GLO-BUS

Developing Winning Competitive Strategies

Participant's Guide

2018 Edition

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GLO-BUS is published and marketed exclusively by McGraw-Hill Education, Inc., 1333 Burr Ridge Parkway, Burr Ridge, IL 60527

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GLO-BUS

Welcome to *GLO-BUS*. You and your co-managers are taking over the operation of a company that is in a neck-and-neck race for global market leadership in two product categories: action-capture cameras (comparable to those designed and marketed by global industry leader GoPro) and unmanned aerial view (UAV) drones that incorporate a company designed and assembled action-capture camera. Your company competes against rival companies that design, assemble, and market these same two products and that are run by other members of your class. All makers of these two products—action-capture (AC) cameras and UAV drones—compete head-to-head in four market regions across the world—Europe-Africa, Asia-Pacific, Latin America, and North America, and all companies currently have the same unit sales volumes, revenues, and global market shares in both product categories. In the most recent year, your company had worldwide sales of 840,000 action-capture cameras and 140,000 UAV drones. Prior-year revenues were $334.1 million and net earnings were $15 million, equal to $0.75 per share of common stock. The company is in sound financial condition, is performing well, and its cameras and drones are well-regarded by buyers. Your company's board of directors has charged you and your co-managers with developing a winning competitive strategy—one that capitalizes on growing consumer interest in action-capture cameras and UAV drones and boosts the company's overall performance year-after-year.

Your first priority as a *GLO-BUS* participant should be to absorb the contents of this *Participant's Guide* and get a firm grip on the character of the market for action-capture cameras and UAV drones, the operations of your company, the cause-effect relationships affecting various aspects of your company's operations, and the procedures for participating in the exercise. Then you will be ready to explore the software and start managing your assigned company.

How the *GLO-BUS* Exercise Works

GLO-BUS is a PC-based exercise, modeled to reflect the real-world character of the globally competitive market for AC cameras and UAV drones. The operations of your company and the companies run by other students in your class are patterned after those of actual enterprises that design, assemble, and market AC cameras and UAV drones. Cause-effect relationships and revenue-cost-profit relationships are based on sound business and economic principles. *GLO-BUS* enables you and your co-managers to apply what you have learned in business school and to practice making reasoned, businesslike decisions aimed at improving your company's overall performance. Everything about your company and the competitive environment in which your company operates has been made "as realistic as possible" in order to provide you with a close-to-real-life managerial experience.

Each decision period in *GLO-BUS* represents a year. The first set of decisions you will make is for Year 6. You will make decisions each period relating to the design and performance of your company's two products (21 decisions), assembly operations and workforce compensation (up to 8 decisions for each product), pricing and marketing (7 decisions for cameras and 6 for drones), corporate social responsibility and citizenship (up to 6 decisions), and the financing of company operations (up to 8 decisions). In addition, there are 9 entries for cameras and 8 entries for drones involving assumptions about the competitive actions of rivals; these entries help you to make useful forecasts of your company's unit sales (so you have a good idea of how many cameras and drones will need to be assembled each year to fill customer orders). Plus, there is accounting and cost data to examine, import duties and exchange rate fluctuations to consider, and shareholder expectations to satisfy. ***Video Tutorials for each decision page will help you get started. And there are Help sections for each page that provide valuable information about each decision entry, important cause-effect relationships, and decision-making tips.***

Complete results of each decision period become available online ***about 15 minutes*** after the deadline for each decision round. Detailed information and feedback provided in the *Camera & Drone Journal*, the Competitive Intelligence Report, and the Company Operating Reports provide essential information

about each company's performance, assorted industry outcomes, updated demand forecasts, your company's competitive standing vis-à-vis rivals, and other statistics that enable you to determine what actions to take to improve your company's performance in upcoming decision rounds.

The decision round schedule developed by your instructor indicates the number of decision periods that you will be running the company. You should use the practice round(s) to become familiar with the software, digest all the information provided on the decision pages and in the reports, and get a glimpse of what to expect before your management team's decisions start to count.

Anytime-Anywhere Access. You ***can access all aspects of GLO-BUS at any time*** from any desktop or laptop computer, tablet, or smart phone. When you go to your "Corporate Lobby" page at ***www.glo-bus.com*** and click on the Decisions and Reports button, *GLO-BUS* automatically links you directly to all of the pages for entering decisions and viewing reports. When you are ready to exit a session and want to save any work you have done on the decision entry pages, simply click the Save button and all your decision entries will be saved to the *GLO-BUS* server. ***The last set of decision entries saved by a member of your company's management team when the deadline for a decision round arrives will be used to determine the results/outcomes for your company.***

The Corporate Lobby page functions as your "gateway" for all *GLO-BUS* activities—click the buttons at the top to see everything that is available. Plus, the Corporate Lobby page reports the latest interest rates and exchange rate impacts. Take a couple of minutes to familiarize yourself with the features and information on your Corporate Lobby page, all of which will come into play during the exercise. The Recommended Decision Procedures link (Participant's Materials button) is especially worth a few minutes of your attention.

Your Company's Operations

Your company began operations five years ago and maintains its headquarters in Taiwan. It assembles wearable or mountable video cameras smaller than a teacup and camera-equipped drones at recently-constructed facilities in Taiwan. The company's action-capture camera models deliver stunning video quality and have powerful photo capture capabilities. Once the cameras are assembled and tested, they are shipped directly to multi-store chains and online retailers that sell electronics products and to a wide variety of local retail shops selling cameras or sporting goods equipment or outdoor adventure trips in Europe-Africa, Asia-Pacific, Latin America, and North America. For example, shops selling or renting snow skis, snowboards, snowmobiles, all-terrain vehicles, go kart racers, water skis, surf boards, bicycles, hunting and fishing equipment, sky-diving gear, and scuba diving gear often sell or rent miniature, wearable action-capture cameras to customers wanting to video their experiences; likewise, the providers of white-water rafting trips, sky-diving and parasailing flights, deep sea fishing trips, helicopter rides, nature trips, and other outdoor action experiences frequently sell or rent action-capture cameras to their customers.

The unmanned aerial view (UAV) drones assembled at the Taiwan plant are sold directly to buyers at the company's website and to other online retailers of commercial drones. These drones are much more sophisticated and multi-featured than inexpensive toy drones sold for recreational use. Indeed, the company you will manage and the drone-makers you will be competing against produce copter drones as wide as four-feet that can be used for a variety of commercial and business purposes and retail in the $850 to $2,000+ range. UAV drones are commonly used by professional photography enterprises movie studios and to capture often stunning shots (panoramic scenery, hovering over an open shark's mouth, explosive action scenes) from heights and angles not feasible with handheld or tripod cameras. Network and local TV stations use UAV drones to take videos of fires, storm damage, a live volcano, sporting events (golf and football), and other newsworthy events where film footage taken from particular angles or heights or distances is more revealing. Insurance companies use UAV drones to document damage to homes and buildings inflicted by hurricanes, tornadoes, hail, and floods, thereby expediting the process of paying claims; drones are particularly useful in helping insurers inspect areas that are hard to access (such as roofs and condemned buildings). Fire departments use camera drones to monitor fires in large buildings and direct where fire hoses and other firefighting efforts need to be aimed. Large commercial farms use camera drones to monitor crops and crop

harvesting; ranchers use drones to track the location and well-being of farm animals. Construction companies use daily drone flights to gather data and 3-D images showing progress at project sites and identify areas where the project might be falling behind schedule. Companies use periodic drone flights to help protect against theft and vandalism at plant sites and remote facilities. Indeed, unmanned drones equipped with professional quality, action-capture cameras are being used by growing types of private and public enterprises for a growing variety of purposes, resulting in rapidly-growing market demand for UAV drones across the world.

The two product categories your company competes in consists of as few as 4 or as many as 12 companies, as determined by your instructor. ***All companies begin the GLO-BUS exercise in the same competitive position***—equal sales volumes in each of the world's four geographic regions, equal global market shares in both cameras and drones, and equal revenues, profits, costs, product quality and performance, brand recognition, and so on. All competing companies are thus presently on an equal footing in all respects.

In upcoming years, the managers of all companies will undertake strategic actions to boost the performance of their respective companies—these actions will involve altering prices, product performance and quality, advertising, and other competitively-relevant factors that impact buyer choices of which company's brand to purchase. The differing actions of competing companies will almost certainly result in substantially different cross-company unit sales volumes and market shares in all regions of the world because the actions of some companies will prove more effective in attracting buyers than the actions of other companies. Companies that succeed in outcompeting rivals in the sales of either cameras or drones or both will gain sales and market share at the expense of rivals. Some companies will suffer losses of sales and market share in cameras and/or drones in one or more geographic regions—despite striving (or hoping) to do the opposite—because they are outcompeted by one or more rivals offering what buyers consider to be more attractive products. Bigger sales and market shares, of course, do not necessarily equate to better profitability and overall performance than below-average sales volumes and market shares—firms that sell top-quality products at premium prices often have smaller unit sales volumes and smaller revenues, yet their profits and returns on investment may well be greater than those of firms selling less expensive, lower-performing products to the mass market. Moreover, each competing company's production and other operating costs for cameras and drones are certain to change over time, as managers of the competing companies pursue different actions to operate efficiently and build a competitive advantage linked to lower costs or better product quality or some other factor that yields competitive advantage. It remains to be seen which companies will end up being the most profitable and achieving the best overall performance.

The company has regional facilities in Milan, Italy; Singapore; Sao Paulo, Brazil; and Dallas, Texas to conduct the company's marketing efforts in the four geographic regions of the world market, to support the merchandising efforts of regional retailers who stock the company's action cameras and UAV drones, and to process camera/drone warranty claims (including making needed repairs) originating in the region.

Assembly and Shipping. The company assembles cameras and drones usually within two weeks of receiving an order and strives to ship an order no later than 2-3 days after assembly. No camera models or drone models are assembled in advance, warehoused in company facilities, and then used to fill incoming orders.

The company has a staff of people engaged in product R&D; this group has the capability to develop new and improved models of cameras and drones as directed by top management. Once company co-managers settle on the desired specifications and performance features for the company's line-up of camera and drone models, the needed parts and components are obtained from suppliers having the capabilities to make deliveries to the company's Taiwan assembly site on a just-in-time basis, thus eliminating the need to maintain inventories of parts or components.

The company has two buildings for assembling products at its Taiwan site—one for cameras and one for drones (the drone assembly process also includes assembly of an action-camera model having features and specifications suitable for use in camera-equipped drones). Both cameras and drones are

assembled by four-person product assembly teams (PATs), with each PAT performing the needed tasks at its own assigned workstation. Shipping department personnel package orders for shipment and stack them on the loading dock for pickup by independent freight carriers. The cameras are delivered to buyers anywhere from 3 days to 3 weeks later, depending on a retailer's location and the means of transportation—shipments to distant retailers are shipped via a combination of air and ground freight and those to customers in select parts of Asia are shipped by ground freight. The cost of boxing cameras, packaging them for shipment, and freight averages $5 per camera. Shipping costs for drones, most of which are air freighted to customers and delivered within 5 to 10 business days after receipt of the order, average $60 per unit.

Many countries have opted to impose import duties on cameras and drones sourced from Taiwan. Going into Year 6, import duties equal 4% of the average price the company charges customers in Europe-Africa, and 6% of the average price being charged to customers in both Latin America and the Asia-Pacific; there are no import duties on either cameras or drones shipped to customers in North America. Import duties in all four regions of the world market are subject to change in upcoming years.

Competitive Efforts. To capitalize on ongoing technological advances and the pipeline of product enhancement capabilities flowing from the company's expenditures for product R&D, each year the company typically changes the specs for important components, adds/modifies performance features, upgrades the internal software, makes assorted other design-related changes, and introduces new and/or improved models. In addition, strong competition from rival companies pushes management to make price and marketing adjustments to improve buyer appeal for the company's camera/drone models and to enhance the company's ability to compete more effectively with the offerings of rival companies.

Stock Listings. The company's stock is publicly traded on the NASDAQ exchange in the United States. The closing price in Year 5 was $12 per share. The company's financial statements are prepared in accord with generally accepted accounting principles and are reported in U.S. dollars. The company's financial accounting is in accord with the rules and regulations of all authorities where its stock is traded.

The Worldwide Market for Action-Capture Cameras

Worldwide unit sales of wearable and/or mountable, miniature action-capture cameras are *reliably* projected to grow 6-8% annually for the next five years (Years 6-10) and then to grow at a slower 4-6% annual rate during the following five years (Years 11-15). However, the projected growth rates differ by geographic region, as shown below.

Projected Growth of Unit Sales of Action-Capture Cameras

	Worldwide	North America	Europe-Africa	Latin America	Asia-Pacific
Years 6-10	6.0%-8.0%	4.5%-6.5%	4.5%-6.5%	8.5%-10.5%	8.5%-10.5%
Years 11-15	4.0%-6.0%	2.5%-4.5%	2.5%-4.5%	6.0%-8.0%	6.0%-8.0%

Note: Just where within the 2% ranges forecasted above any region's actual growth rate turns out to be in any given year varies from region to region. In one region the actual growth rate in a particular year may be near the high end of the forecasted range, in another region in the same year it may be near the low end, and in still another region in the same year it may be near the midpoint of the range. Moreover, the forecasts are all based on the assumption that rival companies compete aggressively enough to capture the forecasted growth opportunities and do not radically alter current price levels and/or product quality/performance. Future growth rates may turn out to be higher than forecasted in the event more buyers are attracted to purchase action cameras because of significant declines in industry-wide average camera prices, sharp increases in the marketing and competitive efforts of rival companies, and/or significant improvements in camera quality/performance over time. Conversely, factors that can drive away potential buyers and cause the growth in buyer demand to fall below the forecasted amounts include sharply higher camera prices and/or eroding camera

quality/performance and/or greatly diminished marketing and competitive efforts industry-wide. In other words, the forecast growth rates in the table above are reliable only to the extent that rival companies on the whole do not pursue actions that result in future prices, product quality, and marketing and competitive efforts that differ significantly from the levels prevailing in Year 5.

Because the growth rate in four geographic regions can be anywhere within the forecast 2 percent range, company managers have to deal with uncertainty about where within the projected growth range the actual growth rate in camera demand for a particular geographic region in a particular year will turn out to be. *Bear in mind here that the managers of real-world companies do not operate with certainty about what their industry's growth rate in unit volume for the upcoming year will turn out to be, correct to the first decimal place—a forecast somewhere within a 2-percentage-point range is really a pretty good forecast!*

Competition. Competition in the worldwide market for action-capture cameras revolves around price, product quality and performance, the number of models offered, the number and types of retailers that stock and merchandise each brand of camera, the amount of merchandising support companies provide to these retailers, advertising, sales promotion activities (the duration of sales promotion campaigns and the sizes of the price discounts offered to retailers during these promotional campaigns), the length of warranties, and brand reputation.

