PARTICIPANT HANDBOOK

STRATEGIC MARKETING – DURABLE CONSUMER GOODS

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Welcome to Circular Markstrat and congratulations on your new position!

Circular Markstrat gives an environmental perspective to Markstrat simulation and includes environmental concerns in a plausible economic perspective. Circular Markstrat has been developed around the setting of Sustainability Goals set by ONU (www.undp.org) and using principles of Circular Economy mentioned by Ellen Mc Arthur Fondation (www.ellenmacarthurfoundation.org). Circular economy is currently viewed as a promising approach to help reduce our global sustainability pressures and thus offers a solid setting for this simulation. Integrating Circular economy principles into Markstrat "Durable goods" is particularly relevant with the type of goods dealt with, durable goods (such as tablet pcs for instance), which are often used as examples for circular principles.

Besides bringing an environmental setting based on *circular economy* considerations, Circular Markstrat is well anchored in another setting that companies have to deal with nowadays: *digitalization* of markets. Grouping together environmental and digital issues in a Strategic Marketing simulation is completely in line with real companies' concern of being viable, or even profitable from an economic point of view, while caring about the environmental footprint of their company and of their products, in a more and more digitalized world. This simulation also takes reactions from the market into account, where consumers and governments are more and more concerned by environmental issues (they want to avoid leaving present or future generations worse off), which makes them more demanding in terms of companies' ability to adapt to these new challenges. It leads to certain pressure from the market and from authorities, which is even a bigger challenge for companies living in very competitive markets as it is the case in the Markstrat world. Companies also have to consider consumer segments who are not sensitive to environmental issues and make strategic decisions about what they want to offer them.

You and the other members of your team have just been recruited by a large corporation to manage the marketing department of one of its divisions. Coming from a different industry, your team has no experience in the Circular Markstrat world. You will compete with several other firms to market durable goods to consumers.

1. Understand your role

During this exercise, you will be responsible for formulating and implementing the long-term marketing strategy of your division. In particular, you and your team members will have to:

- Work in a highly competitive market with environmental challenges;
- Elaborate your marketing strategy: target selected consumer segments and position your products;
- Design and develop new products, improve existing ones (interface with the R&D department);
- Prepare the launch of new products, improve, maintain or withdraw existing ones;
- Specify your production planning (interface with the production department);
- Make marketing mix decisions (pricing, advertising, online and offline communication channels, …) for each of your brands;
- Decide on your distribution channels (size and priorities of your commercial team and commercial budget);
- Launch Marketing, Digital and/or circular initiatives
- Order market research studies to get up-to-date information for decision making.

2. Your objective

Your objective over the next years is to manage your company in a business competitive setting where environmental stakes are more and more considered as essential. The **Share Price Index (SPI)** provided in your company dashboard depends on two complementary indicators:

- Your company business performance is provided the **Financial Performance Index (FPI).** The FPI takes mainly into account your company's EBT (Earning Before Taxes) and product market shares, but also the net contribution generated, your ability to grow the organization's revenues and the quality of projects successfully completed.
- The ability of your company to cope with environmental circular stakes is provided by the **Eco-Score** of your company. The Eco-Score, at the company level, is calculated based on (i) brand eco-scores, depending on physical characteristics of each product manufactured by your company (e.g. your product durability or carbon footprint); (ii) circular initiatives that you implement (or not) at the company level.

The SPI global indicator, which you should try to optimize, is an average of these two indicators. This is in line with challenges that companies have to meet nowadays from a strategic marketing point of view: having a strong competitive position in markets where environmental stakes cannot be ignored and even lead to higher and higher ecological expectations from the government and from consumers, but where costs need to be controlled to stay viable.

3. Your team

An important aspect of the Circular Markstrat Challenge is that you will be part of a team. It is helpful to establish a good working relationship with your teammates and to organize your work with them. Here are questions to take into consideration:

- Will you work non-stop on your Circular Markstrat exercise for 3 hours from start to finish or will you spread your work over several days?
- Will all team members meet when they make decisions or are you geographically dispersed?
- Will all team members be involved in all decisions or will you assign responsibilities (R&D, Production, Finance, etc.) to team members, each making decisions on his or her own?

