Telephone Interaction: $2-$5
- Fax/Mail Interaction: $3-$6
- Telemarketing Interaction: $8-$24
- Telephone Product Support Interaction: $4-$75
- Field Sales Interaction: $40-$400

Source: Adapted from Figure 2 in Jonathan Wright and Jerry Quinn, "Enterprise Service Management: The Key To Service Excellence," ***Achieving Supply Chain Excellence Through Technology, Volume 4*** (San Francisco: Montgomery Research, Inc., 2002), p. 190.

CSR Salary Decisions

Firms may establish different CSR salary levels across regions. While cost-of-living considerations and competitive market forces might lead you to have CSR salaries that vary across regions, wide variations may lead to morale problems, and not just in the regions where salary levels are particularly low.

CSR salaries are expressed in terms of dollars per month. Thus, a $24,000 per year salary would be specified as a $2,000 salary per month. CSR base monthly salary may not be changed by more than $500 in any quarter from its previous value.

CSR salary levels influence the quality and quantity of the service effort. Through time, higher salary levels will attract and retain more able service representatives, ultimately yielding higher

service quality for customers.

CSR salaries are policy-level directives. The specified salary levels in each region are averages. Regional service managers implement these policies appropriately. This will mean, for example, that more experienced and more able service personnel will typically receive above-average salaries with others receiving correspondingly below-average salaries. These tactical issues are managed by your regional service managers.

Service Hiring/Firing/Transfer Decisions

You manage CSR service staff size in each region by hiring, firing, and transferring CSRs.

- You may only hire new (inexperienced) CSRs in region 1. However, you may hire experienced CSRs directly into any region.
- Firing of CSRs is only possible in region 1.
- Hiring costs for new (inexperienced) CSRs equal two month's salary, representing the costs associated with recruiting, screening, and training.
- Firing costs incur a charge equal to three month's salary.
- Hiring and firing costs are recorded as "Service HFT" on your financial reports.
- Service personnel are hired immediately (i.e., at the start of the next quarter). However, they train in the first month (at full salary) so they don't begin to provide service calls until the following month. Thus, CSR hires in a quarter are only two-thirds as productive as experienced CSRs.

There is a single hiring and firing decision in LINKS. Positive values of this decision variable in region 1 reflect hiring decisions while negative values reflect firing decisions. Obviously, you would never hire and fire CSRs in region 1 in the same quarter, so a single decision variable is all that's necessary to permit you to make CSR hiring and firing decisions in region 1.

Planned changes in service workforce size occur by judicious hiring, firing, and transfer decisions. Attrition reduces CSR staff through time, unless deliberate hiring and transfer decisions are made. Thus, to maintain your existing CSR staffing levels, regular hiring of service personnel will be required.

FAQ

"Is a service usage level of 100% ideal?" With 100% service usage, your service personnel have no time for training, vacation, administrative matters, or other non-customer facing activity. This workload level may lead to higher personnel turnover. In addition, 100% service usage means that lots of customers have to wait for service, with associated degradation of perceived service quality. While less-than-100% service usage has higher associated costs per contact, the key issue is the trade-off between cost per contact and perceived service quality.

Recent experience in the support services industry indicates that CSRs resign at the rate of 7%-10% per quarter. Workload and compensation are thought to influence resignation rates, in positive and negative fashions respectively. If your CSRs are asked to work very hard, their productivity increases but resignations may also increase. As might be expected, higher-paid service representatives resign with less frequency than lower-paid service representatives.

For newly hired CSRs, a month's training is required before they are fully functional in their new positions. This month’s training ensures that newly hired CSRs are knowledgeable and

courteous employees. New hires receive their normal salaries in this training month, but they don't provide any support service to customers during the first month of employment.

The maximum number of new CSRs that may be hired in any quarter in region 1 is 99. The CSR service force in region 1 can be reduced via a firing decision.

Firms in the support services industry recognize that they can recruit from a labor pool that has two segments: people who have prior experience as a CSR (perhaps with competing firm or from another similar industry) or inexperienced people. More recruiting effort and expense is required to attract experienced people, but they require minimal training. Less recruiting effort and expense is necessary to attract inexperienced people, but they require more training time and expense. Specifically, since experienced CSRs require minimal training, they are fully productive immediately (i.e., in the initial month after hiring). Experienced CSRs incur one-time charges equal to twice that of the hiring of new (inexperienced) CSRs. It is possible to hire a maximum of 12 experienced CSRs in any market region in any quarter. Hiring experienced CSRs has no impact on your regular CSR hiring decisions.

Transferring CSRs from one region to another region is possible. Maximum transferees from any region to any other region are limited to 20 in any quarter. Transferred CSRs incur costs equal to one month's salary. Transferred CSRs require one-half month's training before they are available for support service calls in the region to which they are transferred.

If you decide to stop selling all support services in a particular region, you would need to transfer all remaining CSR staff to other regions. Note that you may only fire CSRs in region 1.

Service Time Allocation Decisions

Two aspects of service quality, reliability and responsiveness, are heavily influenced by your decisions about service time allocation. You direct your regional service managers to allocate available CSRs to each of your support services via time allocation decisions (expressed in percentages) in each region. These time allocations must sum to 100% across your support services in each region. If your firm only has a single support service actively marketed in a region, you should have 100% of your CSRs' time allocated to that single support service. With two support services actively marketed in a region, any combination of time allocation percentages (such as 50% and 50%, or 72% and 28%, or 10% and 90%) is possible as long as they sum to 100% across your support services.

Service time allocations within each region are exclusive responsibility assignments. CSRs implicitly assigned to one support service in a quarter are unavailable for "overflow" or "overcapacity" support for other support services in that region, even if they have unused capacity in a quarter. **In general, your service goal should be to align your CSR staff time allocations and CSR service force sizes to be consistent with service demand and your firm's targeted CSR usage (utilization) level for each support service.**

Service Capacity

CSRs provide support services to your customers**. Each CSR has 22 8-hour days of service capability per month (i.e., 176 hours of service capacity per month or 528 hours of service capacity per quarter)**. Support service design (configuration) influences the available service capacity of CSRs assigned to that support service. For example, if a particular support service includes a service design of 4 hours/month of CSR Technical Training, then the available capacity of the CSRs associated with that support service would be reduced by 4 hours/month (12 hours/quarter). Note, also, that Service Call Duration and Service Call Format influence service capacity, since these service design elements affect CSR call time per call.

Here's a sample calculation of CSR capacity in a particular region for a particular support service. In this sample calculation, assume that

1. 4 hours of CSR Technical Training and 2 hours of CSR Service Skills Training are included in that particular service's design;
2. Service Appointment Scheduling is 7 and Service Call Duration and Service Call Format are minimum (level 1), so that there are no indirect CSR productivity consequences.

	Standard CSR Capacity (528 hours/quarter)	528 hours/quarter
-	CSR Technical Training (4 hours/month)	12 hours/quarter
-	CSR Service Skills Training (2 hours/month)	6 hours/quarter
=	Available Support Service Time Per CSR (hours/quarter)	510 hours/quarter
	Support Service Call Capacity: Telephone Service Calls	510 calls/quarter
	Support Service Call Capacity: On-Site Service Calls	382.5 calls/quarter

This sample calculation is for "continuing" CSRs (non-hires and non-transfers) and for experienced CSR hires. For CSR hires to this region, only two-thirds of the 510 hours are available (CSR hires train for one month); for CSR transfers to this region, only five-sixths of the 510 hours are available (CSR transfers are in training for one-half of a month).

CSR staffing levels and staff-movement timing in particular region are defined as follows:

	Beginning CSR Staff
-	CSRs Fired [region 1 only]
-	CSR Resignations
-	CSR Transfers From This Region To Other Regions
+	CSR Transfers To This Region From Another Region
+	CSR Hires [region 1 only]
+	CSR Experienced Hires
=	Available CSR Staff

In this CSR staffing level calculation, note that:

- Available CSR Staff includes a mixture of "continuing" CSRs, new hires (inexperienced CSRs and experienced CSRs), and transfers. New hires and transfers have less-than-full-hours availability due to their associated training (one month for new hires and one-half month for transfers).
- Forced CSR reductions through firing are assumed to occur at the beginning of a quarter.
- CSR resignations are assumed to occur at the beginning of a quarter.
- CSR transfers from one region to another occur at the beginning of a quarter. Transferred CSRs are unavailable for use by the originating (sending) region in the quarter of transfer.

- Available CSR Staff in a quarter equals Beginning CSR Staff in the subsequent quarter.
- In calculating total service personnel salary in any service in any quarter, the relevant number of service personnel equals Available CSR Staff times the relevant region-specific salary level.

Each sale of a support service requires a service call. Thus, the number of service calls in a quarter always equals the sales volume in that quarter.

Unfilled Orders

Similar to other services, support services are characterized by simultaneity of production and consumption and perishability. Consequently, unfilled orders occur when customer demand for any service in any market region exceeds the available CSR capacity for that service in that market region. In LINKS, the difference between potential customer sales (orders) and actual customer sales due to insufficient CSR capacity is "unfilled orders."

Unfilled orders are not backlogged orders. Unfilled orders are not guaranteed (i.e., contracted, pre-paid) future sales. Unfilled orders incur costs of $20/unit (recorded an Unfilled Handling costs on your corporate P&L statements).

Past experience suggests that unfilled orders reflect three types of customers. Some customers immediately defect to another competitor's (available) support service. Other customers decide not to buy any support service now or in the near future. A third segment of customers are inclined to wait and attempt to repurchase the preferred support service having these unfilled orders again in the future when CSR capacity is more favorable. The size of these three types of unfilled-orders customers is unknown. In all cases, however, it should be expected that customers remember their experiences with unfilled orders and these unfavorable experiences influence their perceptions of your service offering, negatively influencing subsequent sales.

Unfilled orders represent demand that might have been realized beyond "filled orders" (i.e., sales) if sufficient service capacity had been available to meet all purchase requests. If there are unfilled orders for multiple services offered to the same market segment in the same quarter, the same customers may have attempted to purchase from multiple firms, so firms must be wary of the potential for industry-wide double-counting in unfilled orders reporting. In such a situation, a single customer would be counted as an unfilled order by both services.

Service Overhead

Each CSR incurs direct and indirect overhead expenses in connection with providing support services. Direct expenses include CSR benefits (health insurance, government taxes of various kinds, and so on). Indirect costs to support service representatives include periodic service training activities, service management overhead, office support, and infrastructure support related to support services. In total, these service overhead expenses equal the CSR salary level. Thus, if you have a monthly service force salary level of $3,000 in a region, a further $3,000 of service overhead per month is also incurred to support each CSR.

Your firm is automatically billed for the direct and indirect costs associated with maintaining

service representatives in each of the market regions. These service overhead expenses are recorded as "Service O/H" on your financial statements.

Managing CSR Capacity Utilization

Each market region may have a region-specific CSR maximum capacity limit, which is applied to all support services sold in that region. Such limits ensure that your CSRs will not be overworked beyond the specific limits that you specify. However, if this limit results in unfilled orders because more service demand exists than your specified capacity limits permit, then there might be loss of goodwill among customers who were unable to obtain support service this quarter. This loss of goodwill might reduce service demand in the future.

Rather than specifying CSR maximum capacity utilization limits, a service's marketing program may be adjusted to temporarily reduce demand, to better match demand and supply. For example, a temporary price increase will reduce service demand until service capacity can be increased.

You may assume that CSRs use slack/spare service capacity time (if it exists) to productively engage in customer follow-up calls, self-improvement study, and voluntary training that enhance their long-run capabilities for providing high-quality service. When their available time is fully used to service current demand, no time is available for such productivity improvement activities.

In the long run, operating at or near full capacity may lead to degradation in service quality and to increases in CSR turnover. Thus, there is a delicate trade-off between maximizing short-run CSR capacity utilization and maximizing long-run service quality.

There are no financial or operational consequences associated with setting CSR maximum capacity limits above current sales volume realizations. CSR maximum capacity limits are interpreted as contingencies that only take effect if needed. **CSR maximum capacity limits for each region may be any number between 50% and 100%.**

Marketing Decisions

Your LINKS firm is responsible for pricing, marketing spending, and introduction/drop decisions for your support services.

You sell support services to final end-user customers in the Household and Major Accounts categories. Since your firm sells directly to final end-users, the prices that you set for your support services are the final prices paid by end-users. $10 in order processing costs accrue for every support service sale.