The Worldwide Market for UAV Drones

Worldwide unit sales of UAV drones are *reliably* projected to grow 12.5%-16.5% annually during Years 6-9, to grow at slower 6.5-9.5% annual rates during Years 10-13, and to grow at modest 4.0%-6.0% annual rates during Years 14 and 15. However, the projected growth rates differ considerably by geographic region, as shown below.

Projected Growth of Unit Sales of Unmanned Aerial View Drones

Period	Worldwide	North America	Europe-Africa	Asia Pacific	Latin America
Years 6-7	16.5%-18.5%	15.5%-17.5%	15.5%-17.5%	19.0%-21.0%	19.0%-21.0%
Years 8-9	12.5%-14.5%	11.5%-13.5%	11.5%-13.5%	15.0%-17.0%	15.0%-17.0%
Years 10-11	9.5%-11.5%	8.5%-10.5%	8.5%-10.5%	11.5%-13.5%	11.5%-13.5%
Years 12-13	6.5%-8.5%	5.0%-7.0%	5.0%-7.0%	8.5%-10.5%	8.5%-10.5%
Years 14-15	4.0%-6.0%	3.0%-5.0%	3.0%-5.0%	5.5%-7.5%	5.5%-7.5%

Note: Just where within the 2% ranges forecasted above any region's actual growth rate turns out to be in any given year varies from region to region. In one region the actual growth rate in a particular year may be near the high end of the forecasted range, in another region in the same year it may be near the low end, and in still another region in the same year it may be near the midpoint of the range. Moreover, it is essential for you to understand that the forecasts are based on the assumption that rival companies compete aggressively enough to capture the forecasted growth opportunities. Future growth rates may turn out to be higher than forecasted in the event more buyers are attracted to purchase camera-equipped commercial drones because of a dramatic decline in drone prices and/or significantly higher drone quality/performance and/or sharp and sustained increases in the marketing and competitive efforts of rival companies to grow sales volumes. Conversely, factors that can drive away potential buyers and cause the growth in buyer demand to fall below the forecasted amounts include sharply higher drone prices and/or a strong downward trend in drone quality/performance and/or complacent efforts on the part of rival companies to please buyers and capture the available growth opportunities. In other words, the forecasted growth rates in the table above, while reliable, are not guaranteed; the forecasts are based on the assumptions that rival companies on the whole will not pursue actions that result in future prices, product quality/performance, and marketing and competitive efforts that differ *significantly* from the levels prevailing in each region at the end of Year 5

Again, while company managers have to deal with uncertainty about where within the projected 2% growth range the actual growth rate for drones for a particular geographic region in a particular year will turn out to be, *a forecast somewhere within a 2-percentage-point range is really a pretty good forecast!*

Competition. Competition in the worldwide market for UAV drones differs somewhat from that for action-capture cameras and is centered on price, product quality and performance, the number of models offered, the relative appeal of rival company websites as concerns providing complete information about different models and the ease of placing orders, the comparative amounts competitors elect to spend on search engine advertising to help draw shopper traffic to their website (where a big percentage of drone sales are transacted), the length of warranties, the relative success competitors have in attracting third-party online retailers to display and merchandise their brand of UAV drones (and thereby broaden their access to potential purchasers of drones), and brand reputation.

Performance/Quality Ratings of Action-Capture Cameras and UAV Drones

P/Q Ratings for Action-Capture Cameras. The World Digital Video Federation (WDVF), a well-respected affiliation of camera industry trade groups and camera experts, tests the performance and quality of the action-capture camera models of all competitors and assigns a performance-quality or P/Q rating ranging from a low of 1.0 stars to a high of 10.0 stars to each company's line of action-capture cameras—each company's star rating is reported to the nearest tenth of a star (i.e. 2.3, 4.7, 6.5). The WDCF's P/Q ratings are based on an array of factors: (1) image sensor size, (2) size of the LCD display screen, (3) image quality of the pictures/video, (4) number of modes for videos and still photos, (4) camera housing, (5) editing/sharing capabilities, (7) included accessories (such as capacity of flash memory card, rechargeable batteries, a plug-in battery-charger, and carrying case) (8) number of extra performance features, (9) the number of camera models a company offers, (10) a company's cumulative spending on product R&D, and (11) the amount a company spends annually on training for each of its camera-related PATs and improving its camera-related assembly methods (since such spending can affect defects encountered and the need for repairs). Ratings are updated annually.

Currently, the action-capture camera lines of all competitors have a 4.0-star P/Q rating. Competition among rivals is, however, likely to result in different P/Q ratings for the camera offerings of different companies in forthcoming years. This is because all buyers both within a geographic region and across the four geographic regions do not prefer to buy precisely the same quality camera with precisely the same performance features and pay precisely the same price. Diverse buyer preferences thus make it highly that some camera companies will opt to cater to buyers shopping for low-priced action cameras having basic features (and perhaps a P/Q rating of 1-3 stars), while other camera makers may decide to design cameras to satisfy buyer preferences for a premium-priced, full-featured action camera (with perhaps a 7-star to 10-star rating), and still other camera-makers may choose to target "middle market" buyers content with a medium-priced camera having a P/Q rating in the 4-6 star range.

P/Q Ratings for UAV Drones. Three years ago, the Global Alliance for Safe and Responsible Use of Commercial Drones was formed to help lobby government authorities responsible for regulating airspace to establish drone-use regulations that would enable commercial enterprises to benefit from the rapidly-advancing capabilities of aerial drones to provide valuable pictures and data. Membership quickly grew to include drone manufacturers, the suppliers of materials and components used in the production of drones, a wide variety of commercial enterprises and trade associations with interest in using drones for various purposes, and organizations engaged in drone technology research. Two years ago, members of the Global Alliance voted overwhelmingly to develop a methodology for rating the performance and quality of the hundreds of brands and varieties of drones available for sale worldwide, but most especially UAV drones suitable for a variety of commercial uses. Eighteen months ago, the first performance-quality or P/Q ratings of UAV drones were released for posting on the Global Alliance's website, along with the methodology for determining the ratings. Ratings are a function of (1) the caliber of the built-in action-capture camera, (2) the caliber of the built-in GPS/Wi-Fi/Bluetooth components, (3) battery life (maximum flight time per charge), (4) number of rotors, (5) rotor performance and flight controller features/capabilities, (6) body frame construction, (7) the caliber of the obstacle sensors, (8) quality of the camera stabilization device, (9) number of extra performance features, (10) the number of drone models a company offers, (11) a company's cumulative spending on

product R&D, and (12) the amount a company spends annually on training its each of its drone-related PATs and improving its drone-related assembly methods (since such spending can affect defects encountered and the needs for repairs). Each brand of UAV drones was assigned a P/Q rating of 1.0 to 10.0 stars, with each company's star rating being reported to the nearest tenth of a star. Ratings are updated annually.

As of Year 5, the UAV drone offerings of all competitors in your industry group had a 4.0-star P/Q rating. However, given the expected rapid advances in drone technology and the many new features and improvements that are expected to be incorporated in UAV drones in upcoming years, it is likely that the P/Q ratings of competing brands of UAV drones will quickly diverge. Drone buyers across the world are not looking for drones with the very same features, performance, and quality because the purposes for which they intend to use UAV drones vary greatly, thus creating a market for drones with varying combinations of features—which, in turn, results in drones with varying costs being sold at varying prices. Consequently, some drone makers will opt to cater to drone buyers shopping for low-priced drones having basic features (and perhaps a P/Q rating of 1-3 stars), others will elect to target buyers willing to pay well above-average prices for a more full-featured drone (with perhaps a 7-star to 10-star rating), and still other drone-makers opting to compete for the patronage of "middle market" buyers whose performance-quality requirements equate to P/Q ratings in the 4-6 star range.

The Retailers and Buyers of Action-Capture Cameras and UAV Drones

Action-Capture Camera Retailers. Worldwide, there are some 50,000 retailers of wearable (or mountable/attachable), teacup-size video cameras scattered across the world—each of the four major geographic regions of the world market has 12,500 retailers of action-capture cameras, some of which are multi-store retail chains (100 per region), online electronics retailers (400 per region), and local retail enterprises that sell or rent these cameras (12,000 per region). Retailers with store locations that also sell cameras on their websites are not included in the online category. Multi-store chains account for the biggest percentage of action-capture camera sales, with online retailers second and small local retailers third. Retail markups over the wholesale prices run 50% to 100%; thus the models of a company with 4-star-rated action-capture cameras wholesaling for an average of $200 could retail for an average of $300-$400. Such markups allow retailers to put selected models or brands of cameras on sale from time-to-time at 10% to 20% off regular price and still make a decent profit margin.

Retailers typically carry anywhere from 2-4 brands of action-capture cameras and stock only certain models of the brands they do carry, but in all four geographic markets there are around 20 "full-line" action camera retailers that stock most all brands and models. Most all chain-store retailers carry at least 2 and often 3-4 of the best-selling brands. The makers of weak-selling brands of action cameras have difficulty convincing major retail chains to devote much display space and merchandising efforts to their models. Online retailers are, however, more amenable to merchandising low-volume brands, especially those with relatively high P/Q ratings (favored by buyers concerned about camera performance and quality) and/or minimal performance features but ultralow prices (which are favored by bargain-hunting shoppers).

Online Retailers of UAV Drones. There are 100 online retailers of UAV drones in each of the four geographic regions. Because your company sells its UAV drone models at the company's own website in direct competition with other online retailers of UAV drones, these online retailers are inclined to stock and display your company's brand of *drones only if they can purchase your drone models at an attractive percentage discount to the price being charged on your website*. In other words, if you offer to sell online retailers your models of UAV drones at say 20% off the price being charged on your website, then a greater number of online retailers will be inclined to stock and merchandise your drone models than if you only offer them a 10% price discount. Moreover, the bigger the percentage discount you offer to these online retailers, the bigger the sales they will generate—discounts of 15% to 20% may result in 3rd-party online retailers accounting for 25% to 35% of your company's total sales volume. Generally, if your company's price discounts are under 10%, very few online retailers will purchase your drone models for resale on their websites because their profit opportunities are minimal (even if they charge prices higher than your company's website prices in hopes of attracting buyers who have never visited your company's website).

The Buyers of Action-Capture Cameras. People interested in purchasing a wearable video camera in order to record their action adventures for personal viewing and also to share their experiences with others (perhaps on Facebook or other sites) are generally quite aware that there can be big differences in the prices and performance of the various brands of action-capture cameras. Many do extensive internet research to educate themselves about the features, performance, and prices of different action-capture camera brands and models. The World Video Camera Federation's much publicized P/Q ratings are trusted by people who are shopping for action cameras or already own one, and the Federation's frequently-visited website has detailed information concerning the results of its performance tests and the basis for its P/Q ratings of each action-capture camera brand. Moreover, both the makers of these cameras and online electronics retailers have extensive information on their websites about currently available models. There are also assorted websites and publications that publish/post information about and reviews of new and improved camera models. Consequently, it is easy for most potential buyers of action cameras to do considerable comparison shopping before making a decision about which camera brand to buy—they tend to be quite aware of the prices and P/Q ratings of different brands, the various retail locations and websites where action cameras can be purchased, the warranties of competing brands, and the fact that retailers have periodic weekly sales promotions that feature sizable discounts off the regular retail price. Potential buyers also pay at least some attention to the media ads they see for various action cameras brands and their purchasing decisions are to some degree influenced by these ads. Many price-sensitive consumers shopping for their first action-capture camera are inclined to wait to make a purchase until the retailers of these cameras in their geographic area have weekly sales promotions featuring discounted prices.

The Buyers of UAV Drones. Individuals and enterprises interested in purchasing a UAV drone for commercial use are generally quite aware that there can be big differences in the prices and performance of the various brands of UAV drones. many do extensive Internet research to educate themselves about the features, performance, and prices of different brands and models of UAV drones. The readily available P/Q ratings for various brands of drones compiled by the Global Alliance for Safe and Responsible Use of Commercial Drones are considered trustworthy, and the Global Alliance's frequently-visited website has detailed information concerning the results of its performance tests and the basis for its P/Q ratings of each drone brand. Moreover, both drone-makers and third-party online electronics retailers of drones have extensive information on their websites about the currently available models they offer for sale. Because of mushrooming interest in the features and capabilities of UAV drones, a growing number of websites and media publications have begun posting/publishing articles about the features and capabilities of newly-available drones and newsworthy developments in the drone industry. Consequently, it is common for likely drone purchasers to do considerable comparison shopping before making a decision about which drone brand to buy—they are familiar with the P/Q ratings of rival brands, the retail prices and information posted at company websites and the websites of other online retailers of drones, and the warranties of rival brands. Potential buyers also pay at least some attention to the search engine advertising they encounter when browsing for information about UAV drones, and their decisions to ultimately purchase this or that brand are affected by these ads.

The Competitive Factors that Determine AC Camera Sales and Market Share

Competition among rival makers of action-capture cameras centers around 11 factors:

1. ***Average Wholesale Price to Retailers***—how a company's average wholesale price for the camera models it sells to retailers in each region compares with the wholesale prices of the camera models of competing companies. Charging a price *above* the price charged by certain rival companies puts a company at a price-based competitive *disadvantage* against these rivals whereas charging a lower price results in a price-based *advantage* over these rivals—big cross-company price differences matter more than small differences and much more than "tiny" differences. But ***the more important price-related consideration affecting a company's unit sales/market share is the extent to which its wholesale selling price to retailers in each region is above/below the industry (all-company) average in the region***. The more a company's wholesale price to retailers in a geographic region is *above* the industry average to retailers, the bigger and more important its pricing disadvantage and the more that the region's action-camera shoppers will be inclined to shift their purchases to lower-priced rival brands. Conversely, the more a company's wholesale price to

retailers in a geographic region is *below* the industry average, the bigger the fraction of action-camera shoppers in the region it can attract to purchase the company's lower-priced brand.

However, ***the size of any company's pricing disadvantage/advantage versus rivals (and the resulting loss/gain in unit sales and market share) can be decreased/increased by its competitive standing versus rivals on the other 10 competitive factors.*** Any company whose price *exceeds* the average prices of its regional rivals can partially offset or even overcome its *price disadvantage* when it has competitive edges over rivals on some/many other relevant buyer considerations—such as an above-average P/Q rating, more models for buyers to select from, or longer-than-average warranties. But *the further a company's average price to retailers is above the average prices of rival companies, the harder it is for a company to use non-price enticements to overcome rising buyer resistance to the company's higher priced camera models*.