Regarding the last point, try to avoid letting each member concentrate solely on his/her area of professional expertise. Initially, we strongly recommend that each team member be involved in all discussions for everyone to have the same understanding of the business situation. As the simulation evolves, your team will develop a common understanding of the strategic issues. In parallel, the management of the organization will become increasingly complex. At some point, the members of the team can begin focusing on a specific area of responsibility.

By following this process, not only will you maximize your internal resources, but also ensure that everyone benefits equally from the Circular Markstrat experience.

4. Getting prepared

Preparation includes reading the handbook and trying out the Circular Markstrat software with the Preview data.

A. Pre-Reading

It is highly recommended to read this handbook carefully prior to the beginning of the Circular Markstrat Challenge. If you do not, you may put your team at a disadvantage.

Unless otherwise instructed by your professor, you should read the following four chapters **prior** to Round 1:

- Introduction to the Circular Markstrat Challenge
- Overview of the Circular Markstrat World
- Managing Your Firm

- Understanding Your Annual Report

In these four chapters, you will discover what your new challenge and objective is, what the Circular Markstrat world looks like in term of products, consumers, distribution channels, competitors, etc.; how your company operates and what decisions you will have to make in order to run it through the next 5 to 10 years, and what information will be made available to you in your annual report.

You are then advised to read the last two chapters **prior** to Round 2:

- Positioning and Research & Development
- Users's Guide to the Marketing Plan Tool

There, you will learn in more detail: how to use the semantic scales and the multidimensional studies to reposition brands; how and when to reposition brands or to launch new ones and how the R&D and Marketing departments work together.

B. Previewing Circular Markstrat

Unless otherwise instructed by your professor, you are invited to preview a Circular Markstrat Team to test your knowledge of the Circular Markstrat environment. All registered users have access to the PREVIEW data. Refer to section V.2 for instructions on how to access them. The PREVIEW data have been obtained during a past Circular Markstrat course with *real* students making the decisions. You will be allowed to browse through all charts and graphs and to open decision screens. Please note that you will be able to preview the content of decision screens but will not be allowed to enter decisions and run the mathematical model on this PREVIEW data.

5. Questions & Technical Support

We have done our best to make this guide as clear and complete as possible but the Circular Markstrat simulation is fairly complex and we know from experience that some topics will require additional explanation.

If you have questions regarding this handbook or the simulation, we suggest that you review the Frequently Asked Questions (FAQ's), accessible from the question mark icon located in the left-hand bar. Other participants may have already asked similar questions and a response may be available in the FAQ's. Save time by checking the site first.

Responses to frequently asked questions do not address specific team situations and do not provide advice or hints on strategy, management, marketing, finances or any other topic. For these subjects, you should only count on your knowledge and your experience.

II. OVERVIEW OF THE CIRCULAR MARKSTRAT WORLD

The Circular Markstrat world is a fictitious industrialized country of 80 million inhabitants whose monetary unit is the Circular Markstrat dollar ($). This world does not intend to represent any country, market or industrial sector. However, it roughly behaves like most markets, and the general management and marketing knowledge that you have acquired through business experience or formal education applies to this new world.

In the Circular Markstrat world, both inflation and GNP growth is fairly stable, and no major political, social or economic event is anticipated in the near future. There are a handful of competing companies that manufacture and market consumer durable goods. These goods are comparable to electronic products such as digital cameras, GPS systems, mobile phones or computers, as well as office equipment, cars, books, or any other consumer durable goods.

Initially, the competing companies are identified by a unique letter such as L, M, N, R, S or T. Your first task will be to give a name to your company, starting with this letter and reflecting the spirit within your team.

In most cases, each firm starts in a different situation in terms of product specification, target consumers, brand awareness levels, market share, distribution coverage, profitability, R&D expertise, etc. Consequently, the marketing strategy of each firm should be adapted to its particular situation within the industry. However, Circular Markstrat can be configured so that all firms start in the exact same situation. Your instructor will let you know if you are using one of these *competition* configurations.

Nevertheless, no firm has a relative advantage over the others and initially many characteristics are common to all firms. For instance, the initial brand portfolio of all companies is comprised of two brands. As mentioned before, each firm has the opportunity to design and develop R&D projects and to introduce new products or upgrade existing ones. All R&D departments have the same capabilities to develop new projects, in their range of experience. Similarly, all commercial teams are equally qualified to handle distributor relationships.