Price Decisions

You set prices for each support service in each region. Prices affect demand in the usual fashion. Higher prices are normally associated with lower levels of customer demand in all categories and market regions. The price sensitivities in the support services categories and market regions in LINKS are unknown. You'll need to learn about the markets' responsiveness

to price through your experience in LINKS and by exploiting available LINKS research studies.

In addition to the physical costs of producing and distributing updated price sheets, lists, and databases that accrue when a firm changes price (so-called "menu costs"), a range of indirect and non-obvious costs arise with price adjustments.[1]

- Managerial Costs: A firm must gather information, analyze, assess, and communicate the logic associated with price changes throughout their organization. Managerial costs increase with larger price changes, since there is more to assess/analyze and more organizational members become involved with larger price changes.
- Customer-Facing Costs: When implementing price changes, a communications program must be created and executed to portray a price change in the most favorable light to customers. In a B2B environment, price adjustments potentially involve (re)negotiation with those customers who are resistant to new (higher) prices.

FYI: Price Cuts and Profits

Here are some estimates of the impact on operating profit of a 1% reduction in price, **assuming no change in volume or costs**:

- Food and drug stores: -23.7%
- Airlines: -12.9%
- Computers, office equipment: -11.0%
- Tobacco: -4.9%
- Semiconductors: -3.0%

Across all industries, the average decrease in operating profit from a 1% price decrease was 8.0%, assuming no change in volume or costs.

Source: McKinsey & Co., cited in Janice Revell, "The Price Is Not Always Right," ***Fortune*** (May 14, 2001), p. 110.

In LINKS, each price change by your firm for a service in a market region results in $10,000 in costs **plus** $200 in costs per-dollar change in price (increase or decrease in price) **plus** costs of 0.25% of current-quarter revenues.[2] For example, a $75 change in price on a service with revenues of $4,500,000 in a particular region incurs price change costs of $10,000 + ($200)(75) + (0.0025)($4,500,000) = $10,000 + $15,000 + $11,250 = $36,250. These price change costs are recorded as "Price Changes" in the "Fixed and Other Costs" section of your firm's profit-and-loss statements in the quarter in which the price change occurs.

It's very easy to drop price to attempt to increase demand. However, it's always an interesting question whether that increased demand actually increases profits. Remember, the price drop that generates increased demand also reduces your margin on each unit sold. More importantly, it's easy for competitors to see and feel threatened by a price change. Price wars are often initiated by thoughtless price manipulations by naive managers who assume that competitors won't notice, won't respond, or respond ineptly.

[1] Recent published research documents the range of direct and indirect costs associated with price adjustments for a large U.S. industrial manufacturer (more than one billion USD$ revenues selling 8,000 products [used to maintain machinery] through OEMs and distributors). The authors found that managerial costs are more than 6 times, and customer-facing costs are more than 20 times, the so-called "menu costs" (physical costs) associated with price adjustments. In total, price adjustment costs comprise 1.22% of the company's revenue and 20.03% of the company's net margin. {Source: Mark J. Zbaracki, Mark Ritson, Daniel Levy, Shantanu Dutta, and Mark Bergen, "Managerial and Customer Costs of Price Adjustment: Direct Evidence From Industrial Markets," ***The Review of Economics and Statistics***, Volume 86, Number 2 (May 2004), pp. 514-533.}

[2] Price change costs only accrue for services that are being sold in a region. No price change costs accrue for a service as it is introduced into a region (i.e., it was inactive in that region in the last quarter).

To provide a fact-based approach for making pricing decisions, please refer to the "Pricing Worksheet" on the following page. Complete this "Pricing Worksheet" anytime you're planning to reduce prices. Review the worksheet details with your teammates. After this review, go ahead with the price decrease if you really think that it's appropriate. Review this "Pricing Worksheet" again after you receive next quarter's financial results to verify whether your assumptions and predictions were reasonable.

Marketing Spending Decisions

A marketing spending budget is required for each support service in each region. This budget is managed by your firm's region managers and is used for advertising, promotion, and sales force efforts for your support services. You are free to allocate funds to marketing spending as you see fit. Spending does not have to be equal for all support services and regions.

Marketing spending is thought to increase demand for support services in all market regions. Past industry practice has been to budget at least $50,000/quarter in marketing spending for all actively-marketed support services and market regions. It is thought that the impact of marketing spending on demand declines somewhat at higher expenditure levels, but the precise form of the relationship between marketing spending and sales is unknown. You will have to learn about the influence of marketing spending on sales through your experience within the LINKS support services industry in which you are competing.

Introduction/Drop Decisions

You may introduce support services into market regions not currently active or cease to offer (drop) services in some market regions. Introduction incurs a one-time cost of $250,000 per region. Withdrawing (dropping) a service offering from a region incurs no special costs. Introduction costs are recorded under "Introductions" on your financial statements.

If you wish to "activate" a support service in a market region, you must issue a specific introduction decision. Change the "Active Service?" status to "Yes" to introduce a support service into a specific market region. To drop a support service from active status in a market region, change its "Active Service?" status to "No." You only introduce a support service into a market region once. **Once a support service is active in a market region, it continues to be active until you make an explicit withdrawal/drop ("No") decision.**

You must explicitly introduce a support service to a market region, regardless of your marketing spending and your sales volume forecasts. Setting marketing spending to zero does not result in the associated support service being dropped from that market region. If you drop a support service from a market region, you must change marketing spending to $0. Otherwise, marketing spending continues to occur, in anticipation of a future relaunch.

Your firm has a policy of limiting simultaneous new service-region launches to a maximum of three in any quarter. So, for example, two services each launched (introduced) into one region in any quarter count as two launches. A reconfiguration isn't a launch if that service is already actively sold in a region.

Pricing Worksheet

This pricing worksheet is designed to provide an analysis framework anytime you are contemplating decreasing prices within LINKS.

Complete the "Before" columns and review the "Before" columns with your team members. Complete the "After" column with actual data from the next quarter, after the results are available. Review the before-after comparison with your team members.

Firm		Service		Region		Quarter	

		Before Action Analysis, Review, and Forecast		After Action Review
		Last Quarter, Actual	Next Quarter, Predicted	Next Quarter, Actual
	Industry Sales Volume [units]			
*	Volume Market Share [%s]			
=	Sales Volume [units]			
*	Price [$]			
=	Revenue [$]			
-	Variable Costs [$]			
=	Gross Margin [$]			
-	Fixed Costs [$]			
=	Operating Income [$]			

Forecasting Decisions

Service organizations are challenged to match demand and supply in a dynamic competitive marketplace. And, sales forecasts are extremely important to effective management and business performance in service organizations. Forecasting accuracy requires an understanding of how a firm's decisions influence sales. In LINKS, quarterly sales volume forecasts are required for each support service's sales in every region in which a support service is active.

In LINKS, forecasting accuracy influences operations performance both directly (via adjustments in base administrative overhead for forecasting inaccuracies) and indirectly (via CSR capacity management considerations).

Administrative overhead costs increase by 1% for every 1% inaccuracy in your sales volume forecasts. For example, a forecast error of 10% (whether positive or negative) for a service in a region increases the administrative overhead costs for that service in that region by 10%.

- The maximum administrative overhead penalty associated with sales forecasting inaccuracy for each service in each region is a doubling of administrative overhead.
- Forecast error costs are recorded as "Forecast Inaccuracy" costs on your firm's profit-and-loss statements, so the reported base administrative overhead costs are always $100,000 per quarter per service per region.

Forecasting accuracy is also one of the measures included in evaluating each firm's business performance via the LINKS scorecard.

Forecasting accuracy is equal to 100*(1-(abs(Forecast-Actual)/Actual)) expressed in percentage terms, where "abs" is the absolute value function. Thus, a forecast value of 11,000 and an actual value of 8,000 result in a forecast accuracy of 100*(1-abs(11,000-8,000)/8,000) = 100*(1-(3,000/8,000)) = 100*(1-0.375) = 62.5%. The minimum possible value of forecasting accuracy is 0.0%. For example, with an Actual sales volume of 8,000, a Forecast above 16,000 results in a forecasting accuracy score of 0.0%.

A Judgmental Sales Forecasting Template

The following page contains a judgmental sales forecasting worksheet that provides a template for systematically approaching the sales forecasting process. Judgmental adjustments are challenging, but at least you're explicitly taking into account that your and their (competitors') marketing (customer-facing) program changes influence your sales.

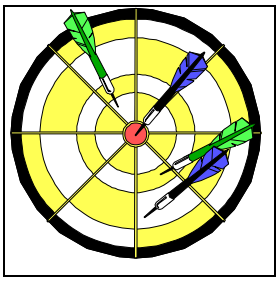
About Forecasting and Forecasting Accuracy

Given the importance of forecasting in running your LINKS business, you might find that reading the following article has a positive return on your reading-time investment:

- J. Scott Armstrong, "The Forecasting Canon: Generalizations To Improve Forecast Accuracy," ***FORESIGHT: The International Journal of Applied Forecasting***, Volume 1, Issue 1 (June 2005), pp. 29-35.
  http://www.forecastingprinciples.com/paperpdf/The_Forecasting_Canon.pdf

Judgmental Sales Forecasting Worksheet

Sales forecasting drives everything in demand-supply coordination and management. Unfortunately, sales forecasting is extraordinarily challenging due to the many factors influencing your sales (your current and recent marketing programs, current and recent competitors' marketing programs, and exogenous market forces).



Here's a judgmental sales forecasting process that, at a minimum, provides an organizational template to systematically approach the sales forecasting process. Judgmental adjustments are challenging, but at least you're explicitly taking into account that your marketing (customer-facing) program changes, and those of your competitors, influence your sales.

- **Step 1** (the "easy" part): Construct a trend-line extrapolation of past sales realizations based on a crucial assumption: future market and environmental forces will continue as they have existed in the recent past. Be watchful for structural considerations like unfilled orders.
- **Step 2** (the "hard" part): Make adjustments for planned changes in your marketing (customer-facing) programs. The potential impacts of changes in service design, price, distribution, communications, and service operations on your sales must be quantified.
- **Step 3** (the "subtle" part): Account for foreseeable competitors' changes in their marketing (customer-facing) programs. It's easy to overlook competitors in forecasting. Assume that competitors are vigilant and thoughtful and present.

1	Trend-Line Extrapolation of Past Sales Realizations (Base-Line Forecast)	
2	Adjustments For Planned Changes In Marketing Program (list specifics, with judgmental estimates of sales impacts *[expressed in +/- %s]*) Service Design Changes Price Changes Distribution Changes Communications Changes Service Operations Changes	
3	Adjustments For Foreseeable Changes In Competitors' Marketing Programs (list specifics, with judgmental estimates of sales impacts *[expressed in +/- %s]*) Service Design Changes Price Changes Distribution Changes Communications Changes Service Operations Changes	
	Adjusted Sales Forecast	

Financial and Operating Reports

The LINKS financial and operating reports are described in this section. These are the standard reports that you receive after each quarter of the LINKS simulation.

Profitability Drivers

"A company can outperform rivals only if it can establish a difference that it can preserve. Competitive strategy is about being different, deliberately choosing a different set of activities to deliver a unique value mix." – Michael Porter

The financial and operating reports described in this chapter are lengthy and detailed. To provide an overall roadmap for thinking about the drivers of profitability, Exhibits 2-3 decompose net income into its underlying components. In Exhibit 2, the principal drivers of net income are revenues and costs. Taxes and non-operating income play lesser roles. Exhibit 3 provides a breakdown of the underlying drivers of volume, one of the two key drivers of revenues. In addition, Exhibit 4 provides a breakdown of the underlying drivers of accessibility perception. Collectively, these exhibits provide a sense of the DNA of net income in LINKS.

Performance Evaluation Report

"If you're riding ahead of the herd, take a look back every now and then to make sure it's still there." – Cowboy philosophy

A detailed discussion of the "Performance Evaluation Report" that forms the first page of your financial and operating reports is provided later in this LINKS participant's manual, in the "Performance Evaluation" section.

Corporate P&L Statement

The "Corporate P&L Statement" aggregates all of the service-specific profit-and-loss statements into an overall corporate profit-and-loss statement. A variety of line items appear on the "Corporate P&L Statement" only, because it is not possible to unambiguously allocate those costs to specific services in specific regions.