Similarly, any company whose price to retailers is *below* the average prices of its regional rivals can ***widen*** its *price-based advantage over rivals* when it also has a competitive edge over these rivals on some or many of the other 10 competitive factors that determine a company's unit sales and market share in a region. In addition, the further a company's price is *below* the average being charged by regional rivals, the *easier* it becomes to offset any competitive disadvantages relating to a below-average P/Q rating, shorter-than-average warranties, a below-average number of models, and other competitively relevant factors.

One other price-related factor also has to be taken into account. ***The buyers of action cameras in Latin America and the Asia-Pacific region are more sensitive to cross-brand price differences than are camera buyers in North America and Europe-Africa.*** Thus when camera-makers raise their wholesale prices to retailers in a region this quickly translates into higher retail prices in the region because retailers mark up the wholesale price they pay camera-makers by 50% to 100%. Consequently, when the product offerings of competing companies entail only minor differences in P/Q ratings (and other factors that shape buyers' brand preferences), then cross-brand differences in wholesale price will have a bigger impact on unit sales and market shares in Latin America and the Asia-Pacific than in North America and Europe-Africa.

2. ***P/Q Rating***—the vast majority of action-capture camera shoppers consider the widely-available and much-publicized annual P/Q ratings compiled by the World Digital Video Federation to be a trusted measure of the performance and quality of competing brands of action-capture cameras. Market research indicates buyers worldwide consider the P/Q ratings of competing brands of AC cameras to be ***one of the two most important factors (along with price)*** in shaping their choice of which action-camera brand to purchase. A company whose P/Q rating is above the P/Q ratings of rivals in a region and, more importantly, the industry average P/Q rating, enjoys an important competitive advantage on the performance-quality aspect of its camera models. A below average P/Q rating constitutes an important performance-quality disadvantage. The more a company's P/Q rating is *above* the industry average, the more that camera shoppers in the region are attracted to purchase the company's camera brand—*unless* the company's higher P/Q rating is undermined by (1) unfavorable comparisons against rivals on such other buyer-relevant features as comparatively few models for buyers to choose among, a significantly weaker brand reputation, or a much shorter-than-average warranty or (2) charging a price premium for the added performance-quality that buyers consider "too high" or "not worth the extra cost."

   Market research further reveals that ***the buyers of action cameras in North America and Europe-Africa are more sensitive to cross-brand differences in P/Q ratings than are camera buyers in the Asia-Pacific and Latin America regions***. Thus, when two brands of action cameras have *slightly different* prices and P/Q ratings (and all other buyer considerations are, on balance, virtually identical between the two brands), then a bigger percentage of buyers in North America and Europe-Africa will purchase the brand with the higher P/Q rating while a bigger percentage of buyers in Latin America and the Asia-Pacific will purchase the cheaper-priced brand—resulting in bigger sales for the camera brand with the higher P/Q rating in the North America and Europe-Africa regions and bigger sales for the lower-priced camera brand in the Latin America and Asia-Pacific regions.

However, beware of assuming the differing cross-region sensitivities to price and P/Q ratings mean buyers in North America and Europe-Africa care little about price or that buyers in Latin America and the Asia-Pacific care little about P/Q ratings. ***Camera prices and P/Q ratings matter greatly in all geographic regions.***

3. ***Number of Models***—Companies offering buyers a bigger selection of models than rivals enhance their company's competitiveness by giving camera buyers more opportunity to find a model well suited to their preferences. Companies offering comparatively fewer models than rivals risk losing sales and market share to competitors offering greater selection, unless they offset their narrower selection with other appealing competitive attributes (such as a lower price, higher P/Q rating, longer warranties, and so on).
4. ***Advertising Budget***—Media advertising is used to inform the public of the prices and features of newly introduced models, to tout the merits of buying the company's brand, and to inform shoppers of special sales promotion campaigns and discounted sales prices. Even though retail dealers act as an important information source for customers and actively push the brands they carry, advertising on the part of camera-makers (often done in conjunction with the advertising efforts of retailers stocking its brand) strengthens brand awareness, helps pull buyers into retail stores carrying the brand, and informs the public about the features and prices of a company's latest action camera models. The competitive impact of advertising depends on the size of your company's current-year advertising budget in each region. Companies spending more on advertising than rivals in a given region gain an advertising-based competitive edge over rivals spending lesser amounts. ***When all other competition-related factors are, on balance, close to equal in a region, companies spending more on advertising in a region will outsell rivals spending less on advertising.***
5. ***Sales Promotions (number of weeks)***—Rival companies can run from 0 to 20 *week-long* sales promotion campaigns annually to tout their action-capture cameras—all such campaigns involves offering retailers a discount of some size off the regular price. Periodic sales promotion campaigns are of interest to retailers stocking the company's models because they call attention to the brand, spur consumer interest and store traffic, and help increase unit sales. Market research indicates that the competitive impact of sales promotions is a function of the extent to which the number of sales promotion events a company has annually is *above/below* the industry average in each region. Companies having more sales campaigns than rivals in a given region gain a promotion-based competitive edge over regional rivals having fewer campaigns. ***When all other competitiive factors are, on balance, close to equal among the rivals in a region, companies having more sales promotions will typically outsell rivals having fewer promotions.***
6. ***Sales Promotions (% discount)***—Retailers that are offered, say, a 15% discount off regular wholesale price on units sold during a sales promotion event can be counted on to pass the savings along to consumers in the form of corresponding sale prices of 15% off the regular retail price. In the camera business, just as in most other businesses, bigger sales price discounts attract more buyers than smaller price discounts. Thus promotional campaigns involving sale prices of 15% to 20% off the regular price have substantially greater sales-enhancing impact than promotions offering only 5 or 10% discounts, even if a company holds more sales with such small discounts. In other words, the size of the discounts off regular price a company offers during sales promotion events is a *very crucial factor* in determining the sales-enhancing impact of its promotional campaigns, more so than the number of promotional events. ***So long as all other competition-related factors are, on balance, close to equal among the rivals in a region, companies offering bigger sales promotion discounts gain a sales-enhancing competitive edge over rivals offering smaller discounts.***
7. ***Retailer Support Budget***—Support for regional retailers involves providing retailers with in-store signs, up-to-date product-information brochures, and engaging video-enabled point-of-purchase (POP) displays that showcase uses of the company's camera models and accessories. A portion of the retailer support budget is also used to support the trips of company marketing personnel to visit the stores of high-volume retailers and work with store managers/clerks in expanding/improving the footprint of the company's POP displays. ***Companies providing greater retailer support gain a competitive edge in attracting retailers to stock their brand compared to companies***

providing lesser amounts of retailer support—the bigger a company's retailer network in a region, the stronger is its brand exposure to camera shoppers and the better chance it has to win sales and market share.

8. ***Website Product Displays / Info***—The level of expenditures for website displays and information is a proxy for the time, effort, and creativity that a company puts into (1) posting periodically refreshed and visually appealing displays of its various camera models, along with ample and useful information about each model's features, capabilities, and specifications, (2) providing site visitors with the capability to create side-by-side model comparisons, (3) enabling site visitors to post their reviews of particular models, and (4) providing good after-the-sale product support to customers. Many potential buyers make a point of visiting the company's website to gather information about the company's models and research how the features, capabilities, and specifications of its models compare against those of rival brands. The product displays, informational content, and customer reviews at each company's website, along with the website's visual appeal and functionality, is thus an important element in prompting buyers to visit a nearby retailer of the company's brand, personally inspect the company's various models, and perhaps make a purchase. Visits to a company's website also enable customers to obtain needed after-the-sale technical support, download apps and software updates for previously-purchased camera models, browse product manuals, discover how to file a warranty claim, and use the chat function to pose questions to online personnel.

9. ***Retail Outlets***—A company's sales and market share in a geographic region are strongly influenced by the number and type of retailers (multi-store chains, online electronics retailers, and local retail shops) it can convince to stock its brand and display its models. In general, having more of each type of retailer selling the company's brand is better than having fewer retailers because of the added display exposure and the added convenience to camera buyers of being able to buy a given brand at more locations. *In the last two months of each year, camera retailers decide whether to stick with the camera brands they are currently stocking or whether to make some adjustments based on five considerations:* (1) which camera brands in their region are growing in popularity and declining in popularity among buyers (as measured by changes in ***each company's market share in the region***), (2) each camera maker's P/Q ratings for its line of action cameras relative to the industry average, (3) the number of week-long sales promotion campaigns each company undertook *relative to the regional average*, (4) the size of the promotional discount each company offered during these weekly sales promotions *as compared to the regional average*, and (5) each company's expenditures to support the merchandising efforts of camera retailers in the region *as compared to the regional average*.

10. ***Warranty Period***—Camera buyers, of course, find longer warranties more appealing than shorter warranties. *To the extent that all other competitive factors are, on balance, roughly equal, a company with longer warranties will typically attract more camera shoppers to purchase its brand than a company with shorter warranties.*

11. ***Company Image (brand reputation)***—*The* "image rating" for each company in the industry that is based on its P/Q rating for action-capture cameras, its P/Q rating for UAV drones, its global market share of action camera sales, its global market share of UAV drone sales, and its actions to display corporate citizenship and conduct operations in a socially responsible manner over the past 4-5 years—a total of 5 factors. All companies had an overall worldwide image rating of 70 at the end of Year 5. Image ratings/brand reputations are updated at the end of each year, using the existing P/Q ratings, year-end global market shares, and information relating to the social responsibility efforts of rival companies. Newly-released brand image ratings are widely-publicized and become quickly known to buyers considering the purchase of action cameras and UAV drones.

    Market research confirms that the *prior-year* company image ratings (brand reputations) of rival companies have *a moderately strong influence* on the brand choices of camera buyers *in the upcoming twelve months*. Thus, companies with prior-year image ratings above the industry average have a meaningful edge over rivals with below-average image ratings in attracting camera buyers to purchase their brand and in recruiting additional retailers to stock and merchandise their camera models for a period of 1 year (at which time new end-of-year company image ratings/brand reputations are released). The importance of a strong brand reputation in attracting camera buyers

is big enough that companies with comparatively weak reputations must exert enough extra effort on the other 10 competitively relevant factors to boost overall buyer appeal for their brand and overcome their image/reputation disadvantage. When weak image companies ***significantly*** improve the overall buyer appeal and competitiveness of their camera models from one year to the next, they can definitely win market share from strong image rivals despite having an image rating disadvantage. Should companies with once-weak brand reputations continue to improve their overall image ratings *over a period of several years*, they can definitely turn the liability of a weak brand reputation into a strong brand reputation and competitive asset.

The Competitive Factors that Determine UAV Drone Sales and Market Share

Competition among rival makers of UAV drones centers around 9 factors:

1. ***Average Retail Price to Online Customers***—In a given region, charging a price that is *above* the industry average puts a company at a price-based competitive *disadvantage* against rival companies, whereas charging a price that is *below* the industry average results in a price-based competitive *advantage* over rivals. The bigger the amount that your retail price is above or below the industry average, the bigger the resulting price-based competitive disadvantage or advantage.

   However, any company whose retail price is *above* the industry average in a region can partially offset or even totally overcome its price disadvantage when it has a competitive edge over rivals on some or many other important sales-determining factors—such as a P/Q rating that is *above* the industry average P/Q rating, an above-average number of models, longer-than-average warranties, an above-average number of third-party online retailers, above-average expenditures for search engine advertising, and a better brand reputation. *Price disadvantages become progressively easier to overcome as a company's P/Q rating rises further above the industry average*. P/Q ratings that are 1-2 stars (or more) above the industry average can command prices hundreds of dollars above the industry average because a sizable fraction of the commercial enterprises that purchase UAV drones place a high value on the added performance of drones with P/Q ratings of 7 stars and higher—perhaps as many as 5% of the world's drone buyers can be enticed to pay prices perhaps as high as $2,000-$2,500 for UAV drones with 9-star or 10-star P/Q ratings. But the further a company's price to retailers is *above* the industry average in a region, the *harder it is* for a company to use enticements other than higher P/Q ratings to overcome rising buyer resistance to higher retail prices for its drone models. Likewise, the further a company's price is *below* the industry average in a geographic region, the *easier it becomes* to offset any competitive disadvantages relating to lower P/Q ratings, shorter warranties, fewer models, and so on.

   One other price-related factor also has to be taken into account. ***The purchasers of drones in Latin America and the Asia-Pacific regions are more sensitive to price differences than are drone purchasers in North America and Europe-Africa.*** In other words, when the drone offerings of competing companies entail only minor differences in P/Q ratings (and other factors that shape buyers' brand preferences), then price differences will have a bigger impact on unit sales and market share in Latin America and the Asia-Pacific than in North America and Europe-Africa.

2. ***P/Q Rating***—The vast majority of drone shoppers consider the widely-available and much-publicized annual P/Q ratings compiled by the Global Alliance for Safe and Responsible Use of Commercial Drones to be a trusted measure of the performance and quality of competing brands of drones. Market research indicates buyers worldwide consider the P/Q ratings of competing drone brands to be ***one of the two most important factors (along with price)*** in shaping their choice of which brand to purchase. A company whose drones have a P/Q rating above the industry average thus has an important competitive advantage over rivals, whereas a below-average P/Q rating constitutes an important competitive disadvantage. P/Q ratings that are more than 1 star above or below the industry average result in particularly strong competitive advantages or disadvantages. The competitive advantage that attaches to an above-average P/Q rating can make a company's drone brand *even more appealing* to buyers (and thus translate into even bigger sales volume and market share) if it is *supplemented* by charging an attractively small price premium for the added performance-quality, by also offering a longer-than-average warranty and/or an above-average number of models to choose from, and so on. Likewise, a company selling drones with an above-average P/Q rating can *erode its performance-quality advantage* by charging a price that buyers

consider "unreasonably high" for the added performance and quality or by weakening the competitiveness of its product offering with other subpar characteristics (a short warranty or a weak brand reputation or an unappealing website) that undercut the P/Q rating advantage.

Market research further reveals that *when two brands of drones have slightly different prices and P/Q ratings (and all other buyer considerations are, on balance, an even tradeoff between the two brands), then* ***a bigger percentage of buyers in North America and Europe-Africa will purchase the brand with the higher P/Q rating while a bigger percentage of buyers in Latin America and the Asia-Pacific will purchase the cheaper-priced brand***.

3. ***Number of Models***—An above-average number of models enhances a company's competitiveness in the marketplace by giving drone buyers wider product selection and thus more opportunity to find a model with the features and specifications that best matches how they plan to use the drone. Companies with a below-average number of models risk losing sales and market share to competitors offering greater selection, *unless they offset their narrower selection with other appealing competitive attributes* (a lower price, a higher P/Q rating, a longer warranty, etc.).