1. Sonite Products

At the beginning of the simulation, all rival firms market two *Sonite* brands. Sonite products have existed for several years and the market has grown quite consistently since the introduction of the first Sonite brand. It is now a well-established market, with several strong brands at different price points covering a wide range of needs. Analysts believe that the Sonite market will continue to grow over the next five years.

A Sonite is a complex piece of equipment made up of several components. Although they can be evaluated along more than fifty attributes, Sonite brands are primarily differentiated in terms of eight physical characteristics that are considered as the most important ones by industry experts. These characteristics are described below, and additional details are given in Figure 1.

- **Processing Power**. This characteristic measures the speed of the internal processor. High processing power is critical for applications using extensive graphics or doing a lot of calculations. It also drives the ability of the Sonite product to process multiple tasks simultaneously. Processing power is given in gigaflops (billions of floating point operations per second), a standard and respected measure that takes several factors into account: number of “cores”, internal memory size, frequency, etc.
- **Display Size**. This is the size of the screen (in inches). This characteristic drives the ability of the product to display higher quality images or videos, or to display more information to the user at a given time.
- **Design Index**. This characteristic does not relate to the product esthetic but to the type of raw materials used (wood, plastic, metal ...), to the number of components (all-in-one type versus multiple-component type), to the aspect of its various components (position, size …). Therefore, a product rated 8 on the design scale is not better or easier-to-use than one rated 4 on the same scale.
- **Battery Life**. This is the number of hours during which the Sonite product can operate without being connected to the main power.

- **Recyclable materials.** This is the percentage of recyclable materials used in the Sonite product. Recyclable materials in a Sonite durable product mean technical materials that can be reused to produce another durable good (for example, after materials are disassembled, the plastics are shredded, melted and then mixed with virgin plastics); it also includes more innovative materials that are biological ingredients that are at least non-toxic and possibly even beneficial and can be safely returned to the biosphere, such as biodegradable compostable materials (e.g. bioplastic made of polylactic acid such as starch). A high percentage of recyclable materials allows for reducing waste, in line with circular economy principles.
- **Carbon footprint.** This shows how much carbon dioxide emission (per kg of CO2e emissions) will be created during the production of the Sonite product. CO2e emissions (also called carbon or environmental footprint) are pollution stemming from the burning of fossil fuels (for instance when manufacturing a durable good) and are directly going into the atmosphere. The lower the carbon footprint is, the more environmental-friendly (sustainable) the product is.
- **Durability.** This characteristic is a rating (index) officially given to the product following external certification rules and relates to the life duration of the Sonite product. It mainly comes from the solidity and robustness of the materials used to manufacture the product. The more robust the material is, the longer the product life duration will be, in line with circular economy principles.
- **Repairability.** This characteristic is a rating (index) officially given to the product following the Markstrat government law on "repairability". It relates to the possibility of repairing the Sonite product. More specifically, the rating depends on several criteria: availability of technical documentation about the product, possibility to disassemble the product, availability of spare parts and availability of advice for users in terms of product maintenance. The easier a Sonite product can be repaired, the higher is the repairability rating, in line with circular economy principles.

It is important to understand that offering *more* of a certain characteristic is not necessarily *better*. For instance, high *processing power* processors may require a sophisticated cooling system that has an impact on weight, volume and noise. Consumers who do not need high power will certainly choose a less powerful Sonite that will be relatively small, light and quiet. Similarly, large screens (*big display size*) may be highly attractive to some users, but not to others because of their higher weight and heavier power consumption. Similar advantages and drawbacks exist for most characteristics: long duration batteries (*battery life*) are bulky and heavy; high durability may be attractive for some consumers but not to others because the material used are heavier; the use of biodegradable components (*recyclable materials*) will affect the product aesthetic, which may not be attractive for all consumers; a high level of repairability may not be attractive for consumers who like the idea of changing product more frequently etc.

The *base cost* is also an important factor; this is the cost at which each unit will be produced, based on an initial production batch of 100,000 units. The base cost is decided jointly by the Marketing department – which is mainly concerned with margin and profitability – and by the R&D department – which is mainly concerned with product feasibility.