Definitions of non-obvious line items on the "Corporate Current P&L Statement" follow:

- Administrative overhead ("Administrative O/H") is $100,000/quarter per service in all market regions.
- "Consulting Fees," adjustments to income or expenses, may be positive or negative. Conversations with your instructor are without charge, so don't worry about "Consulting Fees" associated with such consultations. In LINKS, the "Consulting Fees" line item represents a convenient mechanism for making adjustments to income or expenses. For example, a research billing problem can be corrected via an appropriate negative "Consulting Fee."

Exhibit 2: Net Income Drivers in LINKS

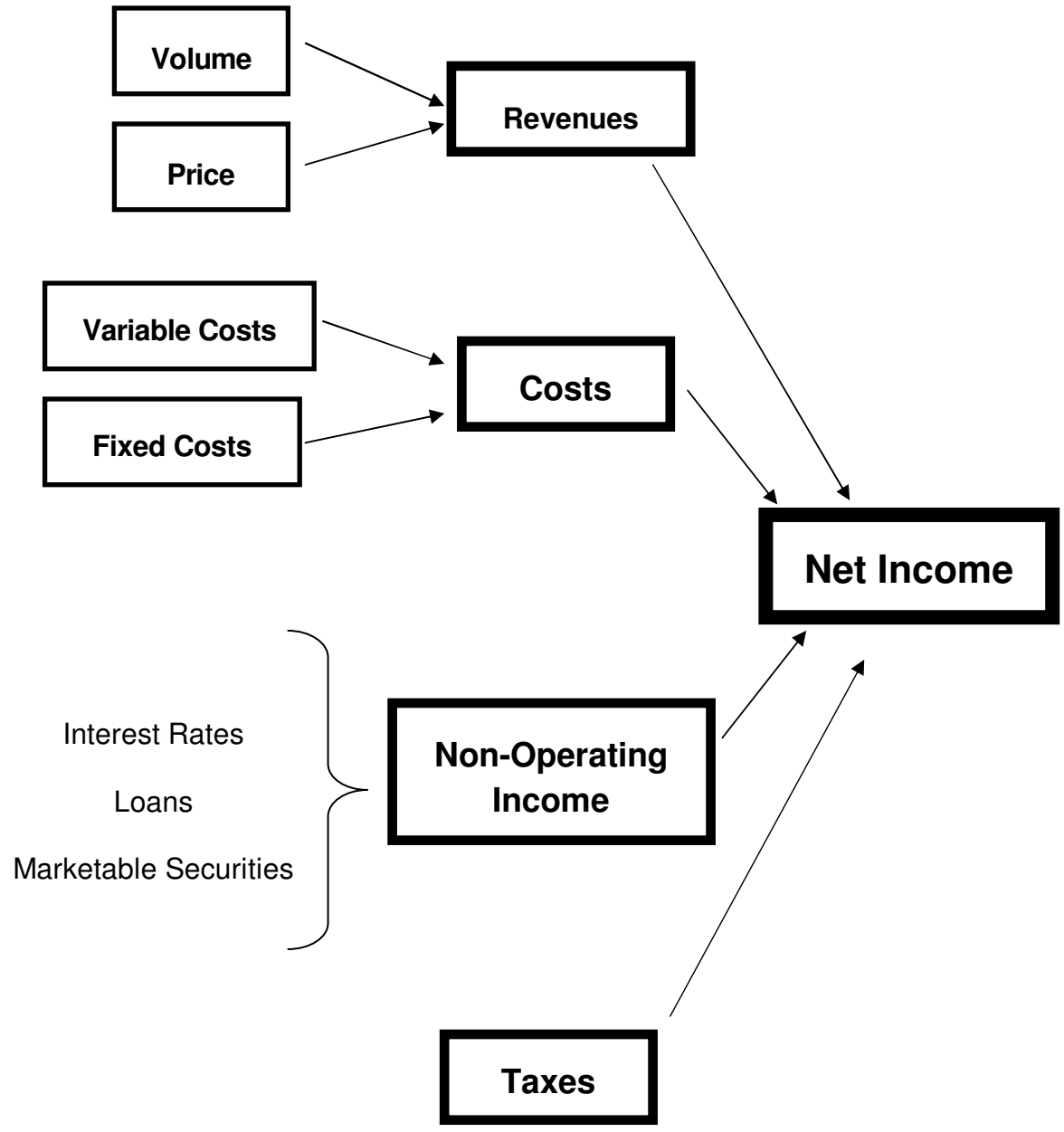


Exhibit 3: Volume Drivers in LINKS

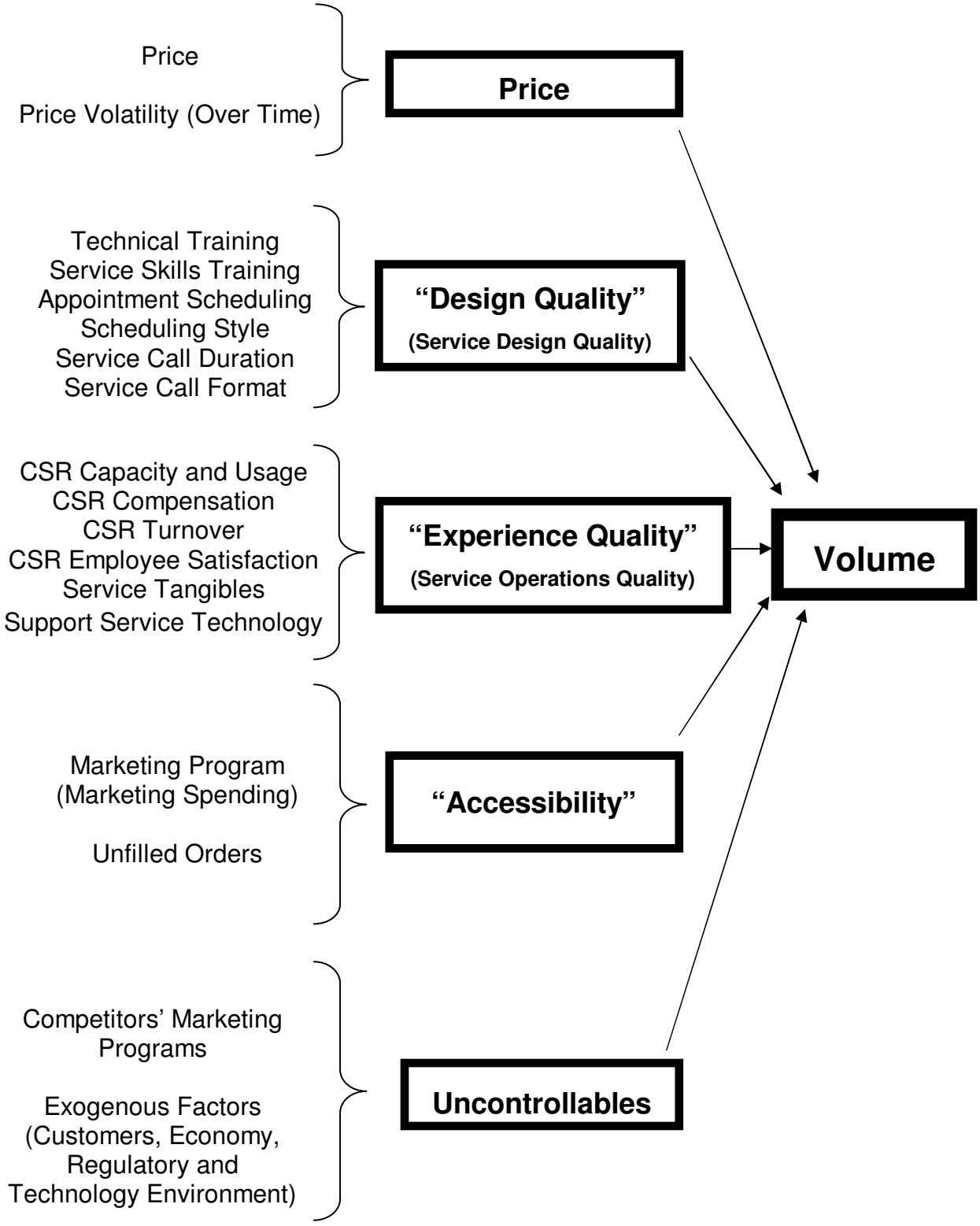
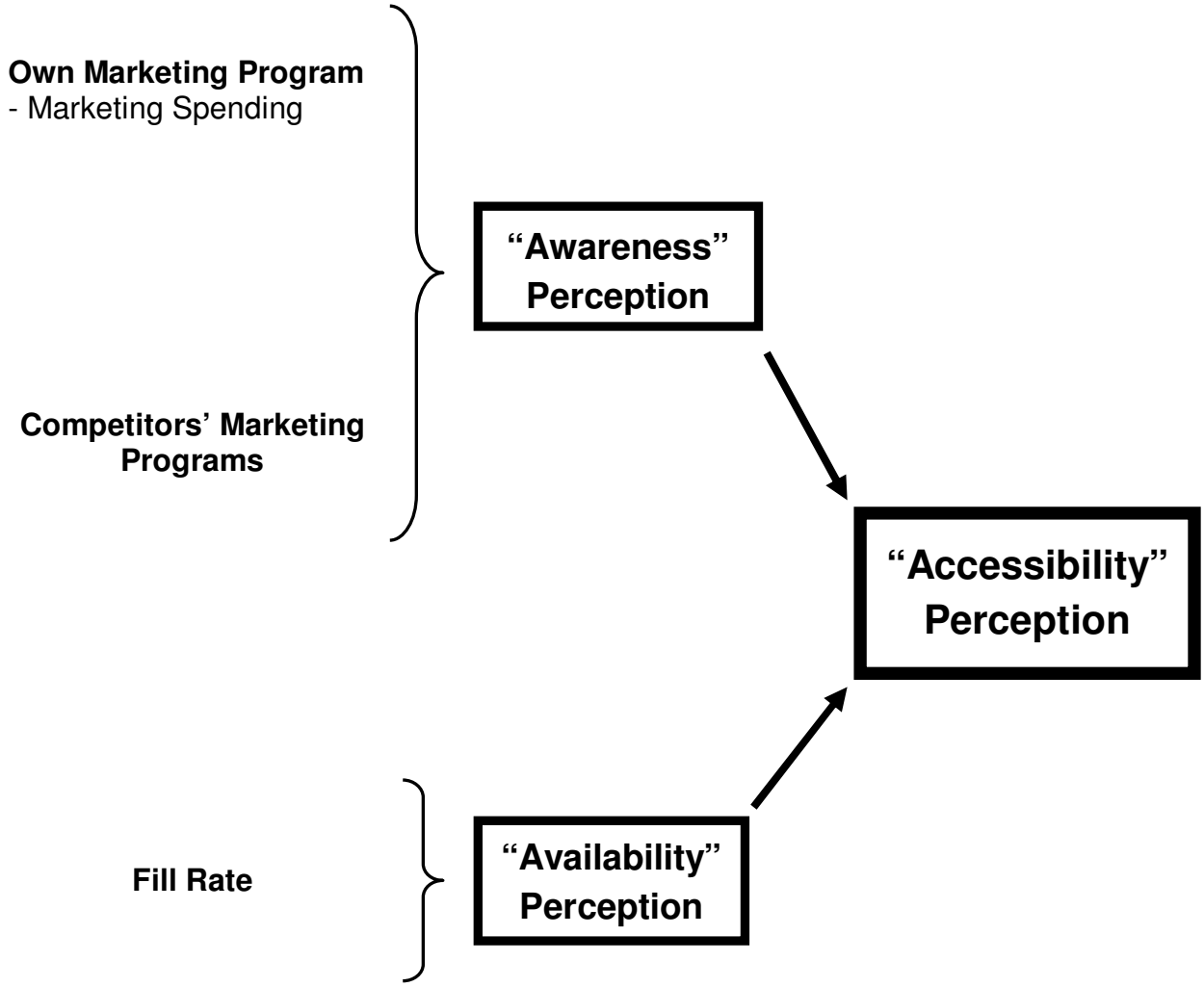


Exhibit 4: "Accessibility" Perception Drivers in LINKS



- Corporate overhead ("Corporate O/H") is $500,000 per support service per quarter. This per-service charge is incurred if a support service is active in one or more market regions.
- “Forecast Inaccuracy” records the costs associated with forecasting errors.
- "Information Technology" records all IT charges. Your IT charges include a $1,000/page charge for all financial and operating reports plus research studies. This charge is per-firm and is not related to the number of members of your firm's management team. Each quarter's charge is based on the previous quarter's actual page counts (e.g., the quarter-32 charge is based on the quarter-31 page count).
- "Introductions" reflects costs when services are introduced into market regions.
- "Marketing" equals total marketing spending.
- "Non-Operating Income" derives either from interest earned on "Marketable Securities" (from the previous quarter's "Balance Sheet") or from interest paid on "Loans" (from the previous quarter's "Balance Sheet").
- "Operating Income" equals "Gross Margin" minus "Total Fixed Costs."
- ”Order Processing" records the $10/unit cost associated with processing all sales orders.
- "Research Studies" reflects the total costs associated with last quarter's research study requests. Note that the current quarter's research studies are executed after the current quarter's financial reports are prepared. Thus, research study billings are lagged a quarter.
- "Service Salaries" is the total salary cost associated with all CSRs.
- "Service O/H" is the overhead cost levied on CSR salaries.
- "Service HFT" costs are the service hiring, firing, and transfer costs.
- "Unfilled Handling" costs are the unfilled orders handling costs ($20/unit).
- "Taxes" reflects corporate taxes payable. Your corporate tax rate is 50%.
- "Total Fixed Costs" is the sum of all fixed costs. Note that "Total Fixed Costs" does not sum correctly down and across since some fixed costs are not allocated to specific services.