4. ***Retailer Recruitment / Support Budget***—This expenditure covers the costs of calling on prospective online retailers to (1) personally communicate the expected rapid growth of the UAV drone market, the advantages of a company's drone models, and the R&D effort the company is making to improve future models of its drones, (2) build a relationship with these prospects via a face-to-face visit, and (3) explain the kinds and amount of merchandising support the company provides. Retailer support includes providing periodically-refreshed pictures of the company's various drone models, supplying comprehensive and up-to-date information about each model, and engaging in collaborative efforts to service buyer requests for various kinds of after-the-sale product support (filing warranty claims, downloading product manuals, obtaining software updates and useful apps, and so on).

5. ***Discount Offered to 3rd-Party Online Retailers***—While exerting efforts to recruit third-party retailers and support their efforts to merchandise the company's drone models is important, ***the crucial inducement to securing the commitment of 3rd-party online retailers to market a company's drones is the size of the percentage discount off the price that a drone-maker is selling drone models at its website***. Understandably, third-party online retailers have *zero interest* in buying a drone-maker's models at the same price the drone-maker is charging at its website, then marking the purchase price up by some percentage (10% or more to cover their own costs and allow for an attractive profit) and trying to secure orders at prices above a drone maker's website prices. Hence, a drone-maker wanting to gain wider buyer access and additional sales volume through 3rd-party online retailers can do so only by offering to sell its drones to these online retailers *at an attractively large percentage discount off its own website price*. The bigger the percentage discount offered, the greater the interest of 3rd-party retailers in stocking and merchandising a drone-maker's brand. But, as should be expected, the bigger the amount by which a drone-maker's percentage discount offer *exceeds* the industry regional average, *the bigger the number of 3rd-party online retailers it will attract to sell its brand of drones* in that region.

6. ***Search Engine Advertising***—Search engine ads are a means of attracting more drone shopper traffic to a company's website and thereby helping achieve a bigger unit sales volume and market share in a region. A company's competitiveness versus rival brands is stronger in a region when its expenditures for search engine advertising are above the industry average and weaker when its expenditures are below the industry average.

7. ***Website Product Displays / Info***—The level of expenditures for website enhancement is a proxy for the time, effort, and creativity that a company puts into (1) posting periodically refreshed and visually appealing displays of its various drone models, along with ample and useful information about each model's features, capabilities, and specifications, (2) providing site visitors with capability to create side-by-side model comparisons, (3) enabling site visitors to post their reviews of particular models, (4) making it easy and quick for buyers to place orders and pay for their purchase via credit card or wire transfer, and (5) providing good after-the-sale product support to customers. Many potential buyers make a point of visiting the company's website to gather information about the company's models and research how the features, capabilities, and specifications of its models compare against those of rival brands. Visits to a company's website

also enable customers to obtain needed technical support, download apps and software updates for previously-purchased drone models, browse product manuals, discover how to file a warranty claim, and use the chat function to pose questions to online personnel.

8. ***Warranty Period***—Shoppers for UAV drones find longer warranties more appealing than shorter warranties. To the extent that all other competitive factors are, on balance, roughly equal, a company offering a longer warranty period will typically attract more shoppers to purchase its brand than a company offering a shorter warranty period.

9. ***Company Image (brand reputation)***—Just as with action-cameras, market research confirms that the *prior-year* company image ratings (brand reputations) of rival drone-makers have *a moderately strong influence* on the brand choices of drone buyers in the upcoming twelve months. Thus, companies with prior-year image ratings above the industry average have a competitive edge over rivals with below-average image ratings in attracting drone buyers to purchase their brand for a period of 1 year (at which time new end-of-year brand image ratings become available and are widely publicized). The bigger a company's image rating advantage, the bigger the edge it has in increasing its sales of drones in the upcoming year.

   Companies with comparatively weak brand reputations must exert enough extra effort on some (or many) of the other 8 competitive factors to overcome a weak image disadvantage and boost overall buyer appeal in order to increase sales and market shares above prior-year levels. Winning big chunks of sales and market share away from rivals with strong image ratings in a single year is difficult. But it is certainly feasible for drone-makers with below-average image ratings to nibble away at the business of strong-image rivals, gaining 1 or 2 points of market share in a single year, (maybe more) *if they significantly improve the overall buyer appeal and competitiveness of their drone models relative to the models of rivals.* Should companies with once-weak brand images continue to improve their image ratings over a period of several years, they can definitely turn the liability of a once-weak brand image into a strong brand image and competitive asset.

The Importance of the Competitive Factors that Determine Sales and Market Share

Just as in the real world, the 11 competitive factors for action cameras have differing impacts—some carry more weight than others in a company's sales volumes and market shares in each geographic region. As indicated above, ***the prices and P/Q ratings of camera rivals are the two most important competitive factors*** affecting buyer decisions of which camera brand to purchase. Moreover, buyer decisions to purchase one brand instead of another are *more influenced* by brand reputation, number models, number of retail outlets, advertising, the warranty period, and the size of promotional discounts than by differences in the length of promotional discounts, in retailer support expenditures, and in website expenditures. The weight brand reputation falls somewhere in between the weights for the most and least important competitive factors.

Similarly, the 9 competitive factors for UAV drones have differing impacts on which drone brands have more buyer appeal than other. ***The prices and the P/Q ratings of rival brands are the two most important competitive factors*** affecting buyer decisions of which UAV drone brand to purchase. Furthermore, the brand preferences of drone shoppers are likely to be more influenced by such competitive factors as brand reputation, the number of models, and warranty periods than they are by search engine ads and the efforts of rival companies to enhance their websites (where many sales transactions occur) and market their drones at the websites of other online electronics retailers. The weight brand reputation falls somewhere in between the weights for the most and least important competitive factors.

Analyzing the Effects of the Competitive Factors. The weighting placed on the 11 competitive factors for action cameras and the 9 competitive factors for drones closely mirror what is believed to actually prevail in real-world marketplaces. ***While knowing precisely the weighting used for each competitive factor might seem helpful, such knowledge is not as useful as you might think.***

Price is most definitely a *very important* competitive factor. ***Big price differences in a region matter a lot*** in accounting for differences in sales/market share. But as the spread between the highest-priced

company and the lowest-priced company becomes smaller and smaller, *the weaker is the unit sales/market share impact of price differences* and the greater is the role of the differences on other competitive factors in causing the sales and market shares to differ. For example, in the rare instance that all companies should happen to charge the same price in a region, then price becomes a total competitive non-factor and has *zero impact* on buyer appeal for one brand versus another—in such a case, 100% of the regional sales and market share differences among rivals would stem directly from differences on the other competitive factors. So how much price matters in determining a company's unit sales/market share in a region ***is not a fixed amount but rather is an amount that varies*** from "big" (when price differences are also "big) to "small" (when prices differences are "small") to "zero" (when the prices of rivals are identical). Precisely the same is true for the other competitive factors. So while it is true that some competitive factors affect buyer brand preferences more than others, ***what matters most in determining sales and market shares is the sizes of the differentials on each competitive factor***. *Big differences on a less important competitive factor like the length of warranty periods can end up having a bigger sales/market share impact than very small/insignificant differences on more important competitive factors (like price and P/Q rating).*

Essential understanding: The *more* that a company's brand appeal to buyers on any one competitive factor (whether it be price, P/Q rating, brand reputation, number of models to choose from, length of warranty, and so on) is *above/below the industry average in a region*, *the bigger is the weighting/impact of that factor in accounting for why its regional net sales/market share is above/below the industry average*. Conversely, the closer to the industry regional average is a company's price or P/Q rating or brand reputation or number of models and so on, the *smaller* is the weighting/impact of that factor in accounting for why its unit sales/market share is above/below the industry average. *When a company's competitive effort on each of the various competitive factors approximates the industry averages in a region, then its resulting unit sales volume/market share will also approximate the region's industry average*. ***So which particular competitive factors actually turn out to be most important all depends on how that company's competitive effort stacks up against the industry average competitive effort***, factor by factor. All unit sales and market share outcomes in all regions are thus 100% competition-based and are a function of the size of each company's competitive advantage or disadvantage versus the industry averages for all the competitive factors.

> **Special Note:** After each decision round, you can review a Competitive Intelligence Report (1-page for each geographic region) showing each company's competitive standing versus all other companies in the industry on each of the competitive factors for action cameras and UAV drones. It is imperative that you review this information to determine how well your company's competitive effort on each factor compares to the industry averages—*on which factors does your company have a competitive edge and on which factors is your company at a competitive disadvantage*? This information puts you in position to correct any important competitive disadvantages and to consider ways to further exploit any competitive advantages in the upcoming decision round. ***Ignoring the information in the Competitive Intelligence Reports puts your company in the risky position*** of heading into a market contest with little or no clue as to competitors' prices, P/Q ratings, brand reputations, models, warranties, and so forth and the extent to which your company is being outcompeted by rivals.

Crafting a Strategy to Be Competitively Successful

With so many competitive factors determining unit sales and market shares of and with the sales and market share impacts of these factors varying from year-to-year because of shifts in each company's competitive advantage/disadvantage versus rivals on all these factors, you have wide-ranging options for crafting a strategy capable of producing good overall company performance and competing successfully in the action-camera and drones markets. For example, you can:

- Employ a low-cost leadership strategy and pursue a competitive advantage keyed to operating more cost-efficiently than rivals and thereby being in a strong position to profitably sell action cameras and/or drones at prices below those of rivals.
- Employ a strategy to differentiate your company's cameras and/or drones from rival brands based on such attributes as product performance and quality, number of models, warranties,

and other competitive factors that matter to buyers—and thereby outcompete rivals with a product offering that has greater overall appeal to a highly profitable number of buyers.

- Employ a "more value for the money" strategy (for example, selling 8-star cameras and drones at lower prices than other 8-star brands) where your competitive advantage is an ability to incorporate "upscale" product attributes with high buyer appeal at a lower cost than rivals—and thereby underprice rival brands having comparable attributes and P/Q ratings.
- Focus your strategic efforts on being the clear market leader in either action-capture cameras or UAV drones.
- Focus your company's competitive efforts on gaining sales and market share in those geographic markets where your company already has high sales and/or attractively large profit margins (as compared to other regions) and putting less emphasis on winning sales in those regions where your company has a low market share or small profit margins and regions where competition is especially fierce (as compared to other regions).
- Pursue essentially the same strategy and competitive advantage across all four regions or, instead, craft regional strategies tailored to improve the company's competitiveness region-by-region and counteract/overcome the strategic actions and competitive maneuvers of specific rivals in specific regions.

There's a very big window of opportunity for you to craft some version of the above strategic approaches. And because ***GLO-BUS has no built-in bias that favors any one strategy over all the others***, there are multiple strategic approaches and sets of competitive efforts/action that, if properly designed and well-executed, are capable of producing competitive success in the global market for cameras/drones, provided they are not overpowered or thwarted by even more potent strategic approaches and competitive actions/efforts that are well-executed by rival companies.

No One Strategy for Competing "Guarantees" Success. Because the sales and market share outcomes for a company are based on the competitiveness and overall buyer appeal of its brand versus the competitiveness and overall buyer appeal of rival brands, *it is not conceptually and competitively possible for there to be any one surefire strategy or competitive approach or combination of competitive efforts/actions that is "guaranteed" to propel your company to the top.* Consider the following:

- Are the companies that are being outperformed by the company pursuing a so-called surefire strategy going to sit idly, do nothing, and watch that company overwhelm them, decision round after decision round thereby running the risk of a poor grade? *Not likely*. *It is unreasonable to expect any company to passively accept competitive defeat and unconditionally surrender.*
- Do managers of rival companies whose performance is suffering have *strong* incentives to aggressively pursue actions to boost the performance of their companies? *Certainly*.
- Do all the managers of rival companies lack the capacity figure out why their companies are being outcompeted and outperformed? *Very unlikely*.
- Aren't the reasons fairly obvious? Don't these reasons revolve around prices and/or P/Q ratings and/or number of models offered and/or warranties and/or assorted marketing efforts that are not sufficiently competitive with those of the high-performing company and that have resulted in weak buyer appeal? *Most certainly*.
- Might part of the reason for their underperformance also be due to "high" unit costs that are squeezing profitability? *Yes—at least for some companies*.
- Can one or more of the companies being outcompeted and outperformed be reasonably expected to launch a strong counterattack and initiate new and potentially potent competitive efforts to improve their company's performance? *Yes. There is nothing to prevent any company from reducing prices and/or increasing P/Q ratings and/or adding models and/or lengthening warranties and/or boosting its marketing efforts (perhaps by*

significant amounts), and there is plenty of reason for underperforming companies to pursue such actions aggressively.

- Might such actions prove effective in bolstering the competitiveness and overall buyer appeal of their brands, thereby narrowing the competitive gap and the performance gap between the underperforming companies and the industry leader? *Definitely. It is common for underperforming companies to reverse their fortunes by undertaking actions that succeed in boosting buyer appeal for their product offerings and greatly improving their overall performance—this occurs both in GLO-BUS and in the real world*.
- Is there a reasonable chance that one or more companies could even overtake the industry leader by devising a potent strategy and series of competitive actions/maneuvers that enable it to outcompete the former industry leader in the marketplace and become the best-performing company in the industry? *It should come as no surprise—there are many instances, both in GLO-BUS and the real-world, where well-managed trailing companies have overtaken industry leaders.*

There is no such thing as a "magic bullet" (undefeatable) strategy or a strategy that is "guaranteed" to outperform all other strategies, irrespective of the strategies and competitive actions undertaken by rival companies.

Always remember that what drives the sales/market share success/failure of any one company's strategy for competing in the marketplace is how well the overall buyer appeal and competitiveness of its cameras/drones matches up in each decision round with the overall buyer appeal and competitiveness of the cameras/drones of rival companies on each of the competitive factors. As long as your company's competitive efforts/actions and decision entries produce an overall buyer appeal for your camera/drone product line as compared to the offerings of rival companies and so long as your company exerts sufficiently aggressive competitive efforts, then you can expect a satisfactory percentage of buyers to prefer purchasing your cameras/drones over rival company brands.

While it is important to win attractive sales/market shares in each region, such outcomes are not sufficient to produce the best profit outcomes. For a company to rank among the industry's top-performers, its net revenues must cover costs by an amount sufficient to produce good-to-excellent profitability. This requires not only sufficient competitive success in the marketplace to produce attractively large revenues but also consistent managerial success in operating the company cost-efficiently—*operating inefficiencies and wasteful spending impair a company's profitability and overall performance*.

Just as in real-world companies that operate in competitive marketplaces, ***your company's strategy and competitive actions/efforts will need to evolve as the decision rounds unfold in order to respond and adjust to the shifting strategies and competitive efforts of rival companies***. So even if your company's performance in the year just completed is quite good, do not expect to lock your competitive efforts and decisions entries in concrete—some adjustments (maybe many adjustments) will almost certainly be needed to counter the freshly initiated competitive efforts/actions of rivals.