Characteristic	Abbreviation	Measurement Unit	Range
Processing Power	Power	Gigaflops (GFLOPS)	5 – 100
Display Size	Display	Inches (")	4 – 40
Design	Design	Index	3 – 10
Battery Life	Battery	Hours (H)	24 – 96
Recyclable materials	Recyclable	Percentage (%)	0-80
Carbon footprint	Carbon	Kilograms (kg)	5-50
Durability	Durability	Rating	1-100
Repairability	Repairability	Rating	1-100
Base Unit Cost	Base Cost	$	25+

Figure 1 – Sonite main physical characteristics

2. Naming Conventions

Brand names are made up of up to six characters. The first letter identifies the firm marketing the brand (M, R, S, T, L or N). The second letter must be an 'O' for a Sonite. The other characters can be letters or numbers and can be freely chosen by each firm to generate different brand names.

For instance, brands TONE and TOPS would be Sonite products marketed by firm TIGERS. All new brands must follow these conventions and must have different names. The selected name has no influence on the market response to the brand.

3. Sonite Customers

Sonite customers are adults who purchase the products for personal or professional use. Market research studies show that the Sonite market can be divided into five major groups of customers or segments, having similar needs and purchasing behavior.

- **Professionals (Profs)** – Individuals in this segment may use Sonite products for both personal and professional reasons. Consequently, they are looking for high quality, high-performance and easy-to-use products. They can afford expensive products and often view price as an indication of quality.
- **Baby Boomers (Boomers)** – Retired adults (born between 1943-1959). They are not extremely knowledgeable about Sonite technology and the different characteristics. They are used to buy their Sonite product in specialty stores where they can find good advice and recommendation. They demand quite good performing products, i.e. products with good processing power and/or large screens. They are less concerned with the convenience of the products (battery life, design or number of features) however they are quite price-sensitive, since they use Sonite products for their personal use, and do not necessarily have high incomes.
- **Gen-X** – Older adults (40+). Currently the largest segment, though forecast growth is low. Gen-X consumers are becoming more mainstream as they get older. Television is their main window on the world followed by printed media, though they also use internet and e-mail extensively. Premium products are preferred, price may be seen as an indicator of quality.
- **Millennials** – Young adults in their 20's & 30's, Millennials are close to being the largest segment now, with analysts predicting significant growth over coming years as they aim to fit more into their busy lives. They are also less product loyal and look out for bargains. Millennials are tech-dependent (not just tech-savvy) and typically use mobile and social media throughout the day every day! They have a good knowledge of marketed products and do extensive product comparison. They look for products with a high quality –price ratio and average levels of both performance and convenience. They use Sonite products for personal purposes and are quite price-sensitive.
- **Gen-Z** – Younger consumers, big Sonite users. Gen-Z have grown up with the internet and most forms of digital media. They know about the technology, are skeptical about advertising and privacy, and have short attention spans so are best reached via multiple channels; for example, by using sponsorship and print to complement a social or mobile campaign. As they are younger consumers price is an important factor in their purchase decision, though they also value some Performance and Convenience.

Each segment has specific needs in terms of physical characteristics and price. Awareness levels and purchase intentions vary significantly for existing products from one group to the other. Market forecast studies show that the sizes and growth rates of the five segments are significantly different. This is explained in part by the development stage of each segment, by the varying product offerings, and by the intensity of marketing effort targeted at each segment.

4. Distribution Channels

Sonite consumers tend to shop in the following three distribution channels:

- **Specialty Stores** – These stores are usually small and may not necessarily belong to organized chains. They are geographically close to their customers and can provide a high level of service and technical support. As they do not distribute many different product categories, Sonite products account for a large

proportion of their sales. These stores usually carry a broad product line for each category, including the most expensive and/or high-performance products.