Historical Corporate P&L Statement

The "Historical Corporate P&L Statement" reports the previous and current quarter's corporate-level profit-and-loss data. In addition, all elements in the "Historical Corporate P&L Statement" are expressed in percentage-of-revenue terms.

Service P&L Statement

Each support service has a current profit-and-loss statement each quarter. The service "P&L Statement" includes the relevant data for all market regions.

Balance Sheet

Your balance sheet records the usual assets and liabilities associated with your firm at the end of each quarter.

On the "Balance Sheet":

- "Cash" in excess of 10% of revenues is automatically invested in short-term "Marketable Securities" which earn 1.5% per quarter in "Non-Operating Income" on the "Corporate P&L

Statement" in the following quarter. If cash falls below 5% of revenues, a loan is automatically arranged to increase cash to 5% of revenues. You pay interest of 3% per quarter on "Loans" and this interest payment is recorded as "Non-Operating Income" (a negative value of "Non-Operating Income") in the following quarter's "Corporate P&L Statement."

- "Corporate Capitalization" is the Ldollar-value of the original capital invested by your shareholders to start your firm.
- "Dividends" are cash payments to shareholders. In any quarter in which "Net Income" is positive, 30% of the "Net Income" is allocated to "Dividends."
- "Facilities and Equipment Investment" represents the Ldollar-value of your firm's investment in facilities and equipment.

You can't run out of cash within LINKS. Loans are automatically issued to bring your cash requirement up to minimum acceptable. Of course, you do have to pay interest on loans.

Whenever profits are positive, corporate policy is to allocate 30% of net income to dividends.

Service Operations Report

The "Service Operations Report" provides the details of your CSR staffing, productivity, and CSR management activities. These are "hard" (engineering and operations) metrics that provide insights into customer experiences and customer perceptions of service quality (reliability, responsiveness, assurance, and empathy). This report will undoubtedly be one of the most frequently-referenced reports among all of the LINKS financial and operating reports.

Service Center Statistics Report

> *"While many companies gather customer feedback and suggestions through focus groups and surveys, call centers capture customer input from a much broader customer base. At a typical call center, agents talk to thousands of customers every day and collect customer demographic information, purchasing preferences, complaints suggestions, and competitive intelligence. This information can be used to spot trends."* – Brad Cleveland, Chief Executive, Incoming Calls Management Institute, Annapolis MD

Current and potential customers interact with your firm's call center to purchase support services, schedule service appointments, and to ask questions about all aspects of your firm's support services. Your firm systematically tracks/counts callers' questions.

The "Service Center Statistics Report" provides categorized service center call counts of callers' questions for each of your firm's services in each market region. Service center call counts are reported for these ten categories: billings, design configuration, design quality, first-time usage, introduction (service introductions to market regions), miscellaneous, service call duration, service experience, service scheduling, and unfilled orders. Where a single caller has several questions, the call is recorded in multiple categories. Thus, these "call counts" are really "question counts" rather than counts of caller calls.

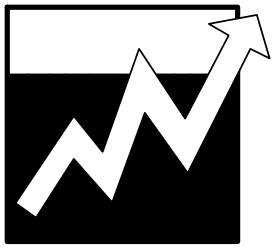
Your firm outsources service center management to a reputable provider/vendor in each region in which your firm operates. Your firm pays your outsourced service center $6/call received.

These costs are recorded as “Call Center Service” on your firm’s financial statements.

In the Excel results supplemental spreadsheet (accessible within the LINKS Simulation Database on the LINKS website), additional service center results are reported within the financial/operations results for the current quarter.

- A Service Center Statistics History Report follows immediately after the Service Center Statistics Report. Historical service center statistics (service center calls in each of the ten calling categories) are reported for each service and region for each of the last six quarters. This report permits convenient historical analysis of trends in service center calls.
- Sales volume for each service/region/quarter is included with the service center statistics and the service center statistics history (an additional row of data) to permit convenient data scaling. For example, dividing the raw service center calls data by sales volume expresses the service center calls in scale-adjusted “call per sales order” terms.

Forecasting Accuracy Report



The "Forecasting Accuracy Report" provides details of the forecasting accuracy associated with your short-term (next-quarter) sales volume forecasts. In addition, the sales history for all of your firm's services (sales by support service and region) for the last six quarters is displayed at the end of this report.

Forecasting accuracy is equal to 100*(1-(abs(Forecast-Actual)/Actual)) expressed in percentage terms, where "abs" is the absolute value function. Thus, a forecast value of 11,000 and an actual value of 8,000 results in a forecast accuracy of 100*(1-abs(11,000-8,000)/8,000) = 100*(1-(3,000/8,000)) = 100*(1-0.375) = 62.5%. The minimum possible value of forecasting accuracy is 0.0%. For example, with an Actual sales volume of 8,000, a Forecast above 16,000 results in a forecasting accuracy score of 0.0%.

Sample Reports

"The meaning of life is to do the best you can with what you've got." – Anonymous

The following pages provide samples of the standard LINKS financial and operating reports. In addition to these reports, you'll receive the results of any research studies that you order on additional pages after the last page of your financial and operating reports.

These samples are provided to familiarize you with the style and format of the reports that are provided to your firm after each LINKS round. The data reported in these sample reports are only illustrative of reports formatting. These data aren’t specific to your particular LINKS industry. Please do not interpret these samples as suggested guidelines or benchmarks for good decisions and performance within LINKS.

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**************************************************************************
FIRM 5:  Support Services Ltd.                                INDUSTRY SRV
PERFORMANCE EVALUATION REPORT, QUARTER 16                          PAGE   1
**************************************************************************
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	Firm 5	Industry Worst	Industry Average	Industry Best
FINANCIAL				
Net Income to Revenues	11.3%	11.3%	12.6%	13.7%
Change in Net Income to Revenues	-2.1%	-2.1%	0.3%	1.2%
OPERATIONAL				
Fill Rate	99.0%	95.9%	98.5%	99.6%
Forecasting Accuracy	79.6%	71.9%	75.7%	79.6%
CSR Turnover	6.5%	11.7%	8.7%	6.5%
CSR Cost/Call	77.4	77.4	73.3	69.9
CUSTOMER				
Change in Market Share	-1.8%	-1.8%	0.0%	0.6%
Customer Satisfaction	28.4%	28.4%	30.7%	32.0%

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**************************************************************************
FIRM 1:  Worldwide Services                                   INDUSTRY ABC
LINKS DASHBOARD, QUARTER 10                                        PAGE   1
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	Quarter 10		Quarter 11	
Sales Volume	91,859		99,593	
Unfilled Orders	397		1,178	
Price	209		204	
Revenues	19,235,800	100.0%	20,350,190	100.0%
Variable Costs	4,000,226	20.8%	4,137,159	20.3%
Gross Margin	14,316,984	74.4%	15,217,101	74.8%
Net Income	1,625,053	8.4%	1,921,030	9.4%

For Your Information

You receive the LINKS scorecard (shown above) automatically each quarter as the first page of your financial and operating reports. This scorecard provides comparatives to assess how your firm's data compares to the industry averages and industry bests on every Key Performance Indicatory (KPI).

Historical plots of all KPIs are provided in your firm's supplementary results Excel spreadsheet ("KPIcharts" worksheet), accessible within the LINKS website's LINKS Simulation Database. Data from the past six quarters are displayed, to the extent available in your industry's historical archives, to create quarter-by-quarter plots for each of the LINKS performance evaluation metrics (KPIs) compared to the relevant quarter-specific industry best, industry average, and industry worst for your industry.

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**********************************************************************************
FIRM 5:  ??????????????????????????????????????????????      INDUSTRY AAA
CORPORATE P&L STATEMENT, QUARTER  6                                 PAGE   4
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	All Services	Service 5-1	Service 5-2
Sales Volume	98,841	61,352	37,489
Unfilled Orders	2,133	0	2,133
Price	203	160	275
Revenues	20,125,795	9,816,320	10,309,475
- Variable Costs	4,077,933	1,472,448	2,605,485
- Order Processing	988,410	613,520	374,890
Gross Margin	15,059,452	7,730,352	7,329,100
Fixed & Other Costs:			
Administrative O/H	600,000	300,000	300,000
Call Center Service	728,748	492,354	236,394
Consulting Fees	0		
Corporate O/H	1,000,000		
Forecast Inaccuracy	130,130	62,769	67,361
Information Technology	17,000		
Introductions	0		
Marketing	2,400,000	1,200,000	1,200,000
Price Changes	0	0	0
Research Studies	0		
Service Salaries	2,970,000	1,485,000	1,485,000
Service O/H	2,970,000	1,485,000	1,485,000
Service HFT	288,000	144,000	144,000
Unfilled Handling	42,660		
Total Fixed & Other	11,146,538	5,169,123	4,917,755
Operating Income	3,912,914	2,561,229	2,411,345
Non-Operating Income	53,650		
Taxes	-1,983,282		
Net Income	1,983,282		

****
FIRM 5: ?? INDUSTRY AAA
HISTORICAL CORPORATE P&L STATEMENT, QUARTER 6 PAGE 5
****

	Previous (Quarter 5)		Current (Quarter 6)	
Sales Volume	101,491		98,841	
Unfilled Orders	3,344		2,133	
Price	204		203	
Revenues	20,713,555	100.0%	20,125,795	100.0%
- Variable Costs	4,206,324	20.3%	4,077,933	20.3%
- Order Processing	1,014,910	4.9%	988,410	4.9%
Gross Margin	15,492,321	74.8%	15,059,452	74.8%
Fixed & Other Costs:				
Administrative O/H	600,000	2.9%	600,000	3.0%
Call Center Service	735,072	3.5%	728,748	3.6%
Consulting Fees	0	0.0%	0	0.0%
Corporate O/H	1,000,000	4.8%	1,000,000	5.0%
Forecast Inaccuracy	138,065	0.6%	130,130	0.6%
Information Technology	17,000	0.1%	17,000	0.1%
Introductions	0	0.0%	0	0.0%
Marketing	2,400,000	11.6%	2,400,000	11.9%
Price Changes	0	0.0%	0	0.0%
Research Studies	0	0.0%	0	0.0%
Service Salaries	2,997,000	14.5%	2,970,000	14.8%
Service O/H	2,997,000	14.5%	2,970,000	14.8%
Service HFT	288,000	1.4%	288,000	1.4%
Unfilled Handling	66,880	0.3%	42,660	0.2%
Total Fixed & Other	11,239,017	54.3%	11,146,538	55.4%
Operating Income	4,253,304	20.5%	3,912,914	19.4%
Non-Operating Income	32,069	0.2%	53,650	0.3%
Taxes	-2,142,686	-10.3%	-1,983,282	-9.9%
Net Income	2,142,687	10.3%	1,983,282	9.9%

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**************************************************************************
FIRM 5:  ??????????????????????????????????????????????      INDUSTRY RNB
SERVICE 5-1 P&L STATEMENT, QUARTER  6                            PAGE   6
**************************************************************************
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	All Regions (TOTAL)	Region 1 (Central)	Region 2 (North)	Region 3 (East)
Active?		Yes	Yes	Yes
Sales Volume	61,352	17,995	17,850	25,507
Unfilled Orders	0	0	0	0
Price	160	160	160	160
Revenues	9,816,320	2,879,200	2,856,000	4,081,120
- Variable Costs	1,472,448	431,880	428,400	612,168
- Order Processing	613,520	179,950	178,500	255,070
Gross Margin	7,730,352	2,267,370	2,249,100	3,213,882
Fixed Costs:				
Administrative O/H	300,000	100,000	100,000	100,000
Call Center Service	492,354	139,458	142,560	210,336
Forecast Inaccuracy	62,769	3,245	34,672	24,852
Marketing	1,200,000	400,000	400,000	400,000
Price Changes	0	0	0	0
Service Salaries	1,485,000	549,000	400,500	535,500
Service O/H	1,485,000	549,000	400,500	535,500
Service HFT	144,000	54,000	36,000	54,000
Total Fixed Costs	5,169,123	1,794,703	1,514,232	1,860,188
Operating Income	2,561,229	472,667	734,868	1,353,694
Sales Volume Forecast		17,411	11,661	19,168
Service: CSR Salary $/Month		3,000	3,000	3,000
Service: CSR Hiring&Firing		12	0	0
Service: CSR Experienced Hiring		3	6	9
Service: CSR Transfer From Region 1		0	0	0
Service: CSR Transfer From Region 2		0	0	0
Service: CSR Transfer From Region 3		0	0	0
Service: CSR Maximum Capacity Limit		95	95	95
Service: CSR Time Allocation		50	50	50

Service 1-1 Configuration: H446320

For Your Information

The standard LINKS quarterly reports include separate P&L statements for each of your support services. In this sample display, only the report for service 1 is included.