Advice from Outside Sources. Because sales volumes and market shares in are 100%-determined by how well the buyer appeal and competitive attributes of your company's offerings of cameras/drones compare against those of the specific rival companies you are competing against, you are well-advised to ***be highly skeptical of any advice and tips regarding what to do that comes from prior participants in the GLO-BUS exercise at your school or from sources you discover from internet searches***. While such information may be interesting and "nice to know," the hard truth is that your company will be competing against companies run by students in *your class*—any "folklore" about the experiences of companies run by students from previous classes at your school or elsewhere in the are mostly "noise" or of dubious. The chance that the head-to-head competition and outcomes in past industry will closely match what will occur in your industry is small. So following such advice carries significant risk of being "wrong" or "misguided" when it comes to figuring out what your company needs to do to compete effectively against the rival companies in your class.

Making Decisions

As indicated earlier, there are 56 different types of decision entries and 17 entries involving assumptions about the competitive actions rivals are likely to take. In some cases, entries for the same decision type (like selling price or advertising and the length of warranties) are required for each of the four geographic regions of the world market. *Each of the decision pages displays calculations of the projected outcomes of your decision entries.* These calculations appear instantaneously as soon as each decision is entered, allowing you to isolate the incremental impacts of each decision entry. On each decision page are calculations showing *projections* of earnings per share (EPS), return on average equity investment (ROE), credit rating, image rating, revenues, net profit, and year-end cash balance. These projections are instantly updated each time a new entry is made, allowing you to see the probable impacts of each new decision entry on company performance. You will find these built-in decision support calculations invaluable in evaluating alternative decisions and deciding what to do. You can easily try out any number of "what if we do this" decision alternatives, review the projected outcomes, and thereby search for a combination of decision entries that appears to offer the best overall performance and meets with the consensus approval of your company's management team.

The first time you visit a decision entry page, you will need to take time to explore the page and digest all the information. ***If you feel the need for additional information while you are working on a particular page, click on the Help button that appears at the top-right. The Help sections provide detailed guidance, including important cause-effect relationships, explanations of all on-screen calculations, and decision-making tips.***

Upon visiting a decision entry page, the numbers you will see in the decision entry fields represent either (1) the decision entries from the prior year or (2) the latest decision entries you and/or your co-managers saved in the course of having previously worked on the current decision round. No decision entry for the upcoming year is considered final until the deadline (set by your instructor) for entering decisions arrives. ***The last decision entry set saved prior to the decision round deadline is considered "final". When the deadline for the decision round arrives, the GLO-BUS system will process the decision round results***, making them available to all companies and to the course instructor. Thus, it is critical that you save your final entries for the round in time to meet the deadline.

Product Design Decisions

The product design page involves deciding on the components, enhancements, and extra performance features to incorporate in your cameras/drones, the number of models to have in each product line, and how much to spend on product R&D. Initially the numbers appearing in the decision entry fields (or beside the decision filed for product R&D) are the entries from the prior round (year). The Product Design entries are important because they determine the P/Q ratings assigned to your cameras/drones. The better the design-related specifications and the greater the number of extra performance features, the better the resulting performance and quality (but the higher the associated production costs). As decisions are entered, you can review the on-screen calculations of the expected P/Q ratings and the associated costs to determine which combination of design specifications is "best" for implementing the strategy you have chosen to pursue.

All parts, product enhancements, accessories, and components needed for extra performance features are purchased from outside suppliers; these suppliers sell essentially the same items at the same prices to all companies. The costs of extra performance features increase as the number incorporated into the designs of cameras/drones increases (the cost impacts are shown in the Production Costs section of the page).

Number of Models. Prior management elected to have a product line-up consisting of 3 action camera models and 2 drone models. While there is considerable merit in trying to expand sales by adding more models, the addition of more models introduces quality control difficulties that negatively impact P/Q ratings and warranty claims and that also reduces the number of cameras/drones that product assembly teams (PATs) can assemble annually. PATs cannot assemble 5 models of cameras/drones as proficiently and as problem-free as they can assemble 3 models. Model increases reduce

camera/drone PAT productivity by some percentage that depends on whether the model increase is 1 model, 2 models, 3 models, or 4 models. The addition of more models also tends to increase warranty costs because of faulty assembly and/or components that prematurely become defective. Reducing the number of models has the reverse effects. It is easy enough to track the effects of increasing or decreasing the number of models by observing the changes in the on-screen calculations of the P/Q rating, warranty costs, and labor costs.

Product R&D Expenditures. In Year 5, prior management spent $20 million on product R&D for cameras and $15 million on product R&D for drones. Substantial R&D spending is required to improve product performance, discover and test easier-to-assemble camera/drone designs, develop new and improved models, and program more sophisticated software capabilities for both cameras and drones. The R&D challenges for improving drone performance are more formidable than for action cameras, partly because video camera technology is better understood and more mature, partly because drones are a relatively new product, and partly because the company just recently entered the drone marketplace and has yet to fully develop its drone designs. Drone buyers, of course, are highly interested in drones that can stay up in the air longer than the current maximums of 15-30 minutes, fly distances well beyond the view of the person operating the flight controller, and avoid crashing into obstacles in their flight path—such capabilities present formidable R&D challenges that will require sustained R&D efforts.

The combination of current year spending and cumulative spending over time for product R&D (1) provide a pipeline of tested ways to add more features, improve performance, and build the company's proficiencies in designing new and improved camera/drone models, (2) improve a company's camera/drone P/Q ratings—higher P/Q ratings are realized as soon as current and cumulative R&D spending reach levels sufficient to produce better camera/drone performance and quality, (3) reduce warranty claims and costs (these two benefits stem from the positive impact of R&D expenditures on P/Q ratings), (4) increase the productivity of PATs in assembling camera/drone models—productivity gains occur as soon as current and cumulative R&D spending reach levels sufficient to identify and develop easier to assemble product design, and (5) reduce the costs of components, accessories, and enhancement features used in assembling cameras/drones.

AC Camera Marketing Decisions

At the top of this second decision page is a section displaying the 7 marketing-related decisions your company will make for action cameras. Just below the entry fields for the 7 marketing decisions is a section labeled Market Segment Statistics. The first two lines show your company's (1) actual sales of cameras in the prior year and projected sales in the current year and (2) camera market share in the prior year and projected market share in the current year. The last three lines of this section report the numbers of multi-store chains, online retailers, and local retail shops in each region stocking and merchandising your brand of action cameras in the prior-year and the current year—the current year numbers were updated at the end of the prior year to reflect the year-end appeal of your company's camera models and *there's nothing you can do in the current year to attract additional retailers* (the updated numbers of retailers willing to stock each company's camera brands are reported in the Competitive Intelligence Reports). The company's regional sales offices (Milan, Singapore, Sao Paulo, and Dallas) are staffed with people who help recruit and service the accounts of retailers in the region.

Each time you enter a different value for any of the marketing decisions, you will see the effects on *projected* unit sales and projected market share. In addition, you will see on-screen calculations showing the *projected* price-cost-profit outcomes associated with the marketing decision entries.

The decision entries on the page are pretty much self-explanatory, but click on the Help button at the top-right of the page if you have questions, want additional information, or need guidance.

There are several things you need to keep in mind as you make entries for the marketing decisions:

- All seven marketing decisions (along with your company's P/Q rating and number of models offered, both of which are determined by your entries on the Product Design page) will largely determine the degree to which your company's camera products are competitive with

the camera products of rival companies and whether your company's brand will be sufficiently appealing to buyers *to generate net sales revenues big enough to cover operating costs and yield attractive operating profits and operating profit margins.*

- The accuracy of the on-screen projections of your company's unit sales and market shares is a function not just of your company's competitive efforts but also the competitive efforts of rival companies (which will almost certainly include making adjustments in their P/Q ratings, number of models, wholesale prices, advertising, sales promotion efforts, and so forth). At the bottom of this page is a section labeled ***Competitive Assumptions*** containing entry fields for the competitive factors affecting sales and market share in each region. The first time you visit this page these entries prior-year average competitive efforts of rival companies. Unless and until these are changed, the on-screen projections of your company's unit sales and market share for the current year are based on how your company's competitive effort for the current year compares *against the competitive conditions your company faced last year*.

  Note: The reason there are entry boxes for only 9 of the 11 competitive factors is that the two missing competitive factors—number of retailers and brand reputation—are already known for the current year because they are updated at the *end* of every decision round and are reported in the Competitive Intelligence Report.

  Needless to say, the managers of rival companies can be counted upon to alter aspects of their competitive effort in all four regions as they prepare their current-year decisions and seek to boost the performance of their respective companies. This means that the on-screen projections of your company's unit sales and market share in each region are unreliable because they are based on how your company's competitive effort in the current year stack up against the *past* competitive efforts of rival companies, not their forthcoming competitive efforts.

  If you believe that rival companies are likely to alter their competitive efforts by raising or lowering prices, P/Q rating, models offered, advertising, and so on, then you will definitely need to enter your anticipated changes in the some/all of the industry averages. If your anticipated changes in the industry averages prove close to the actual outcomes, then the now-revised projections for sales, market share, revenues, costs, and profits will be relatively close to the actual outcomes when the decision entries of all companies are "processed" and the results for the year generated.

  Consequently, before you get very far along in making entries for the 7 marketing decisions, it makes sense to first enter your anticipated updates of the industry averages for the 9 competitive factors. Yes, these are likely to be "guesstimates" or "approximations", but sales/market share projections based on reasonable assumptions of what rivals are likely to do may be more reliable than projections based on what rivals did a year ago. There is ample reason to believe that the competitive efforts of rivals will, on average, be stronger than in the prior year, if only because poorly-performing companies that were outcompeted last year have strong incentive to initiate actions to boost their competitiveness.

  Even if you overestimate the strength of competition from rivals in the upcoming year (which, in turn, will lower the projected sales/market shares for a given level of marketing effort on the part of your company) and actually end up with bigger sales/market shares than were projected, your company will still assemble, ship, and sell the unexpected units demanded *provided your company has sufficient idle workstation capacity to assemble the unexpected orders*. It is far better to have the pleasant surprise of selling more than the projected sales volume (and enjoying the accompanying extra revenues and profits) than having the unpleasant surprise of selling less than the projected sales volume because you underestimated the strength of the competitive efforts from rivals.

Trying different decision entries and experimenting with different assumed changes in the industry averages for the current year, enables you to evaluate the merits of different decision entries and arrive at a consensus of what strategic actions to take in in striving to combat the anticipated strategies and competitive maneuvering of rivals.

Exchange Rate Adjustments. In the section labeled Price-Cost-Profit Breakdown, you will notice that in the Revenue Projection entries just under selling price is a line labeled "± Exchange Rate Adjustment." Exchange rate adjustments result from the fact that (1) the exchange rate of one currency for another fluctuates on a daily basis and (2) the company assembles, ships, and sells action cameras in Taiwan (where the local currency is Taiwan dollars) to buyers in other parts of the world (where local currencies are different). Further, the orders tend to occur at some agreed price in a period when exchange rates are one value while buyer payments are not received until some later period (when exchange rates are very likely a different value). There's a second reason for exchange rate adjustments: the local currency payments the company receives from buyers over the course of a year must be converted into Taiwan dollars and ultimately into U.S. dollars (since the company reports its financial statements in U.S. dollars and the company's stock is traded on a U.S. stock exchange). Thus the company's business is one with potentially significant foreign exchange risks.

To help manage these risks, company officials have negotiated a long-term currency exchange agreement with the Global Community Bank through which the company does most of its business. The agreement calls for the bank's foreign currency department to handle the company's many foreign currency transactions. For simplicity, the agreement entails combining both of the reasons for currency adjustments (enumerated in the above paragraph) into a single adjustment whereby the net revenues the company actually receives on cameras assembled and shipped from its Taiwan assembly facility and sold to buyers in various parts of the world to be adjusted upward or downward is based on the real-world currency swings during the period from one decision round to the next as concerns the U.S. dollar against the Taiwan dollar, the euro against the Taiwan dollar, the Brazilian real against the Taiwan dollar, and the Singapore dollar against the Taiwan dollar. Specifically:

- The net revenue per camera the company actually receives from camera sales to retailers in North America is a result of adjusting the company's average wholesale price up or down for exchange rate changes between the U.S. dollar and the Taiwan dollar.
- The net revenue per camera the company actually receives from camera sales to retailers in Europe-Africa is a result of adjusting the company's average wholesale price up or down for exchange rate changes between the euro and the Taiwan dollar.
- The net revenue per camera the company actually receives from camera sales to retailers in the Asia-Pacific is a result of adjusting the company's average wholesale price up or down for exchange rate changes between the Singapore dollar and the Taiwan dollar.
- The net revenue per camera the company actually receives from camera sales to retailers in Latin America is a result of adjusting the company's average wholesale price adjusted up or down for exchange rate changes between the Brazilian real and the Taiwan dollar.

In making sales to buyers in Europe-Africa, the company provides price quotes in terms of both the buyer's local currency and in euros. Buyers, while making payment in their local currency (which can be either euros or some other denomination), agree when the order is placed to tie the amount of their local currency payment per camera to the local currency equivalent of that number of euros per camera—the company's global bank handles converting the local currency payments of Europe-Africa buyers into the equivalent of euros and then into Taiwan dollars at the appropriate exchange rates. Should the exchange rate of euros per Taiwan dollar fall from one decision period to the next, say from 0.0250 to 0.0249 euros per Taiwan dollar, then buyer payments of the agreed number of euros per camera at the time the order was placed equate to *more* Taiwan dollars at the time of payment and an *upward* adjustment in the company's revenues. Conversely, when the exchange rate of euros per Taiwan dollar rises, say from 0.0250 to 0.0251 euros per Taiwan dollar (meaning that a specified number of euros equate to fewer Taiwan dollars), then the company does not receive as many Taiwan dollars in payment for the cameras sold and shipped to Europe-Africa buyers and net revenue is accordingly adjusted *downward*. The size of the Europe-Africa revenue adjustment is equal to 5 times the actual period-to-period percentage change in the exchange rates of euros to Taiwan dollars (multiplying the actual % change by 5 is done so as to translate the exchange rate change over a few days into a change that is more representative of what might realistically occur over a full year). Thus, if the exchange rate between euros and Taiwan dollars should change by −0.40% from one decision period to the next, the size of the exchange rate adjustment will be −2.0% (−0.40% x 5 = −2.0%).

Because actual exchange rate fluctuations are occasionally quite volatile over a several day period, the maximum exchange rate adjustment during any one year is capped at ±20%, thus limiting the size of gains and losses from exchange rate adjustments.