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********************************************************************************
FIRM 5:  ??????????????????????????????????????????????????      INDUSTRY AAA
BALANCE SHEET, QUARTER  6                                             PAGE   8
********************************************************************************

ASSETS
------
Cash                                                                1,895,795
Marketable Securities                                               7,593,318
Facilities and Equipment Investment                                50,000,000
Total Assets                                                       59,489,113

LIABILITIES AND EQUITIES
------------------------
Corporate Capitalization                                           50,000,000
Dividends, Current Quarter                                           -725,938
Dividends, Cumulative Prior To This Quarter                        -3,340,821
Loans                                                                       0
Retained Earnings, Current Quarter                                  2,419,795
Retained Earnings, Cumulative Prior To This Quarter                11,136,077
Total Liabilities and Equities                                     59,489,113
```

```
********************************************************************************
FIRM 5:  ??????????????????????????????????????????????????      INDUSTRY AAA
SERVICE VARIABLE COST REPORT, QUARTER  6                              PAGE   8
********************************************************************************
```

	Service 5-1	Service 5-2
Support Service Category	0.00	0.00
CSR Technical Training	0.00	0.00
CSR Service Skills Training	0.00	0.00
Service Appointment Scheduling	0.25	12.50
Scheduling Style	0.00	12.00
Service Call Duration	10.00	5.00
Service Call Format	10.00	20.00
	20.25	49.50

```
********************************************************************************
FIRM 5:  ??????????????????????????????????????????????      INDUSTRY ASU
SERVICE OPERATIONS REPORT, QUARTER  6                              PAGE   9
********************************************************************************
```

	All Regions	Region 1	Region 2	Region 3
STAFFING REPORT				
Beginning CSRs	314	136	82	96
− CSR Resignations	−31	−15	−8	−8
− CSR Firing	0	0		
+ Experienced Hires	18	3	6	9
+ CSR Hiring	12	12		
+ CSR Transfer From R1		0	0	0
+ CSR Transfer From R2		0	0	0
+ CSR Transfer From R3		0	0	0
− CSR Transfer To R1		0	0	0
− CSR Transfer To R2		0	0	0
− CSR Transfer To R3		0	0	0
= Available CSRs	313	136	80	97
PRODUCTIVITY REPORT				
SERVICE 5-1 [H217420]				
Gross CSR Productivity		528.0	528.0	528.0
− Technical Training		−6.0	−6.0	−6.0
− Service Skills Training		−3.0	−3.0	−3.0
− Service Appoint Scheduling		0.0	0.0	0.0
− Duration and Format		−47.2	−47.2	−47.2
Net CSR Productivity		471.8	471.8	471.8
CSRs		124	80	97
Hires Productivity		314.5		
Hires		12		
Transfer Productivity		393.2	393.2	393.2
Transfers To This Region		0	0	0
Time Allocation		50%	50%	50%
Potential CSR Capacity		31,139	18,872	22,883
CSR Maximum Capacity Limit		95%	95%	95%
Actual CSR Capacity		29,582	17,928	21,738
SERVICE 5-2 [M537111]				
Gross CSR Productivity		528.0	528.0	528.0
− Technical Training		−15.0	−15.0	−15.0
− Service Skills Training		−9.0	−9.0	−9.0
− Service Appoint Scheduling		0.0	0.0	0.0
− Duration and Format		−126.0	−126.0	−126.0
Net CSR Productivity		378.0	378.0	378.0
CSRs		124	80	97
Hires Productivity		252.0		
Hires		12		
Transfer Productivity		315.0	315.0	315.0
Transfers To This Region		0	0	0
Time Allocation		50%	50%	50%
Potential CSR Capacity		24,947	15,119	18,332
CSR Maximum Capacity Limit		95%	95%	95%
Actual CSR Capacity		23,699	14,363	17,415

```
********************************************************************************
FIRM 5:  ??????????????????????????????????????????????      INDUSTRY ASU
SERVICE OPERATIONS REPORT, QUARTER  6                            PAGE  10
********************************************************************************


===============
ACTIVITY REPORT
===============

SERVICE 5-1
  Service Calls         58,850  23,808  13,304  21,738
  CSR Capacity          72,894  31,139  18,872  22,883
  CSR Utilization [Q# 6]           76%     71%     90%
  CSR Utilization [Q# 5]           74%     70%     91%
  CSR Cost/Call          50.31   53.68   56.83   42.64
  CSR Turnover                     10%     10%      8%

SERVICE 5-2
  Service Calls         34,698  15,370   8,120  11,208
  CSR Capacity          58,398  24,947  15,119  18,332
  CSR Utilization [Q# 6]           62%     54%     61%
  CSR Utilization [Q# 5]           60%     50%     58%
  CSR Cost/Call          85.34   83.15   93.10   82.71
  CSR Turnover                     12%     10%      8%
```

```
**************************************************************************
FIRM 5:  AAA Support Services                                 INDUSTRY AAA
SERVICE CENTER STATISTICS REPORT, QUARTER 16                     PAGE  11
**************************************************************************
```

	All Regions	Region 1	Region 2	Region 3
SERVICE 1-1				
Billings	3,743	1,381	836	1,526
Design Configuration	3,772	1,172	845	1,755
Design Quality	16,351	5,588	3,388	7,375
First-Time Usage	8,823	2,903	2,081	3,839
Introduction	0	0	0	0
Miscellaneous	7,708	2,859	1,584	3,265
Service Call Duration	3,547	1,142	766	1,639
Service Experience	8,414	1,978	3,078	3,358
Service Scheduling	31,840	11,166	7,596	13,078
Unfilled Orders	832	0	636	196
SERVICE 1-2				
Billings	2,587	1,156	841	590
Design Configuration	2,422	1,075	845	502
Design Quality	9,378	4,432	3,114	1,832
First-Time Usage	5,758	2,623	2,008	1,127
Introduction	0	0	0	0
Miscellaneous	5,705	2,485	1,966	1,254
Service Call Duration	1,247	603	401	243
Service Experience	6,929	2,157	3,034	1,738
Service Scheduling	8,905	4,163	2,906	1,836
Unfilled Orders	601	425	176	0
ALL SERVICES				
Billings	6,330	2,537	1,677	2,116
Design Configuration	6,194	2,247	1,690	2,257
Design Quality	25,729	10,020	6,502	9,207
First-Time Usage	14,581	5,526	4,089	4,966
Introduction	0	0	0	0
Miscellaneous	13,413	5,344	3,550	4,519
Service Call Duration	4,794	1,745	1,167	1,882
Service Experience	15,343	4,135	6,112	5,096
Service Scheduling	40,745	15,329	10,502	14,914
Unfilled Orders	1,433	425	812	196
... Total ...	128,562			

```
**************************************************************************
FIRM 5:  ??????????????????????????????????????????????      INDUSTRY ABC
FORECASTING ACCURACY REPORT, QUARTER 16                          PAGE  13
**************************************************************************
```

	Region	Forecast	Actual	Accuracy
Service 5-1	1	17,421	23,808	73.2%
Service 5-1	2	11,784	13,304	88.6%
Service 5-1	3	19,114	21,738	87.9%
Service 5-2	1	13,870	15,370	90.2%
Service 5-2	2	9,765	8,120	79.7%
Service 5-2	3	6,747	11,208	60.2%

SUMMARY: For 6 forecasts, average forecasting accuracy is 80.0%

Note: Forecasts count within the calculation of forecasting accuracy only if the "actual" value being forecast is greater than 100 for sales volumes (to not penalize you for "small" forecasts). Otherwise, the relevant values of "forecast" and "actual" are only reported for reference purposes, but such forecasts are not counted for forecasting accuracy scoring. This is the reason why the number of forecasts referenced in "SUMMARY" may be less than the detailed line-by-line reporting of forecasts.

SALES HISTORY	Quarter 11	Quarter 12	Quarter 13	Quarter 14	Quarter 15	Quarter 16
REGION 1						
Service 5-1H	17,421	20,665	19,287	22,765	20,485	23,808
Service 5-2M	13,870	14,881	18,138	12,513	20,416	15,370
REGION 2						
Service 5-1H	11,784	14,578	13,246	13,821	18,175	13,304
Service 5-2M	9,765	12,149	12,017	11,333	14,365	8,120
REGION 3						
Service 5-1H	19,114	20,393	15,856	19,628	21,514	21,738
Service 5-2M	6,747	6,994	8,817	8,399	8,881	11,208

Research Studies

"Research is the process of going up alleys to see if they are blind." - Marston Bates

This chapter describes the research studies that are available in the LINKS Service Quality Management Simulation. These research studies provide information about competitors and about your firm, competing firms, and about the support services industry and markets. These research studies are typical of the kinds of research resources that exist in service industries, and the associated costs are typical of the approximate magnitude of the costs associated with such research studies in "real" industries. However, there's no reason to believe that every one of these research studies is appropriate and useful at all times or worth the associated costs. You'll have to decide whether these research studies are worth their stated costs.

Research studies requests are submitted along with your other decision variable changes. Although LINKS research studies are ordered prior to the beginning of the next quarter, research studies are executed during and after the next quarter, as appropriate. Thus, research studies reports always reflect the just-completed quarter's experience.

An overview of the available LINKS research study resources is provided in Exhibit 5.

Exhibit 5: Overview of LINKS Research Studies

#	Research Study	Cost	Limit
1	Benchmarking – Earnings	$500	
8	Benchmarking - Service (CSR Usage)	$5,000	
9	Benchmarking – Marketing	$5,000	
12	Market Statistics	$2,500	
13	Employee Satisfaction	$15,000	
14	Regional Summary Analysis	$5,000 per region	
18	Experience Quality Perceptions	$10,000	
20	Customer Satisfaction	$10,000	
24	Price Sensitivity Analysis	$20,000 per service per region	4
38	Retention Statistics	$10,000	

In thinking about research studies strategy and tactics, some generalizations are possible:

- Excellent strategy can only be developed based on excellent analysis. Since research provides

the raw data for excellent analysis, research should be an important component of your LINKS decision-making process. Do not relegate your research studies pre-ordering decisions to the last five minutes of team meetings. Rather, treat research studies ordering decisions as a fundamental part of your whole LINKS decision-making process.

- Plan ahead. To identify patterns and trends, you will probably need to order some research studies on a more-or-less regular basis. A formal research studies plan should be a part of your management planning process.
- Systematize the post-analysis of research studies. This might involve, for example, the continual updating of databases, charts, or graphs to reformat the raw LINKS research studies results into more meaningful and useful forms.
- Share insights derived from particular research studies with all of your team members. These may require research studies' "experts" to assume coaching roles with research studies "novices." This is a natural state of affairs. Given the complexity of LINKS, it is not possible to be an "expert" on everything.

In the following research study descriptions, sample output illustrates style and formatting of research study output. **These samples are only for illustrative purposes.** The output should not be viewed as providing any specific insight into your particular support services industry.

Research Study #1: Benchmarking - Earnings

Purpose: This research study provides earnings benchmarks for your industry. The current-quarter earnings, cumulative-to-date earnings, and current-quarter dividends of each firm in your industry are reported. In addition, a variety of financial market statistics are reported.

Information Source: These data are based on public information.

Cost: $500.

Sample Output

```
========================================================================
RESEARCH STUDY # 1 (Benchmarking - Earnings                            )
========================================================================


                            Current   Cumulative      Current
                          Net Income   Net Income    Dividends
                          ----------  ----------   ----------
Firm 1                     2,974,292    5,788,265      892,287
Firm 2                     3,472,461    6,234,171    1,041,738
...

Financial Market Statistics [stock price, shares outstanding (millions),
earnings per share, dividends per share, market capitalization ($millions)]
                ------  ------  ------  ------
               Firm 1  Firm 2  Firm 3  Firm 4
                ------  ------  ------  ------
StockPrice     120.00  131.80  117.63  123.96
Shares           2.0M    2.0M    2.0M    2.0M
EPS              1.49    1.74    1.44    1.57
DPS               .45     .52     .43     .47
MarketCap        240M    264M    235M    248M
```

Research Study #8: Benchmarking - Service (CSR Usage)

Purpose: This research study provides service benchmarks in the forms of CSR usage rates (utilization) for each of the last four quarters are reported by service and region.

Information Source: This research study is based on information sharing and pooling agreements administered by the Support Services Industry Trade Association.

Sample Output

```
========================================================================
RESEARCH STUDY # 8 (Benchmarking - Service (CSR Usage)                 )
========================================================================

                        Quarter 93   Quarter 94   Quarter 95   Quarter 96
                        ----------   ----------   ----------   ----------

--------
REGION 1
--------
Service 1-1H                    61           70           80           73
Service 1-2M                    51           56           65           62
Service 2-2M                    66           71           67           69
...
```

Cost: $5,000.

Research Study #9: Benchmarking - Marketing

Purpose: This research study provides marketing benchmarks for your industry. Price and marketing statistics (minimum, average, and maximum) for each service category and market region are provided for each of the last four quarters.

Information Source: This research study is based on information sharing and pooling agreements administered by the Support Services Industry Trade Association.

Cost: $5,000.

Sample Output

```
=====================================================================
RESEARCH STUDY # 9 (Benchmarking - Marketing                         )
=====================================================================

                          Quarter 55   Quarter 56   Quarter 57   Quarter 58
                          ----------   ----------   ----------   ----------

-----------
HOUSEHOLD
REGION 1
min/ave/max
-----------
  Price [$]             435 520 657  431 554 689  437 542 662  429 542 662
  Mktg [$K]             100 161 300    0 183 300    0 157 300    0 181 326


-----------
MAJORACC
REGION 1
min/ave/max
-----------
  Price [$]             465 515 603  477 573 692  489 594 687  579 676 839
  Mktg [$K]             100 130 200   94 138 200  100 149 200  100 157 218
```

Research Study #12: Market Statistics

"Those who cannot remember the past are condemned to repeat it." - George Santayana

Purpose: This research study provides a variety of market statistics for the last four quarters:

- Industry demand (final customer purchases) and unfilled orders are reported for Household and Major Accounts service categories.
- Overall market shares for each firm are provided for each of the last four quarters. These market shares are based on end-user customer purchase volumes.

Information Source: This research study is compiled by your research vendor using a variety of sources.

Cost: $2,500.

Sample Output

```
=====================================================================
RESEARCH STUDY #12 (Market Statistics                                )
=====================================================================

                        Quarter 11   Quarter 12   Quarter 13   Quarter 14
                        ----------   ----------   ----------   ----------

---------------
INDUSTRY DEMAND
---------------
Region 1:
  Household Demand          60,231       59,075       59,244       59,165
  Household Unfilled             0            0            0            0
  MajorAcc Demand           29,940       31,385       31,145       30,422
  MajorAcc Unfilled              0            0            0            0
Region 2:
  Household Demand          21,988       23,306       23,136       22,930
  ...
...

---------------------
OVERALL MARKET SHARES
---------------------
Firm 1                        18.0         26.6         25.3         20.7
Firm 2                        19.5         17.4         18.8         17.9
Firm 3                        19.9         19.1         17.6         20.0
Firm 4                        21.7         19.8         19.7         19.6
Firm 5                        20.9         17.1         18.6         21.8
```

Research Study #13: Employee Satisfaction

Purpose: This research study provides employee satisfaction estimates of all firms' services in all regions for the last four quarters based on results of an industry-wide CSR employee satisfaction survey conducted by the Support Services Industry Trade Association.

Sample Output

```
=====================================================================
RESEARCH STUDY #13 (Employee Satisfaction                           )
=====================================================================

                        Quarter 33   Quarter 34   Quarter 35   Quarter 36
                        ----------   ----------   ----------   ----------

--------
REGION 1
--------
  Service 1-1H              23.0         18.8         27.2         25.8
  Service 3-1H              16.0         22.8         26.8         23.4
  Service 4-2M              25.2         27.2         29.3         20.0
  Service 5-1H              31.5         29.5         29.9         21.9
...
```

Information Source: Employee satisfaction is estimated via a regular, quarterly industry-wide CSR employee satisfaction survey. CSR employee satisfaction is the percentage of survey respondents rating their overall job satisfaction with as "excellent" on a 4-point "poor"-"fair"-"good"-"excellent" rating scale.

Cost: $15,000.

Research Study #14: Regional Summary Analysis

"If you torture the data long enough, it will confess." – Anonymous

Purpose: This research study provides a regional summary analysis for each specified market region, including current-quarter market shares, prices, and perceptions of design quality (service design quality), experience quality (service operations quality), and accessibility of all actively-marketing support services.

"Design Quality" (service design quality) is perceived service offering design quality which follows from the service's configuration.

- "Experience Quality" (service operations quality) reflects customers' perceptions of the service operations quality associated with their support service experience. Service quality derives from experiences with each firm's CSRs. High utilization levels of CSRs presumably leads to lower service levels, since customers must queue for service and be served by over-worked CSRs.
- "Accessibility" is perceived service accessibility, reflecting customers' perceptions of top-of-mind awareness, inaccessibility due to unfilled orders, ease of access, purchase convenience, and general presence/prominence in the market place.

Sample Output

```
=====================================================================
RESEARCH STUDY #14 (Regional Summary Analysis                       )
=====================================================================

REGION 2
HOUSEHOLD | Volume | Market Share | Price | DQ | EQ | Ac
    1-1   | 17,092 | 17.8-        |   220 |  2 | 71+ | 46+
    2-1*  | 28,135 | 29.4+        |   225 | 26+| 77+ | 40+
    3-1   | 15,938 | 16.6-        |   212 |  2 | 72+ | 38-
    4-1u  | 11,673 | 12.2-        |   210 |  2 | 68+ | 44+
    5-1   | 15,855 | 16.6         |   215 |  2 | 77+ | 31
    6-1*  |  7,082 |  7.4         |   230 |  2 | 27- | 30-

REGION 2
MAJORACC | Volume | Market Share | Price | DQ | EQ | Ac
    1-2r  |  8,956 |  9.4-        |   330 |  3 | 72+ | 43+
    2-2u  |  5,821 |  6.1-        |   299-|  3 | 74+ | 29-
    3-2r  | 27,839 | 29.1+        |   330 | 12+| 71+ | 46+
    4-2*  | 30,483 | 31.9+        |   380+| 68+| 66+ | 30-
    5-2r  | 10,828 | 11.3-        |   330 |  3 | 74+ | 41
    6-2u  | 11,781 | 12.3-        |   470 | 96 | 27- | 31-

Notes:
(1) "Volume" is sales volume in units.
(2) Other variables listed above are market share, customer price
    ("Price"), perceived design quality ("DQ"), perceived experience
    quality ("EQ"), and perceived accessibility ("Ac").
(3) Changes of more than 2%, $20, 2%, 2%, and 2%, respectively, in these
    variables from the previous quarter are flagged with "+" (increase)
    and "-" (decrease) signals after the numerical values.
(4) "r" after a firm#-service# denotes a reconfigured service this quarter.
(5) "u" after a firm#-service# denotes a service with unfilled orders.
(6) "*" after a firm#-service# denotes a reconfigured service that has
    unfilled orders.
```

Information Source: Perceived design quality (service design quality), perceived experience quality (service operations quality), and perceived accessibility are based on a survey of support services customers. These perceptual ratings are the percentages of survey respondents rating design quality (service design quality), experience quality (service operations quality), and accessibility as "excellent" on a 4-point "poor"-"fair"-"good"-"excellent" rating scale.

Cost: $5,000 per region.

Research Study #18: Experience Quality Perceptions

Purpose: This research study provides the experience quality perceptions of all services in the Household and Major Accounts categories in all regions for the last three quarters. This research study plots current-quarter experience quality perception against last-quarter's CSR usage (utilization) rates using data from the last three quarters for all services in your industry.[3] Charts are provided for the Household and Major Accounts support service categories in each region.

"Experience Quality" is perceived service operations quality which reflects customers' perceptions of the delivery of the support services experience. Service operations quality derives from customers' experiences with each firm's CSRs. High CSR usage (utilization) rates presumably lead to lower service operations quality levels, since customers must be queued for service and may be served by more harried CSRs. CSR usage rate (lower is better from the customer's viewpoint), CSR salary (higher salary attracts, retains, and motivates more-able service personnel), and turnover (training of new CSRs takes time and energy away from providing customer service) all influence service operations quality perception.

Information Source: Service quality perception is based on a customer survey of current users. Service quality perception is the percentage of survey respondents rating the service's operations quality as "excellent" on a 4-point "poor"-"fair"-"good"-"excellent" rating scale. CSR service capacity usage rates are based on information sharing and pooling agreements among all firms in support services industry. This information sharing and pooling agreement is administered by the Support Services Industry Trade Association.

Cost: $10,000.

[3] The historical time span for Research Study #18 is the current and preceding three quarters. But, only three quarters of historical data pairs are available for analysis since current-quarter experience quality perceptions are plotted against last-quarter service capacity usage rate. For example, in Quarter #10:

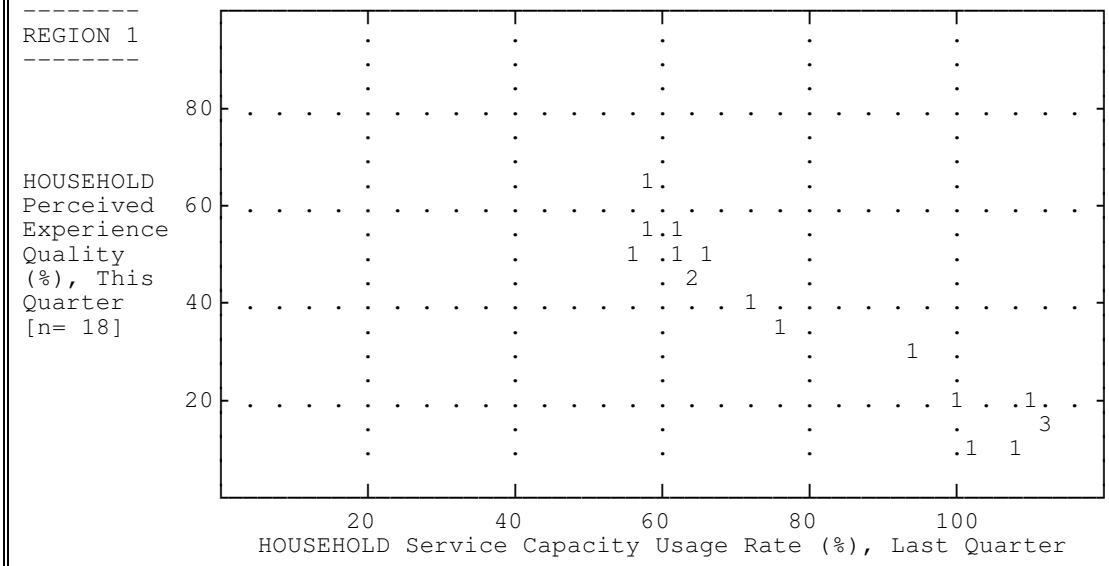
- The first of the three quarter's of available historical data are Q#10 experience quality perceptions vs. Q#9 service capacity usage rates.
- The second of the three quarter's of available historical data are Q#9 experience quality perceptions vs. Q#8 service capacity usage rates.
- The third of the three quarter's of available historical data are Q#8 experience quality perceptions vs. Q#7 service capacity usage rates.

Sample Output:

```
================================================================================
RESEARCH STUDY #18 (Experience Quality Perceptions                    )
================================================================================

                            Quarter 14   Quarter 15   Quarter 16   Quarter 17
                           -----------  -----------  -----------  -----------

--------
REGION 1
--------
  Service 1-1H                    50.2         47.4         55.2         13.0
  Service 1-2M                    43.9         44.6         35.9         13.0
  Service 2-1H                    61.1         54.1         42.9         38.3
  Service 2-2M                    47.7         40.5         40.0         42.5
  Service 3-1H                    36.2          9.9         10.2          9.0
  Service 3-2M                    36.6         20.0         26.5         36.6
```




```
Note:  Active services for the last three quarters are plotted with multiple
data points in the same grid location coded by numbers (e.g., if three data
points occupy the same grid location, then the number "3" is reported).  Ten
or more data points at one grid location are denoted by "*".
```

Research Study #20: Customer Satisfaction

Purpose: This research study provides customer satisfaction estimates of all services in the Household and Major Accounts categories in all regions for the last four quarters.

Sample Output

```
=====================================================================
RESEARCH STUDY #20 (Customer Satisfaction                           )
=====================================================================

                       Quarter 33   Quarter 34   Quarter 35   Quarter 36
                      -----------  -----------  -----------  -----------