The procedures for adjusting revenues on sales to retailers in Latin America, Asia-Pacific, and North America are handled in like fashion. All the pertinent calculations are done automatically, thus relieving you from mastering the intricacies of the exchange rate adjustments. Since the sizes of the expected exchange rate adjustments in dollars per camera/drone are known during the course of making the current-year decisions, you can pursue actions to mitigate the adverse effects of unfavorable (those with a minus sign) exchange rate adjustments. One option is to adjust sales and marketing efforts in a manner that results in (1) added sales in those areas where the exchange rate adjustments are positive (favorable) and (2) somewhat smaller sales in the regions where the exchange rate adjustments are negative (unfavorable). Another option is to raise the selling prices in a particular region to help offset negative revenue adjustments and realize higher net revenue per camera sold. Because all competing companies have assembly facilities in Taiwan and are thus subject to comparable exchange rate impacts on net revenues per camera sold, you may be able to make offsetting price adjustments without much risk of putting your company at a price disadvantage. Consult the information in the Help section for more details on the mechanics of the exchange rate adjustments and their managerial relevance in making decisions.

There will be no exchange rate adjustments in Year 6. The prevailing real-world exchange rate values at the beginning of Year 6 and the real-world rates at the beginning of Year 7 will serve as the base for calculating the Year 7 exchange rate adjustments. The real-world changes in the exchange rates between the beginning of Year 7 and the beginning of Year 8 serve as the basis for exchange rate adjustments in Year 8. And so on throughout the exercise.

Since the company's financial statements are reported in U.S. dollars, company accountants go through the necessary accounting procedures to accurately record and report the revenues collected in Taiwanese dollars in U.S. dollars and to otherwise accurately portray the company's financials in U.S. dollars. The procedures are in full compliance with generally accepted accounting procedures and have been approved by the company's auditors.

UAV Drone Marketing Decisions

At the top of this third decision page is a section displaying the 6 marketing-related decisions for UAV drones. Initially the numbers appearing in the decision entry fields (or beside the decision filed for product R&D) are the entries from the prior round (year). Just below the entry fields for marketing decisions is a section labeled Market Segment Statistics. The first two lines show your company's (1) actual sales of drones in the prior year and projected sales in the current year and (2) drone market share in the prior year and projected market share in the current year. The last line of this section displays the number of third-party online retailers marketing your drone models at their websites in the prior-year and the current year—the current-year number was updated at the end of the previous year to reflect the year-end appeal of your company's drone models and ***there's nothing you can do in the current year to attract additional 3rd-party online retailers*** (the updated numbers of 3rd-party online retailers willing to stock and merchandise each company's drone brands in the current year are reported in the Competitive Intelligence Reports). Each time you enter a value for any of the marketing decisions, you will see the effects on projected unit sales and projected market share.

The third section of the UAV drone marketing page shows price-cost-profit breakdowns flowing from the marketing decision entries and the projected sales volumes in each region. At the bottom of the decision page is a section for entering your anticipated changes in the industry averages for 8 of the 10 competitive factors affecting each company's sales/market shares in each region. The current-year industry averages for 2 of the 10 competitive factors—the number of third-party retailers merchandising each company's drone models and company brand reputation—are already known (and can always be viewed in the Competitive Intelligence Report).

Just as was the case with the AC Camera Marketing Decision page, before you get very far along in making entries for the 6 drone marketing decisions, it makes sense to first enter your anticipated updates of the industry averages for the 8 competitive factors in the Competitive Assumptions section at the bottom of the page. Again, your entries are "guesstimates" and can be expected to vary from the actual industry averages appearing in the Competitive Intelligence Reports. But sales/market share projections based on your best judgment of what rivals are likely to do may be a less risky basis for evaluating the profit prospects of alternative marketing decision entries than relying on sales/market share/ profitability projections based on what rivals did a year ago. But bear in mind that the chances are good that the competitive efforts of rivals will, on average, be stronger in the current year than in the prior year, both because poorly-performing companies have strong incentive to initiate actions to boost their competitiveness and overall company performance and because some top-performing companies may try to strengthen whatever prior-year competitive edges they had on certain competitive factors.

Even if you overestimate the strength of competition from rivals in the current year (which, in turn, will lower the projected sales/market shares for a given level of marketing effort on the part of your company) and actually end up with bigger sales/market shares than projected, your company will still assemble, ship, and sell the unexpected units demanded *provided your company has sufficient idle workstation capacity to fill the unexpected orders from buyers*. It is far better to have the pleasant surprise of selling more than the projected sales volume (and enjoying the accompanying extra revenues and profits) than having the unpleasant surprise of selling less than the projected sales volume because you underestimated the strength of the competitive efforts from rivals.

> **Note:** In the first several decision rounds, making adjustments in the competitive assumptions admittedly involves more guesswork than insightful judgement because there's little hard evidence about what actions rivals will take. Thus, it is usually wise to be cautious and make relatively small adjustments in the averages. But making reasonably accurate guestimates become easier as the number of completed decision rounds increases; this is because with more data points, trends in one or more of the industry averages become more evident and because careful analysis of the data in the Competitive Intelligence Reports about what rivals are doing gives you sound basis for judging what they are likely to do next.

Your task on this decision page is to try out a variety of combinations of the 6 market decisions in each region and search for a set of entries which, in conjunction with your company's P/Q ratings for drones and number of drone models (as determined from your entries on the Product Design page), number of 3rd-party online retailers, and prior-year brand reputation, produces an overall competitive effort versus rival companies with appealing projected outcomes for unit sales, market shares, operating profits, and operating profit margins.

Exchange Rate Adjustments. Exchange rate adjustments in the company's selling prices for drones have to be made for all the same reasons as for action cameras and the adjustment procedures are identical. The adjustments appear in the section labeled Price-Cost-Profit Breakdown on the line just under selling price labeled "± Exchange Rate Adjustment." As explained earlier, a negative adjustment represents an *unfavorable* shift in exchange rates that results in the company receiving net revenue per drone sold that is *below* the company's selling price in the region. A positive adjustment represents a *favorable* exchange rate shift that causes net revenue per drone sold to be *higher* than the posted selling price.

It is up to you to decide whether to just *ignore* favorable/unfavorable exchange rate shifts or whether to make proactive adjustments. One option is to adjust sales and marketing efforts in a manner that results in (1) added sales in regions where the exchange rate adjustments are positive (favorable) and (2) somewhat smaller sales where the exchange rate adjustments are negative (unfavorable). Another option is to raise the selling prices in regions with negative revenue adjustments by amounts sufficient to recover the lost revenue and preserve the company's profit margins.

There will be no exchange rate adjustments in Year 6. The prevailing real-world exchange rate values at the beginning of Year 6 and the real-world rates at the beginning of Year 7 will serve as the base for calculating the Year 7 exchange rate adjustments. The real-world changes in the exchange

rates between the beginning of Year 7 and the beginning of Year 8 serve as the basis for exchange rate adjustments in Year 8. And so on throughout the exercise.

Compensation, Training, and Facilities Decisions

The top section of this page contains 4 decision entry fields for compensating workers engaged in assembling action cameras and 4 decision entry fields for compensating workers engaged in assembling drones. The compensation decisions are the same for both types of workers: (1) how much to raise/lower the base pay of PAT members, (2) whether and by how much to change each PAT's assembly quality incentive payment per unit assembled, (3) whether and by how much to alter the annual bonus for perfect attendance, (4) whether and by how much to raise/lower payments for fringe benefits. It is up to you whether to establish identical or different compensation packages for the two types of workers.

PAT Productivity. Just under the compensation-related decisions is a field for entering the amount management wishes to spend for training PAT members and improving PAT productivity. ***The productivity of each four-person PAT (how many units they can assemble in a given year) is influenced by 8 factors:***

- ***Annual base wage increases***—Annual increases in base pay of 2% or more lead to higher levels of productivity, chiefly because higher annual base wages help attract and retain workers with better skills and work habits and because higher base wages make workers feel better about their jobs and enable higher standards of living for them and their families. The maximum annual base pay increase is 10%. Cuts in base pay are allowed, up to a maximum of 15% in any one year; as might be expected, base pay reductions act to reduce PAT productivity. Small pay cuts do not entail a "big" drop in productivity but cuts of 5-15% will have a major negative impact.
- ***The assembly quality incentive***—Experience indicates that bigger assembly quality incentive payments per unit increase productivity and reduce warranty claims. PATs have responsibility for fully testing the functioning of each action camera/UAV drone assembled and correcting any performance problems, including replacing malfunctioning components—the costs of replacing defective or malfunctioning parts/components are borne by suppliers. Prior management instituted the practice of paying each PAT an assembly quality incentive for each unit assembled, the thesis being that such incentives spurred PAT members to propose ways to cut assembly and testing times while still accurately assembling and thoroughly testing each camera or drone after assembly. Thus far, PAT members in the assembly facilities have taken pride in coming up with better and more efficient procedures that help reduce warranty claims and boost productivity. In Year 5, the incentive payments were $2.40 per camera per PAT and $4.80 per drone per PAT; *these payments are divided equally among all PAT members*.
- ***Attendance bonus***—Absenteeism on the part of PAT members has a strong negative impact on the functioning and performance of the remaining team members. When team members fail to show up for work a team's assembly procedures are disrupted; and substitutes must be assigned to fill-in for the person(s) absent or else the team must try to assemble units as best it can. To discourage absenteeism, prior management instituted the practice of paying an $800 year-end bonus to each PAT member with a record of perfect attendance (defined as working 2000 hours per year—50 weeks at 40 hours per week, with 2 weeks off for holidays and personal leave); missing as much as ½ day during a 2000-hour work year constituted disqualification for the bonus. Prior management believed the attendance bonus was successful in keeping absenteeism at a tolerable minimum, thereby enabling most PATs to operate at full-strength and assemble at least a reasonable number of cameras/drones each shift. However, you have the authority to discontinue the practice of paying a bonus for perfect attendance, to continue the program as is, or to raise the size of the bonus periodically as you see fit. It is up to you to determine whether diverting the $800 bonus per PAT member to other types of compensation (such as bigger incentives or higher base pay or bigger fringe benefits) could lead to even better PAT productivity.

- ***Fringe benefits package***—PAT members and other company personnel view a generous company-paid fringe benefits package (health insurance, disability insurance, term life insurance, and retirement plans) as an important element of a "good job" because the components of fringe benefit packages add to the employee's overall well-being.
- ***Total compensation***—How well your company's PAT members are being compensated relative to rival companies with regard to base pay, assembly quality incentives, the perfect attendance bonus, and fringe benefit packages is a major factor in the company's ability to attract/retain better-caliber, more productive employees. The best, most productive workers are inclined to leave jobs at lower-paying companies for jobs at higher-paying companies. Likewise, job seekers that exhibit motivation, pride of workmanship, good work habits, and aptitudes for teamwork are drawn to work for those companies having the best overall compensation package. Thus, PAT productivity tends to be higher at the companies with the highest total compensation packages per PAT member.
- ***Best Practices / productivity improvement budget***—The productivity of PATs is enhanced by training PAT members in better assembly techniques, post-assembly product testing, ways to reduce warranty claims, and overall productivity improvement. You have the authority to raise/lower annual spending per PAT for such training. While spending greater amounts per PAT increases productivity, the benefits from greater annual training expenditures per PAT *are subject to diminishing marginal returns* (that is, the benefits become smaller and smaller, eventually reaching a point where the added costs outweigh the added benefits). A company can always reduce annual training expenditures per PAT without losing the previous productivity gains.
- ***Product R&D expenditures (cumulative)***—A portion of R&D expenditures is always devoted to improving the designs of all camera/drone models in ways that reduce the amount of time it takes PATs to assemble and test them, thus increasing the annual productivity of PATs.
- ***Number of models***—Increasing the number of models in a given year will reduce PAT productivity, due to lower PAT proficiency in assembling more models and increased model change-over time. Reducing the number of models boosts productivity because PATs have fewer assembly and post-assembly product testing procedures to master and less model change-over time.
- ***The total compensation of camera PATs versus drone PATs***—A small difference between the compensation packages of a company's camera and drone PATs will be tolerated by PAT members. However, a significant disparity in the compensation packages of camera and drone PATs can cause dissatisfaction among the PAT members receiving the smaller compensation package, thus negatively affecting productivity. In Year 5, the compensation packages of camera and drone PATs were identical.

At the end of year 5, the productivity of PATs assembling action cameras was 3,000 units annually. There is reason to believe that over the next several years the productivity of camera PATs can be increased to 3,500 to 4,000 cameras annually. Productivity could go even higher, if managers aggressively pursue productivity gains via attractive compensation, additional training, and robot-assisted assembly techniques.

At the end of year 5, the productivity of PATs assembling drones was 1,500 units annually (drones assembly is more complicated and involves assembling the built-in action camera, as well as the drone itself; moreover, thoroughly flight testing all the performance features of a UAV drone is considerably more time-consuming). The productivity of drone assembly PATs could rise to perhaps 2,000 units annually, if company managers are willing to invest in attractive compensation packages, additional training, robot-assisted assembly methods, and expedited flight testing procedures (via product R&D).

Assembly Capacity, Facilities Expansion, and Workstation Additions. The remainder of this decision page is devoted to decision entries and on-screen calculations that enable you to (1) fill growing buyer demand for your company's cameras/drones by having PATs work overtime—the

maximum number of cameras/drones that can be assembled at overtime is 20% of annual PAT productivity (the number of units a PAT assembles each year), (2) add additional workstations as may be needed to fill incoming orders for cameras/drones during the current year, (3) initiate projects to expand the size of the assembly facility for cameras and/or drones whenever additional workstation space is needed, and (4) order a robotics upgrade for all existing camera and/or drone workstations that enables the size of PATs to be reduced from 4 persons to 3 persons and that also.

Your company's AC Camera assembly facility for currently has space for 300 workstations, but only 280 workstations have been installed (thus, there is enough vacant space to add 20 more workstations). The UAV Drone assembly facility currently has 110 workstation spaces, but only 100 drone workstations have been installed and 10 spaces are vacant (which can be filled with workstations whenever you see fit). New camera/drone assembly workstations can be installed at a cost of $100,000 each; adding workstations can be done quickly (usually during a single weekend) at the beginning of each year. Your company will in all likelihood need to expand both the camera and drone assembly facilities in the years to come in order to have enough workstations for PATs to assemble the numbers of cameras and drones it will take to meet growing buyer demand. Additional space for camera/drone workstations can be built at a cost per space that declines as the size of the space expansion increases. Space expansions are undertaken at the beginning of a year and take several weeks to complete; however, both the camera and drone assembly facilities have enough extra storage area to accommodate the immediate delivery of additional workstations and set them up *temporarily* in the extra storage space until a facility expansion is completed. This gives you the ability to gain full-year assembly capability for newly-purchased camera/drone workstations pending completion of a workspace expansion project.

The capital costs of new workstations, facilities expansions, and robotics upgrades are paid in full in the year they occur. The company has enough land at its Taiwan plant site to permit expansion of the camera assembly facility to accommodate 1000 workstations and expansion of the drone assembly facility to accommodate as many as 800 workstations (although it is highly improbable that you would ever need this many workstations). Fixed assets (primarily facilities, workstations, robotics upgrades, office equipment, and furnishings) are depreciated over 20 years at the rate of 5% annually.

The two big camera/drone assembly-related decisions that have to be made each year concern (1) how many new workstations to add and (2) whether additional facility space for workstations is needed and, if so, how many workstation spaces to add. Just below these decision entry fields are several on-screen calculations that will be of assistance. There is a line showing the number of units that can be assembled with and without the use of overtime (given the projected productivity of PATs). There's a second line showing ***projected*** unit sales (which could prove too high if you have underestimated the strength of rivals' competitive efforts or too low if you have overestimated the strength of rivals' competitive efforts) and a third line showing whether you will be unable to assemble the number of units to fill expected orders.

It is up to you to determine whether it is more economic to have PATs work overtime to fill incoming orders from buyers (which can have the benefit of delaying the purchase of additional workstations and/or the expansion of assembly facilities) or whether it is more economical to always have in place sufficient workstations/workstation space to avoid paying PATs 1.5 times the regular hourly rate for overtime assembly. It is a quick exercise to view the on-screen projected cost-profit outcomes of using overtime, then make the "what if we add workstations/expand facilities by amounts sufficient to avoid overtime" entries, view the projected cost-profit outcomes, and decide which option is "best." If the on-screen calculations show a shortfall in the number of units assembled (meaning that projected buyer demand for your company's brand of cameras/drones exceeds assembly capability with maximum use of overtime, then more workstations and/or workstation space will definitely be needed (assuming you wish to be able to fill all of the projected orders), and it is your responsibility to enter numbers for any new workstations and/or workstation spaces.

The GLO-BUS system will automatically employ the "optimum" number of PATs needed to fill actual incoming orders for cameras/drones. Here is how it works:

1. If actual orders turn out to be less than assembly capability without the use of overtime then the *GLO-BUS* system will "right-size" the workforce, staffing only the number of workstations needed to assemble the units ordered.
2. If actual orders are greater than assembly capability without the use of overtime, then the *GLO-BUS* system will have PATs work overtime (up to the maximum 20% of annual PAT productivity) to assemble enough additional units to satisfy buyer demand.
3. If actual orders for cameras/drones *exceed* assembly capability of all installed workstations with *maximum use of overtime*, then your company is stuck with a shortfall in assembly capability and orders in the amount of the shortfall will go unfilled (forcing the affected buyers to purchase rival brands).

The company maintains an updated list of several hundred appropriately-skilled workers living within commuting distance of the company's assembly plant that it can draw upon to form new PATs to staff any idle workstations that are needed to fill incoming buyer orders. These workers have sufficient experience and qualifications that they can be adequately trained in a matter of days to assemble cameras/drones at productivity rates equal to the company average.

Robotics Upgrades. You have the option to shift to robotics-assisted assembly of cameras and/or drones—there is a section near the bottom of this page for entering decisions to shift to robot-assisted assembly. The manufacturers of robots have recently developed small robots capable of performing some of the tasks in assembling both action cameras and UAV drones. Installing one of these robots at each workstation enables the size of PATs to be cut from 4 members to 3 members. These robots cost $150,000 each. If the company decides to shift from manual assembly to robotics-assisted assembly, all existing workstations in a camera or drone assembly facility must be upgraded to include the use of a robot at a cost of $150,000 each, and all future workstations the company purchases for that facility must include use of a robot (which means that the capital cost of each additional workstation for that assembly facility will increase from $100,000 to $250,000). Robot-assisted assembly can be used in one facility and manual assembly can be used in the other facility, either indefinitely or until such time as management decides to shift over to robot-assisted assembly. Once robot-assembly has been adopted for a facility, it is not feasible to revert back to manual assembly.

The on-screen calculations will help in evaluating the cost impact of a robotics upgrade. Cash outlays for capital costs associated with robotics upgrades of existing workstations and any new robot-equipped workstations are incurred in the year of purchase. Depreciation of these assets occurs over 20 years at the rate of 5% annually. As with all types of capital expenditures, the associated cash outlays can be paid for from cash on hand, by issuing new shares of stock, or by borrowing. *Shifting to robot-assisted assembly also results in added annual maintenance costs of $9,000 per workstation, pushing the total maintenance cost per workstation from $6,000 annually to $15,000 annually.*

Corporate Social Responsibility and Citizenship (CSRC)

This decision page concerns spending for such things as charitable contributions, "green" initiatives to promote environmental sustainability, the use of renewable sources of energy, improved working conditions for plant personnel, and institution of a supplier code of conduct and compliance monitoring of supplier factories. The decisions on this page are straightforward, and you will find ample information and calculations on this page and in the Help section to guide your entries. The degree to which your company displays good corporate citizenship and conducts operations in a socially responsible manner affects your company's image rating. However, the image gains are minimal unless your company's actions are "comprehensive" (involve several, but not necessarily all, of the optional citizenship and social responsibility programs), entail more than token efforts (as indicated by how much money is being spent), and represent an ongoing effort of at least 4-5 years.

Finance and Cash Flow Decisions

The Finance and Cash Flow decision page involves 8 decision entries and provides projections of cash inflows and cash outlays for the current year, along with projections of other important year-end

financial statistics. Going into Year 6, your company has a B credit rating and a reasonably strong balance sheet. At the end of Year 5, the company's total assets were financed with 46% debt and 54% equity, putting the company in good position to cover its interest and principal payments on loans outstanding to the Global Community Bank (GCB), with which the company does all of its banking, financing, and foreign exchange transactions.

Interest Rates. Officials at GCB, under terms of the long-term banking agreement with your company, have agreed to lend the company additional monies should you elect to use debt to help finance growth and other financial needs. The interest rate on such loans is tied to the company's credit rating and the going rates of interest in world financial markets. Just as interest rates in real-world financial markets change intermittently and unpredictably, there is no way to predict in advance what future interest rates will be. The interest rate on 1-year (short-term) loans for companies with an A+ credit rating can range from a low of 4% to a high of 7%; the interest rate on 1-year loans for companies with a C– credit rating can range from a low of 10% to a high of 13%. Going into Year 6, the interest rate on 1-year loans for companies with an A+ rating is 4.5%; C– rated companies pay 11% interest on 1-year loans. The GCB's present interest rate for 1-year loans carrying a B rating is 6.5%. Longer-term loans are available at somewhat higher interest rates—a 5-year loan carries a 0.50% interest rate adder and a 10-year loan carries a 1.0% interest rate adder; these adders apply to 5-year and 10-year loans granted at all credit ratings. New interest rates for 1-year, 5-year, and 10-year loans are announced at the beginning of each year and appear in the Interest Rates table on the Corporate Lobby page.

The company's banking arrangement with GCB calls for the company to be paid interest on any positive cash balance in the company's checking account at the beginning of each year. *The agreed-upon interest rate is set at 3.5 percentage points below the prevailing interest rate for short-term loans carrying an A+ credit rating*. Going into Year 6, the interest rate of A+-rated 1-year loans is 4.5%; thus the money market rate paid on cash balances will be 1.0%. If the company overdraws its checking account, GCB will automatically issue your company a 1-year "Overdraft" loan in an amount sufficient to bring your ending cash balance up to zero. The interest rate charged on overdraft loans carries a *2% adder* (i.e. 8.5% if your B credit rating carries a 6.5% short-term interest rate). The potential for overdrawing your checking account is signaled by a negative "Ending Cash" number in the Projected Performance box at the left of each decision page (however, even a very small positive Ending Cash number runs the risk of having an overdraft loan, since there is always uncertainty that sales volumes, revenues, and cash inflows will be as high as projected).

Factors Determining the Company's Credit Rating. Analysts at independent credit rating agencies review the company's financial statements annually and assign the company a credit rating ranging from A+ to C–. A company's credit rating is a function of three factors: (1) the debt-to-equity ratio (defined as the percentage of total assets financed by debt and the percentage financed by shareholder equity investment in the business); (2) the interest coverage ratio (defined as annual operating profit divided by annual interest expense); and (3) the current ratio (defined as current assets divided by current liabilities). Your company's prior-year and projected performance on these three credit rating measures is shown in the section at the bottom right of the Finance Decisions page. This allows you to see when actions are needed to maintain a good credit rating. (See the Help section for full details about how the three factors combine to determine the company's credit rating.)

Financial Decisions. Finance decision entries should ***always*** come last in the decision-making process. Until *all* of the other decision entries have been finalized there is no way to get reliable projections of cash inflows and outflows for the year and estimate the company's projected year-end cash balance. The eight finance-related decision entries revolve around the following issues:

- ***Borrowing money***—To finance operations the company may take out loans with 1-year, 5-years, and/or 10-year terms. One-year loans are granted at interest rates corresponding to the company's current credit rating; 5-year loans carry an additional 0.50% and 10-year loans carry a full 1% interest rate adder. In addition to a lower interest rate, a 1-year loan has the advantage of quicker debt pay-down and smaller total interest costs, but also has the disadvantage of having to re-finance the debt in the following year at perhaps less favorable interest rates should cash flows not be sufficient to fully fund a 1-year loan

repayment. Longer 5 or 10-year loans have the advantages of locking in what may be an attractive long-term interest rate and lowering annual principal payments; however, 5-year or 10-year loans, in addition to their higher interest rates, have the further disadvantage of paying out bigger sums for interest over the life of the loan (which, in turn, depresses the company's interest coverage ratio over a longer period of time).

- ***Issuing shares of stock***—Additional capital may be raised by issuing new shares of common stock. New issues of common stock have the effect of diluting earnings per share and ROE and should be done cautiously. From time to time, you may determine that the company needs to raise additional equity capital to (1) help pay down a portion of the outstanding loans (because of burdensome interest costs or because lowering debt is the best way to improve the company's credit rating) or (2) help pay for added assembly capacity and/or robotics upgrades. The company's board of directors has established a 40-million share maximum on the total number of shares outstanding and there's an on-screen calculation showing the maximum number of shares that can be issued in any one year (given the company's financial condition). The company cannot issue new shares in the same year that it elects to buy back (retire) outstanding shares. At the end of Year 5 the company had 20 million shares outstanding. Each time you make an entry specifying how many shares are to be issued, there are accompanying calculations showing the total amount of new equity capital raised (see the cash inflows section) and the price at which investors will agree to buy the newly-issued shares (the price declines as more shares are issued because additional shares dilute earnings per share). In deciding how many shares to issue, you can try several "what if" entries and check out the effects on earnings per share, return on equity, and the amount of money raised.
- ***Early repayment of long-term bank loans***—You have the option of accelerating debt retirement (or refinancing high interest debt) by using excess cash on hand, new issues of stock, or proceeds from new loans to pay off the outstanding principal on up to 2 of the outstanding 5 and 10-year loans. This is accomplished by simply selecting the loan number of the loan you want to pay off (loan numbers are indicated in Note 8 to your company's balance sheet). All such loan repayments are considered end-of-year repayments; thus, the company will still make the current-year annual principal payment and interest payment on any long-term loan that is repaid early.
- ***Paying dividends***—The company paid no dividend to shareholders in Year 5. You have the authority to declare a dividend, subject to certain conditions. The maximum allowable dividend entry is 2 times projected earnings per share; moreover, projected total shareholder equity must ***always*** remain at or above $100 million after any and all dividend payments. No dividend can be paid should projected total shareholder equity fall below the $100 million minimum established by the company's board of directors (a policy that won the enthusiastic approval of credit rating agencies). Higher dividends are welcomed by share-holders and have a positive effect on the company's stock price (unless dividend payments exceed earnings per share and can't be sustained at present levels).
- ***Repurchasing shares of stock***—Using cash on hand to repurchase and retire outstanding shares has the advantage of increasing earnings per share, returns on equity investment, and the company's stock price. While you have the authority to initiate stock repurchases, ***the Board of Directors has reserved the right to limit the number of shares repurchased in any given year****—such limits vary from year to year and are shown on the Finance Decisions page just below the stock repurchase entry field*. The company must ***maintain a minimum of 15 million shares outstanding and a minimum total shareholder equity of $100 million***. The company cannot repurchase outstanding shares in the same year that it elects to issue new shares. Each time you enter a number for share repurchases, you are provided calculations showing the total cost of the repurchased shares (see the cash outlays listings) and the price at which investors will agree to sell the shares you want to buy back (the price rises as more shares are repurchased because of the upward impact on earnings per share and the bigger fraction of ownership that fewer shares represent). In deciding how many shares to repurchase, you can try several "what if" entries and check out the effects on EPS, ROE, and cash needed for repurchased shares.

Decision-Making Procedures

It is feasible (often normal) for co-managers to log-on simultaneously and each be engaged in entering decisions. In the communication section at the bottom-left of all decisions/reports pages there is a microphone button that connects teammates to ***audio mode*** (live voiceover internet communication). The adjacent button (with the arrows) enables ***collaboration mode***, synchronizing each connected team member so that all see the same page at the same time. You will find it highly desirable to work jointly in "audio mode" and "collaboration mode".

Any time a co-manager clicks the Save button (upper-right), all of the entries on all decision entry pages are written to the *GLO-BUS* server. Any and all co-managers can enter save decisions, and all entries can be changed and resaved as many times as desired prior to the decision round deadline set by the course instructor. ***The last set of decision entries saved (by any team member) before the decision round deadline are the entries used to generate the results for the round.*** *Coordination and consensus on the decision entries is strongly urged but is left as a matter for you to work out with your co-managers.*

What the Board of Directors Expects

The Board of Directors has charged you with ***developing a strategic direction*** and ***crafting a strategy*** that delivers consistently good results. Board members have set five clear-cut performance objectives for the company's management team:

1. ***Grow earnings per share*** *from $0.75 at the end of Year 5 to $1.00 in Year 6, $1.75 in Year 7, $2.75 in Year 8, $4.00 in Year 9, $5.25 in Year 10, $6.50 in Year 11, $7.50 in Year 12, $8.50 in Year 13, $9.25 in Year 14, and $10.00 in Year 15.*
2. ***Grow average return on equity investment (ROE)*** *from 14.5% at the end of Year 5 to 17% in Year 6, 20% in Year 7, 25% in Year 8, 30% in Year 9, and by an additional 2.5% annually in Years 10 through 15 (thus reaching 45% in Year 15).* Average ROE is defined as net income divided by the average of total shareholder equity balance at the beginning of the year and the end of the year. Average ROE for each company is reported on page 2 of the *Camera & Drone Journal*. Data for calculating your company's average ROE appears on page 4 of the Company Operating Reports in the company's Balance Sheet.
3. ***Achieve stock price gains*** *of $5.50 per share in Year 6, $12.50 per share in Year 7, $30 per share in Years 8 -13, and $20 per share in Years 14-15 (thus reaching $250 per share in Year 15).* Board members believe these stock price gains are definitely within reach if the company meets or beats the annual EPS targets, achieves the targeted rates of return on shareholders' equity (ROE), rewards shareholders with growing dividends, and from time to time prudently uses its financial capabilities to repurchase shares of stock. The company's stock price was $12 per share at the end of Year 5.