--------
REGION 1
--------
  Service 1-1H              23.0         18.8         27.2         25.8
  Service 3-1H              16.0         22.8         26.8         23.4
  Service 4-2M              25.2         27.2         29.3         20.0
  Service 5-1H              31.5         29.5         29.9         21.9
...
```

Information Source: Customer satisfaction is based on a customer survey. Customer satisfaction is the percentage of survey respondents rating their overall satisfaction with a support service as "excellent" on a 4-point "poor"-"fair"-"good"-"excellent" rating scale.

Cost: $10,000.

Research Study #24: Price Sensitivity Analysis

"Any sufficiently advanced technology is indistinguishable from magic." – Arthur C. Clarke

Purpose: This research study provides a price sensitivity analysis for a specific support service in a specific region (or all regions).

Information Source: This research study is based on surveys of customers, using advanced marketing research techniques.

Study Details: These price sensitivity analyses isolate the impact of price on market share, while holding other market share drivers constant (design quality, experience quality, and accessibility perceptions).

Nine price levels are used in this research study. With no user-specified price input, these price levels are automatically centered around the current price (the "Reference Price") of the service in each region for which this research study is executed. Values of -40%, -30%, -20%, -10%, 0% (i.e., current price), +10%, +20%, 30%, and +40%, relative to the service's "Reference Price," are used.

If price is left at its default value (0), then Research Study #24 is executed with the existing service centered around the current price of the specified service. Otherwise, the user-specified price (with the specified price being the "Reference Price") is used. Market share predictions are provided for all tested prices in Research Study #24. Research study output includes market share and gross margin estimates in research study requests.

Case Study: Amazon.com

Amazon.com has been charging customers different prices for the same products. For example, the company has charged some users $23.97 and others $25.97 for a DVD version of "Men in Black." Patty Smith, an Amazon spokeswoman, said the different prices were part of a test Amazon is conducting "to measure what impacts a decision to purchase or not to purchase." Ms. Smith said Amazon test customers are selected randomly and the prices they receive aren't based on any other characteristics.

Source: "Amazon.com Varies Price of Identical Items For Test," ***The Wall Street Journal*** (September 7, 2000)

Cost: $20,000 per price sensitivity analysis (per service per region). If you execute this research study for regions in a 3-region LINKS environment, the total cost would be $60,000.

Sample Output:

SERVICE 9-1H PREDICTED GROSS MARGINS IN REGION 8 [HOUSEHOLD]
Reference Price: 185

Price	$ 111	$ 130	$ 148	$ 167	$ 185	$ 203	$ 222	$ 240	$ 259
Cost	$ 65	$ 65	$ 65	$ 65	$ 65	$ 65	$ 65	$ 65	$ 65
Margin	$ 45	$ 64	$ 82	$ 101	$ 119	$ 137	$ 156	$ 174	$ 193
Sales Volume	61,320	47,178	37,327	29,233	23,308	18,701	14,935	12,305	10,138
Market Share	94.7%	72.9%	57.7%	45.2%	36.0%	28.9%	23.1%	19.0%	15.7%
Margin Chang	-62.2%	-46.2%	-31.1%	-15.1%	0.0%	15.1%	31.1%	46.2%	62.2%
MS Change	163.1%	102.4%	60.1%	25.4%	0.0%	-19.8%	-35.9%	-47.2%	-56.5%
Net Change	-0.5%	8.9%	10.4%	6.4%	0.0%	-7.6%	-16.0%	-22.8%	-29.5%
Gross Margin (in $000s)	$2,759	$3,019	$3,060	$2,952	$2,773	$2,562	$2,329	$2,141	$1,956
Service Cost (in $000s)	4,470	3,439	2,721	2,131	1,699	1,363	1,088	897	739
Adjusted Gross Margin (in $000s)	-1,711	-420	339	821	1,074	1,199	1,241	1,244	1,217

In estimating "Service Cost," it is assumed that the current cost-per-call for service 1 in region 8 applies for all sales volumes included in this price sensitivity analysis. CSR staffing for service 1 in region 8 is assumed to adjust to the predicted sales volumes, to maintain the current service capacity usage level at all prices included in this price sensitivity analysis. For your reference, the current cost-per-call for service 1 in region 8 is 72.91 and the current CSR utilization is 90.0%.

Unfilled orders are assumed to be zero in this price sensitivity analysis.

These estimated per-unit costs of $ 65.50 include these cost components:
Variable Costs $ 55.50
Order Processing Costs $ 10.00

Special Interpretation Reminder: In interpreting these Gross Margin estimates for different price levels tested, service-related costs are assumed to be fixed. That is, it is assumed that there is no change in CSR staffing assignments (and service costs) for this support service in this region across any of the price levels tested in this Price Sensitivity Analysis. In addition, it is assumed that there is sufficient CSR capacity available for this support service in this region so that no unfilled orders exist across any of the price levels tested. Since these assumptions may be inappropriate, the Adjusted Gross Margin estimates are provided at the bottom of the price sensitivity analysis results.

Limitations: A maximum of four (4) research studies of this type may be executed each quarter. Each of these price sensitivity analysis research study requests must reference a single service and one or all regions. This research study may only be conducted for services that are already actively distributed in a region. This research study may not be used for

services prior to their introduction into a region.

Additional Information: These market share predictions and subsequent estimates of gross margins are based on the assumption that competing support services don't change their generate demand programs. Obviously, large price changes will tend to evoke competitive responses.

The reported market shares in Research Study #24 are long-run estimates of market shares if you continue with all of your current customer-facing initiatives (configurations, marketing spending, service levels, etc.) as they are now and so do competitors. Market infrastructure issues (like unfilled order status) are not considered. Only your price is "manipulated" in Research Study #24. Thus, these Research Study #24 estimates of market share will not correspond exactly to your current actual market shares (as reported, for example, in Research Study #14).

Research Study #38: Retention Statistics

Purpose: This research study provides retention rates for all actively marketed services in all markets for the last four quarters.

Information Source: Retention rates are estimated based on a customer survey of current purchasers of support services. Retention rates are customers' stated intentions of probability of future purchase of the just-purchased support service.

Sample Output

RESEARCH STUDY #38 (Retention Statistics)

	Quarter 13	Quarter 14	Quarter 15	Quarter 16
REGION 1				
Service 1-1H	60.2	58.3	58.1	58.0
Service 1-2M	39.6	40.5	39.4	38.9
Service 2-1H	60.5	58.2	60.2	60.7
Service 2-2M	41.4	41.1	41.3	40.3
Service 3-1H	59.0	60.0	61.4	57.9
Service 3-2M	39.1	38.8	39.0	41.0
Service 4-1H	58.0	61.3	58.6	60.5
...				

Cost: $10,000.

Other Comments: Retention rates are measures of long-run average customer loyalty to a just-purchased support service. They are estimates of the average current purchaser's stated intention of probability of repeat purchase.

Decision Forms

"The secret of getting ahead is getting started. The secret of getting started is breaking your complex, overwhelming tasks into small manageable tasks, and then starting on the first one." – Mark Twain

Use the LINKS decision forms on the following three pages during your team deliberations to record your decisions in each month of the LINKS Marketing Tactics Simulation. Then, input these decisions into LINKS via the LINKS web-server.

With the exception of research studies orders (which must be made every month), all LINKS decisions are standing orders. (i.e., permanent until explicitly changed). You only need to enter decision changes. If you are satisfied with a current decision, there is no need to change it.

You are responsible for your own LINKS input. Here's advice from a past participant:

"Never ask just one person to input the data. The volume of input data is so extensive that even the most dependable individual will make mistakes. Our team president was responsible for data entry, but we always had one additional person verify the inputs. Even with this verification process, we still made input errors."

Service Operations Decisions

Firm		Quarter	

Service Operations Decisions	Region 1	Region 2	Region 3
CSR Salary $/Month			
CSR Hiring (+) and Firing (-)			
CSR Experienced Hiring			
CSR Transfer From Region 1			
CSR Transfer From Region 2			
CSR Transfer From Region 3			
CSR Maximum Capacity Limit			

CSR Time Allocations	Region 1	Region 2	Region 3
Service 1			
Service 2			
Total	100%	100%	100%

Note: *Service center time allocations must sum to 100% in each market region.*

Reminders

Only input changes. If you're happy with the current values of these decisions, leave the appropriate decision entries blank.

Don't forget to zero-out prior hiring/firing and transfer decisions if you don't wish them to continue on into the next quarter.

All decision inputs change the existing values to the values that you specify. Do not enter "+" or "-" values except for CSR firings which would, by definition, be a negative number. Rather, enter new values only (new values replace the existing value of the decision variable with your designated value).

Marketing and Forecasting Decisions

Firm		Quarter	

Service 1	Region 1	Region 2	Region 3
Active Service? {**Yes**|**No**}			
Price			
Marketing Spending			
Sales Volume Forecast			

Service 2	Region 1	Region 2	Region 3
Active Service? {**Yes**|**No**}			
Price			
Marketing Spending			
Sales Volume Forecast			

Reminders

Only input changes. If you're happy with the current values of these decisions, leave the appropriate decision entries blank.

All decision inputs change the existing values to the values that you specify. Do not enter "+" or "-" values. Rather, enter new values only (new values replace the existing value of the decision variable with your designated value).

Research Studies Decisions

Firm		Quarter	

1	Benchmarking - Earnings	
8	Benchmarking - Service (CSR Usage)	
9	Benchmarking - Marketing	
12	Market Statistics	
13	Employee Satisfaction	
14	Regional Summary Analysis	Region(s)?
18	Experience Quality Perceptions	
20	Customer Satisfaction	

24	Price Sensitivity Analysis	Service?	Region?	Configuration?	Price?
		Service?	Region?	Configuration?	Price?
		Service?	Region?	Configuration?	Price?
		Service?	Region?	Configuration?	Price?

38	Retention Statistics

***Notes**:*

(1) Circle the number of each research study that you wish to order. If additional information is required for a research study, provide that information in the designated space(s).

(2) When region numbers are required, enter a single region number. Use region "0" as a designation to run a research study for all regions. See the research study descriptions for details about the associated multi-region costs.

Reminders

Research study requests are for one quarter only. If you wish to reorder a research study in a subsequent quarter, you must reenter that research study request.

Performance Evaluation

"If you're riding ahead of the herd, take a look back every now and then to make sure it's still there." – Cowboy philosophy

Profitability measures obviously matter in assessing the long-run performance of a business. However, "other things" are leading indicators of future profitability and root causes of profitability. As you'll note from the details that follow, current performance and change in performance are considered in the LINKS multi-dimensional performance evaluation scorecard.

The LINKS scorecard is a boardroom-level scorecard. It focuses on top-line financial, operational, and customer performance measures and sub-measures. The LINKS scorecard includes the measures and weights described in Exhibit 6. Each firm in your support services industry submits their raw data to the Support Services Industry Trade Association, which provides your firm's scorecard every quarter.

The LINKS scorecard is based on a ranking of performance on each sub-measure. These rank-order comparisons across all competing firms within your industry avoid the undue influence of particularly extreme values of individual sub-measures. This LINKS scorecard is a within-industry performance evaluation system. Comparisons across industries are problematic due to variations in environmental and competitive milieu. Your firm receives weighted points for each competitor for whom your performance on a sub-measure is better. For example, if your firm's ratio of "Net Profits" to "Revenues" is better than three other firms' ratios, your firm receives 9 points. (Of course, the top-performing firm on "Net Income" to "Revenues" ratio in a 6-firm industry would receive 15 points.) In general, the maximum available points on any sub-measure are W*(N-1) where "W" is the sub-measure's weight and "N" is the number of firms in the industry. Points accumulate each quarter throughout the LINKS exercise.

To avoid an overemphasis on minor quarter-to-quarter variations in the calculation of the ranking of firms on the performance sub-measures in the LINKS scorecard, minor differences in the sub-measures are treated as ties in the calculation of ranking points. The thresholds for differences to be treated as meaningful are listed in Exhibit 6 for each sub-measure. For example, differences of 0.2% or less for "Ratio of Net Income to Revenues" are considered to be statistically insignificant, and firms within 0.2% of each other would be treated as being tied. Thus, two firms with ratios of Net Income to Revenues of 4.5% and 4.6% would be treated as being tied in the calculation of ranking position and associated points received in any quarter.

You receive the LINKS scorecard automatically each quarter as the first page of your financial and operating reports. This scorecard provides comparatives to assess how your firm's data compares to the industry averages on every KPI.

In addition, historical plots of past performance are provided. Data from the past six quarters are used, to the extent available in your industry's historical archives, to create quarter-by-quarter plots for each of the LINKS performance evaluation metrics. For each metric and quarter, the range of values the range of values across all firms in your LINKS industry is shown and your firm's position in these ranges is identified.

Exhibit 6: LINKS Scorecard Measures

Financial Sub-Measures	Weight	Sub-Measure Details
Ratio of Net Income to Revenues	3	Current profitability is the best overall signal of business performance, hence its high weight. Firms are "tied" if their scores are within 0.2% of each other.
Change in Ratio of Net Income to Revenues	1	Improvement in profitability is important but less important than current profitability. Firms are "tied" if their scores are within 0.2% of each other.

Operational Sub-Measures	Weight	Sub-Measure Details
Fill Rate	1	The percentage of orders that are filled. "Unfilled orders" occur when available capacity is less than orders in a quarter. Firms are "tied" if their scores are within 0.5% of each other.
Forecasting Accuracy	2	Forecasting accuracy is a relatively pure signal of management skill and expertise (in this case, in the area of understanding customers and customer demand generating forces). Firms are "tied" if their scores are within 0.5% of each other.
CSR Turnover	-1	Equal to the ratio of within-quarter CSR resignations to CSR staff size at the beginning of a quarter. Firms are “tied” if their scores are within 0.10 of each other.
CSR Cost/Call	-1	Equal to service spending (of all kinds) divided by total service center calls. Lower CSR cost/call is desirable. Firms are "tied" if their scores are within 0.20 of each other.

Customer Sub-Measures	Weight	Sub-Measure Details
Change in Market Share	1	Change in market share is an overall measure of customer reaction to the firm's offerings. Firms are "tied" if their scores are within 0.1% of each other.
Customer Satisfaction	2	Customer satisfaction measures the overall performance of the service from the perspective of purchasers. Thus, it's a clear measure of customer performance and a long-run leading indicator of repeat purchasing behavior and customer retention. Average customer satisfaction across all services and regions is used here. Firms are "tied" if their scores are within 0.5% of each other.

Notes: Positive "weights" are associated with sub-measures where "more is better" and negative "weights" are associated with sub-measures where "less is better." "Change" measures are based on quarter-to-quarter changes.

Firm Management and Advice

"Success doesn't come to you. You go to it." – Marva Collins

Planning

Planning occurs throughout LINKS. Your decisions are your plans. But, how are plans developed? And, how are good plans developed? Planning and plans are the consequence of careful analysis and formulation of appropriate strategies and tactics. Your plan is, therefore, the natural consequence of considerable prior analysis and thinking. This analysis-planning-implementation-evaluation sequence iterates through time as the results of your plans are revealed in the market place (and in your financial and operating statements).

The essence of planning involves answering these questions (and in this order):
(1) What is happening?
(2) How are we doing? How and what are "they" (our major competitors) doing?
(3) What factors are important for success?
(4) What are we going to do? Why? With what effect? At what cost?
(5) Who - specifically - is to do what to make the plan work?

Team Management and Organization

You are a member of a team in LINKS. Managing your team to obtain the best efforts of all team members is a continuing management challenge.

- Your most limited resource within LINKS is your team's available time. Well-performing teams inevitably manage their management time carefully and thoughtfully. Think carefully about how to allocate your management time to necessary tasks that exist within LINKS.
- As you gain experience with LINKS, it may well appear that a review is needed of an earlier group decision about how to allocate tasks, responsibilities, and available management time. Don't be shy within your LINKS team about asking the question: "Are we organized in the best way for the tasks ahead?" This is always a good question.

There are predictable signals of well-performing teams in simulations (and in real life!). Pamela Van Rees (Boston University MBA student), provided the following list of characteristics of well-functioning simulation teams:

- The firm's long-term well-being is the top priority of all members.
- Relevant issues are fully and adequately explored.
- Proposals and objectives are clearly explained.
- Members feel comfortable, spontaneous, respected, supported, and listened to.
- Feedback is given freely and directly.
- Disagreements are tactfully stated without being offensive.
- Differences and misunderstandings are resolved in such a way as to strengthen and deepen rather than weaken relationships (by exploring the origins and implication of ideas).
- Everyone's judgment is acknowledged and explored.
- Interruptions are minimal.
- At any given time in a group meeting, each firm member is either engaged in holding the focus (proposing an idea or decision), listening to another's focus, giving feedback about the focus, or

facilitating (creating the structure or leading) the discussion.

The principal causes of poor simulation team performance are a combination of the following:
(1) uncoordinated demand-supply management;
(2) lack of focus (capacity, reconfiguration, time, and human resource constraints combine to favor concentrated effort in fewer than "all" market regions);
(3) limited research and/or limited efforts to interpret the research studies that are available;
(4) limited attention to competitive developments (i.e., lack of in-depth competitor analysis to discover the underlying drivers of market behavior);
(5) financial mismanagement related to cost structure management (variable and fixed costs management, covering corporate-wide overheads, etc.), and capacity management;
(6) not understanding the simulation's structure/environment (i.e., treating the participant's manual in a cursory, fashion rather than something to be studied and referenced regularly);
(7) poor work ethic (not spending enough time on the simulation); and,
(8) team mismanagement (not spending enough time thinking about and discussing team management issues and related human resource deployment strategies and tactics).

End-Gaming Strategies and Tactics

Should you do anything “special” near the end of your LINKS exercise? Behave as if the simulation will not end at any specific pre-announced quarter. **Keep a long-run view and continuously try to improve your firm's performance.** Always manage your firm to improve its profitability through time. You don't have to get it perfect (i.e., achieve "optimal" profits, whatever that is), but you must improve through time. You take over a LINKS firm that is profitable as of quarter 1. Seek to improve your firm's profitability through time ... and that time extends to and beyond the actual end of your particular LINKS exercise.

General Advice

Based on extensive observations of the performance of thousands of past LINKS participants, these general suggestions and summary-advice nuggets are of well-proven value:
- Read and re-read this LINKS participant's manual (there's lots of good stuff in it).
- Regularly think about general business and management principles and how they might relate to and work within LINKS.
- You don't have to know everything about the LINKS support services industry at the beginning of the exercise, but you must consistently increase your knowledge-base through time.
- "Share toys" … work hard at sharing your useful fact-based analyses and important insights with all members of your LINKS team).
- Get the facts and base your decisions on the facts, not on wishes, hopes, and dreams.
- Coordinate demand and supply by continually striving to see the whole demand-chain and supply-chain within the LINKS support services industry. Don't focus myopically on a single part of the LINKS demand-chain without regard for how it relates to, and is influenced by, other LINKS parts and to the "whole" of LINKS.
- Remember the Ferengi proverb (for Star Trek fans): "There is no honor in volume without profit." Volume, sales, and market share is easy to obtain, if there are no constraints on profitability. Profitable volume is the "holy grail" in business and in LINKS.

Appendix: Web-Based LINKS Access

LINKS has no software to download/upload/install. Point your favorite web browser at the LINKS website to interact with LINKS

http://www.LINKS-simulations.com

and then access the LINKS Simulation Database using your firm's case-sensitive passcode. **You'll be e-mailed your LINKS firm's passcode just before your LINKS event begins.**

LINKS uses e-mail to communicate with all LINKS participants. Please ensure that your preferred e-mail software is configured to receive e-mail messages from domains ending with:

@ChapmanRG.com @LINKS-simulations.com @LINKS-simulations.info

Your may wish to consult your personal information technology advisor to ensure that your e-mail software is configured appropriately to receive LINKS e-mail from these domains.

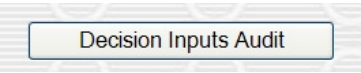
While the LINKS Simulation Database works with all web browsers, Microsoft's Internet Explorer is recommended. **LINKS website access requires a Java-enabled browser.**

Output Retrieval After a LINKS Round: You'll be advised via e-mail when LINKS game-run results are available. Clickable links within the LINKS Simulation Database permit you to access your Word doc and Excel results after a game run.

Inputs For the Next LINKS Round: When you're ready to input decisions for the next LINKS round, access the LINKS Simulation Database and make your input changes.

- **While any number of members of a LINKS firm may access the LINKS Simulation Database simultaneously to "browse," only one member at a time can input new decisions.** If multiple members of a LINKS firm attempt to make inputs simultaneously, problems can arise; all decision inputs might not be saved successfully on the LINKS server with simultaneous inputs from multiple LINKS firm members.
- You may make some inputs now and others later. Only your final LINKS inputs at the input submission deadline for your LINKS industry are included in the next LINKS round.
- Within the LINKS Simulation Database, current decision values are displayed on the input screens. You only need to make changes. All LINKS decision variables are "standing orders" and remain in effect until changed. However, you must input specific instructions each LINKS round for ordering research studies. Otherwise, research studies will be executed only once since "standing orders" don't exist for research studies.
- Inputs are checked for input integrity, including upper and lower bounds on permissible numeric inputs. Invalid entries result in an error message reporting valid minimums and maximums. And, informative messages are reported at the bottom of each web screen.
  - **Execute the "Submit" button after making changes on a LINKS input web screen.** Then, review new reminder, warning, and error messages reported at the bottom of the regenerated web screen after the inputs are processed by the LINKS web server.
  - **"Submit" each webpage's inputs before moving to another input screen in the LINKS Simulation Database.** After you "Submit" a webpage's input changes, check for new reminder, warning, or error messages at the bottom of the refreshed webpage (just above the "Submit" button) before moving on to other web screens.

- **Decision Inputs Audit**: To provide decision inputs auditing support, the LINKS Simulation Database includes a Decision Inputs Audit. Accessible on the initial login and Exit web screens in the LINKS Simulation Database, the Decision Inputs Audit checks a firm's current decision inputs for potential problems and inconsistencies. This LINKS Simulation Database audit function is not an audit of the individual quality of each decision input (e.g., there's no attempt to assess whether a price of $345 is good or bad). But, possible problems are flagged for attention. For example, forecasts that haven't been changed since the last decision round are noted in the audit display because forecasts are normally updated every decision round.



Accessing LINKS Results Files Via Internet Explorer on a Public Computer: Internet Explorer leaves "tracks" to previously accessed web-pages in its browser history. If you access LINKS results files on a public computer (e.g., in a public PC lab), others could access your results too via the Internet Browser history. **If you access LINKS results files on a public computer, follow these steps to clear Internet Explorer's browser history**:

1. Exit/close Internet Explorer after accessing your LINKS results file.
2. Re-start Internet Explorer.
    a. Click on "Tools" and then "Internet Options."
    b. On the "Internet Options" screen, look for the "Browsing History" sub-section. Check "Delete browsing history on exit" (it may already be checked).
    c. Click the "Delete" button in the "Browsing History" sub-section.
    d. Check the "History" box on the "Delete Browsing History" screen (it may already be check).
    e. Click the "Delete" button at the bottom of the "Delete Browsing History" screen.
    f. Wait until the "Internet Options" screen re-appears.
    g. Click the "OK" button.
3. Exit/close Internet Explorer.

These steps clear the browsing history from Internet Explorer on any computer and preserve the security and privacy of your LINKS results files.