   Note: *Stock price is a function of revenue growth, earnings per share growth, average ROE, credit rating, the rate of growth in the annual dividend paid to shareholders, and management's ability to consistently deliver good results (as measured by the percentage of each year's 5 performance targets that your company achieves).*
4. ***Maintain a healthy credit rating****, defined as B+ or higher in Years 6 through Year 10 and at least A- in Years 11-15.* The company's credit rating was B at the end of Year 5.
5. ***Maintain an image rating*** *(brand reputation) of 70 or higher in Years 6-9, 72 in Years 10-12, and 75 in Years 13-15*. The image rating is a function of (1) your company's P/Q ratings for action cameras and UAV drones, (2) your company's global market shares for both action cameras and UAV drones (as determined by your market shares in the four geographic regions), and (3) your company's actions to display corporate citizenship and conduct operations in a socially responsible manner over the past 4-5 years. Your company had an image rating of 70 at the end of Year 5.

Board members believe all of the performance targets for Years 6-15 are reasonable and achievable by company managers, given the strong growth and profit opportunities that exist in the global market for action cameras and UAV drones during the Year 6 to Year 15 period.

The Board of Directors has given you broad strategy-making and operating authority to pursue the achievement of these 5 performance objectives, subject to two primary constraints: (1) your company may not merge with another company—the Board wishes the company to remain independent, and (2) company co-managers are expected to comply fully with all legal and regulatory requirements and to conduct the company's business in an ethical manner. Furthermore, the Board has made all of the above performance targets publicly available to all shareholders and to the investment community; thus, investors have ample reason to expect the company is able to achieve these annual targets.

Reporting of Results

When the deadline for a decision round passes, the GLO-BUS system processes the decision entries of all companies in the industry and sends an e-mail notification that the results for the round are ready (usually less than 20 minutes after the deadline). The results are presented in the form of three reports:

- The ***Camera & Drone Journal*** which contains (a) a 3-page company performance scoreboard, (b) a 1-page statistical overview of the global market for cameras and drones and unit sales forecasts of cameras and drones for the next two years—with breakouts by geographic region, (c) 1 page of comparative financial statistics for all companies, and (d) 2 pages of data containing comparisons of how certain costs and profitability measures for your company compare against industry low, average, and high benchmarks.
- The ***Competitive Intelligence Reports*** which provide a "snapshot" page comparing the competitive efforts (prices, advertising, models, promotional efforts, etc.) and unit sales and market share data of all companies for each of the four geographic regions.
- A set of ***Company Operating Reports*** consisting of 1-page showing your company's assembly and facilities operations, 1-page detailing the performance of your company's action camera business in each of the four geographic regions and worldwide, 1-page showing the performance of your company's UAV drone business in each of the four geographic regions and worldwide, and 1-page with your company's financial statements.

You will find the information in these reports *essential in guiding your decisions* for the current year. ***You are strongly urged to click on the Help at the top of each report page*** to see discussions of (a) how to use each report and what some of the numbers mean, (b) cause-effect relationships, and (c) analysis recommendations and decision-making tips. When you receive e-mail notification that the results for a round are ready, the first thing you should do is review the three reports. You may access the current-year and all prior year reports through the Decisions/Reports program at any time, but you may also find it advantageous to have printed copies of the reports during decision-making.

It is especially important to evaluate how well your company fared on the company performance scoreboard (the first three pages of the *Camera & Drone Journal*). Also, you should review the benchmarking data on pages 6 and 7 of the *Camera & Drone Journal* to determine whether some of your company's costs are out-of-line with those of rivals. Further, carefully scrutinize the information in the *Competitive Intelligence Reports* to discover on which competitive factors your company had a competitive advantage versus rivals and where your company suffered from a competitive disadvantage. Finally, you should study pages 2 and 3 of the *Company Operating Reports* to discover how your company's camera and drone businesses performed in the four geographic regions. Then you can begin to assess what corrective actions need to be taken to improve company profitability and consider the changes you want to make in the next decision round.

Scoring Company Performance

Your instructor has placed weighted the relative importance of the ***five scoring variables: Earnings Per Share (EPS), Return on Average Equity (ROE), Stock Price, Credit Rating, and Image Rating***. These weights translate into some number of points for each of the scoring variable, with the sum of the

points adding to 100. Your company's performance on the five scoring variables is measured using two different scoring standards:

1. ***The Investor Expectations* (I.E.) *Standard*.** This scoring standard involves calculating an annual "Investor Expectation Score" based on your company's success in meeting or beating the performance targets for EPS, ROE, stock price, credit rating, and image rating. There is also a Game-to-Date Investor Expectation Score that measures your company's success in achieving or exceeding the five expected performance targets over *all years* of the exercise completed so far. Meeting each expected performance target is worth some percentage of 100 points, as determined by your instructor. For example, if the scoring weight for EPS is 20% or 20 points, meeting the EPS target earns a score of 20 on the EPS scoring variable. Beating a target results in a point award of 0.5% for each 1% the annual target is exceeded (up to a maximum of 20%). So if achieving the EPS target is worth 20 points, a company can earn a score of 24 points if it exceeds the annual EPS target by 40% or more. Failure to achieve a target results in a score equal to a percentage of that target's point total (based on its weight out of 100 points). If your company earns an EPS of $2.00 at a time when the EPS target is $4.00 and achieving the investor-expected ROE target is worth 20 points, then your company's EPS score would be 10 points (50% of the 20 points awarded for meeting the EPS target). Exactly meeting each of the 5 performance targets results in an Investor Expectation Score of 100. With potential point awards of up to 20% for exceeding each performance target by 40% or more, it is possible to earn an Investor Expectation Score as high as 120.

2. ***The Best-In-Industry* (B-I-I) *Standard*.** This scoring standard is based on how your company's performance compares (1) to the industry's best performing company on EPS, ROE, Stock Price, and Image Rating and (2) to the ultimate Credit Rating of A+. After each decision round, company performances on EPS, ROE, Stock Price, and Image Rating are arrayed from high to low. The Best-In-Industry performer on each of these 4 scoring variables earns a perfect score (the full number of points for that measure as determined by the weights chosen by your instructor)—provided the industry leader's performance equals or exceeds the investor-expected performance target established by the company's Board of Directors. Each remaining company earns a fraction of the points earned by the Best-In-Industry performer that is equal to its performance divided by the performance of the industry-leading company. For instance, if ROE is given a weight of 20 points, an industry-leading ROE performance of 25% (that is above the investor-expected ROE) gets a score of 20 points and a company with an ROE of 20% (which is 80% as good as the industry leader's ROE) gets a score of 16 points (80% of 20 points). Likewise, if EPS is given an instructor-assigned weight of 20 points, a company with an industry-leading EPS performance of $4.00 gets a score of 20 points and a company with an EPS of $3.00 (which is 75% as good as the industry leader's EPS) gets a score of 15 points (75% of 20 points).

   The procedure for assigning best-in-industry scores for credit rating is a bit different. Each credit rating from A+ to C– carries a certain number of points that scales down from the maximum for an A+ credit rating to 1 point for a C– rating.

   Each company's combined point total on the five scoring variables is its score for the Best-In-Industry standard. Your company will receive an annual Best-In-Industry score as well as a B-I-I score for all years completed. In order to receive a score of 100, a company must (1) be the best-in-industry performer on EPS, ROE, stock price, and image rating, (2) achieve the investor-expected targets for EPS, ROE, stock price appreciation, and image rating set by the company's Board of Directors, and (3) have an A+ credit rating.

After each decision round, you will be able to review all company performance scores for both the Investor Expectations and the Best-In-Industry standard, along with an overall "game-to-date" (G-T-D) score for each standard. The annual and game-to-date Overall Scores are determined by combining the I-E Score and the B-I-I Score into a single score using whatever weighting your instructor has chosen (often 50-50). All scores are reported on the first 3 pages of each issue of the *Camera & Drone Journal*, and you can read the full scoring details by clicking on the Help button for each of these pages.

Important Advice

In making decisions, you are strongly encouraged to ***manage your company in a serious, professional manner***. Running a *GLO-BUS* company entails practicing and experiencing what it takes to develop winning strategies in a globally competitive marketplace and being held fully accountable for the results of your actions—just as managers in the real-world are held accountable for the performance of the companies they run. Be wary of trying something that is highly risky, managerially irresponsible, or un-businesslike (things that might get a manager fired in a real company)—operating a *GLO-BUS* company like a daring adventurer with no regard for the dangers of "shoot-from-the hip" decision-making can result in poor company performance. The odds of success are better when you assume the role of a business professional who is trying to achieve the best possible company performance using managerially prudent and competitively astute business approaches.

Also, be alert to the dangers and risks of following the advice of friends or acquaintances (who have previously participated in the *GLO-BUS* exercise) or relying on tips from Internet sources regarding what to do to "win" or get a good grade. ***The GLO-BUS exercise is very much a contest where the success of your company's competitive efforts and overall performance depends on competing effectively against the rival companies in your particular industry***—whatever went on in other industries at other times and places has little bearing on the competitive circumstances of your industry. So following tips and advice recommended by outsiders carries significant risk of being "wrong" or "off the mark" when it comes to figuring out what your company needs to do to combat the specific actions and decisions that other companies in your class are.

Stay focused on the fact that the upcoming decision rounds where you will be in charge of running your company involve a series of head-to-head battles among the strategies and decisions of the companies competing in your particular industry. At the same time your company's management team is crafting maneuvers to outcompete and outperform rivals, rival company managers are scheming to outcompete and outperform your company. Consequently, it is critically important for you to (a) use the information in the Competitive Intelligence Reports to learn exactly how the attributes of rivals' product offerings stack up against the attributes of your company's brand of cameras/drones, (b) try to match wits with rivals and anticipate their next moves (to raise/lower prices, increase/decrease their P/Q ratings, and so on), and (c) make competitive moves and decisions of your own that you believe hold good prospect for delivering good profitability and achieving other targeted outcomes. Just as in sports where it is customary for every team to scout its next opponent thoroughly and develop a game plan to defeat them, so also in *GLO-BUS* you are called upon to scout the strategies and competitive maneuvering of rivals, try to judge what moves they will make next, and then craft a competitive strategy of your own aimed at "defeating" their strategies and boosting your company's overall performance.

Therefore, our recommended recipe for success in becoming one of the top-performing companies in your industry is to ***stay on top of changing market and competitive conditions***, try to avoid being outmaneuvered and put into a competitive bind by the actions of rival companies, strive to price and market your brand of cameras/drones in ways that produce acceptable revenues and profits, be diligent in operating your company cost-efficiently, and observe sound financial management practices.

When the exercise is over, the only thing separating high-performing companies from those with weaker performances will be the caliber of the strategies and decisions of each company's management team. All that the *GLO-BUS* system does in processing the decision entries is to referee the competitive contest and declare whose decision entries produced the best results.

What You Can Expect to Learn

GLO-BUS is a hands-on, learn-by-doing exercise designed to:

- *Connect directly to the material in your textbook and give you practice in applying basic strategy concepts, using the standard tools of strategic analysis, and crafting strategies. GLO-BUS* provides opportunity after opportunity to put much of what you've been reading into play and gain some proficiency in utilizing the concepts and tools of strategic analysis.

You will have to assess the latest industry developments, check out competitive conditions in the different market segments, chart a long-term direction for your company, set and achieve strategic and financial objectives, craft strategies that produce good results and perhaps lead to competitive advantage, and adjust strategic plans in response to changing conditions. You will be provided with competitive intelligence on what rivals are doing and anticipate what moves they are likely to make next. You will have to match strategic wits with the managers of rival companies. You will be responsible for doing the strategic thinking needed to successfully lead your company in a globally competitive marketplace. Learning to do all these things and gaining an appreciation of why they matter are the heart and soul of courses in business strategy.

- *Draw together the information and lessons of prior courses, consolidate your knowledge about the different aspects of running a company, and provide a capstone for your business school education. GLO-BUS* incorporates a wealth of material covered in earlier business courses. Wrestling with accounting and financial data, production operations, workforce compensation, marketing, and financial management issues will give you a stronger understanding of how all the different functional pieces of a business fit together and teach you the importance of looking at decisions from a *total-company perspective* and unifying functional area decisions to create a cohesive strategy. You will see why and how decisions made in one area spill over to affect outcomes in other areas of the company. *GLO-BUS* is very much *a capstone learning experience* that ties together material from other core courses and gives you a better grasp of what running a business is all about.
- *Deepen your understanding of revenue-cost-profit relationships and build your confidence in utilizing the information contained in company financial statements and operating reports*. The numbers-oriented nature of *GLO-BUS*, where you repeatedly make decisions and immediately see on-screen calculations of their impacts on revenues, cost, profits, cash flow, and other important factors, and where you are confronted with all kinds of statistical information about your company and your industry, has the beneficial result of helping you gain command of "all the numbers" that surround the tasks of managing a company's operations. The power of having the computer instantaneously calculate the consequences of each decision will make you appreciate the importance of basing decisions on solid numbers instead of the quicksand of "I think", "I believe", and "Maybe it will work out okay." Moreover, because you will have frequent occasion to review all kinds of operating data, identify costs that are out-of-line and take corrective action, try to boost the profitability of the company's business in under-performing geographic regions, and pursue proactive approaches to take to improve your company's performance, you will see why you cannot hope to make prudent decisions without full command of the numbers—you won't have to participate in the *GLO-BUS* exercise very long to appreciate why shooting from the hip is a sure ticket for disaster.
- *Provide valuable decision-making practice and help you develop better business judgment*. In the course of making the strategic and operating decisions that arise in *GLO-BUS*, you will get all kinds of practice in deciding what to do. You will experience the thrill of "good" decisions (good in the sense they contributed to above-average or maybe even superior company performance) and the agonizing consequences of "bad" decisions (bad in the sense that the company's performance turned out more poorly than expected). The exercise of repeatedly making decisions on the factors that make up *GLO-BUS* will sharpen your sense of business judgment. In the midst of all this decision-making practice, you will get to test your ideas about how to run a company, and there will be prompt feedback on the caliber of your decisions.

The bottom line is that being an engaged participant in the *GLO-BUS* exercise will make you better prepared for a career in business and management. Further, we predict that *GLO-BUS* will make your competitive juices flow and that you will have a lot of fun.