- **Mass Merchandisers** – These stores operate on a low-price, high-volume basis and try to minimize overhead. Consequently, the level of service they offer is lower than that of the two other channels. While mass merchandisers carry many different product categories, the depth of each product line they carry is usually restricted to a few units. They often distribute the cheaper, low-performance products. Their lack of technical expertise and the low level of service may well prevent them from distributing Vodites in the early years.
- **Pure Online Players** – This category of stores includes the web-only merchants (such as amazon.com and newegg.com) as well as the websites of traditional retailers (BestBuy.com, Walmart.com, etc.). An important proportion of Sonite sales are done through pure online players, especially for highly connected consumers such as Millennials. Convenience is their key advantage as consumers may shop from their home at the time of their choice. In addition, consumers have access to an almost unlimited choice and can compare features and prices very easily. Pure online players are likely to become more important in the next 5 to 10 years.
- **eStore** – Each firm has already developed their own eStore to sell directly to the customer. eStores can generate more profits to companies than external distribution as the unit margin is more interesting. However, customers may find that prices are higher than in channels operating discounts.

Within the Sonite market, market research studies show that all four distribution channels are important. There are approximately 10,000 specialty stores, 6,000 mass merchandisers belonging to 6 different chains, 1,000 pure online players and your company eStore.

Differences between margins obtained by the stores in each of the channels are mainly due to differences in the level of service and volume sold. These margins are applied to retail prices and are approximately constant across brands for a given channel. In Circular Markstrat, the distributor margins are 40% for Specialty Stores and 30% for Mass Merchandisers and Pure Online Players. There are no distributor margins for eStores (as they are the company's own eStore), but 20% of the actual customer's retail price are used for the eStore server management and costs.

5. Media Categories

Sonite consumers may be reached through the following media categories:

- **Mass Media (offline) –** Mass media is any form of mass communication available offline, such as television, radio, newspapers, books, magazines, product placement, etc.
- **Outdoor Media (offline) –** Outdoor media is all media that reach consumers when they are outside their homes, such as billboards, ads in Public Transport, Sponsored Events, clean tags, etc.
- **Digital Owned (online) –** Digital owned media is media owned and controlled by the firm. It includes the company's website, mobile apps, blogs, presence in social networks (Instagram, Twitter, Facebook, LinkedIn, etc). It is about investing in creating online content. Ideally, this investment creates earned media (word-of-mouth, shares,…) made by consumers.
- **Digital Paid (online) –** Digital paid media is media bought by the firm to build its online position. It includes displayed ads on relevant e-platforms (websites, social media, …), paid search, Pay-per-click, SEO (Search Engine Optimization), collaboration with influencers, etc. Ideally, this investment helps *create earned media* (word-of-mouth, shares,…) made by consumers.
- **Digital Earned –** Earned media is defined as word-of-mouth, shares, reviews, posts, recommendations, made by consumers. The company may have an impact on Earned Media by stimulating consumers' willingness to share about the product (e.g. sending products to test, organizing events, …).

Segments have different media habits, and each media has a different Return on Marketing Investment. Also, some media are more appropriate to move prospects and customers down the sales funnel.

6. Market Initiatives

During the course of the simulation, companies will be able to launch marketing, digital and circular initiatives. Some initiatives will be available later in the course of the simulation. You can implement up to three initiatives per year.

All initiatives (marketing, digital or circular ones) are expected to have an **impact on the customer purchase funnel** ("customer centricity" – *see section IV.3. on "Market Research Studies"*). Besides having an influence on the purchase funnel, **circular initiatives may also increase the global company eco-score** *(see section II.7.C*).

The initiatives are grouped as follows:

Marketing Initiatives

- **Product Placement** – Product placement is the inclusion of a branded product in media, usually without explicit reference to the product. Blockbuster movies usually attract people from all generations. Investing in product placement in Blockbuster movies and series should raise your awareness among all types of customers and enhance the image of your products.

  Is this initiative renewable? Yes, the partnership is renewable each year.

- **Extended Warranty** – It consists in offering (for free) prolonged warranty to your products. It will reinforce customers' trust in the high quality of your products and reassure them that they are taking low risk by purchasing your products. It will also encourage potential customers to consider your products and is thus expected to have a direct impact on sales.

  Is this initiative renewable? Yes, renewable annually.

Digital Initiatives

- **Influencers** – Your firm decides to launch a marketing campaign by writing sponsored articles and by co-creating content with brand ambassadors, more specifically "influencers". Influencers are individuals whose specific status, position or media exposure make them potentially influence other consumers' behaviors. After carefully choosing the influencers who better fit your audience and your products, your campaign is launched on various social networks (Instagram, Facebook, YouTube, Twitter, etc.). This initiative is expected to have a positive effect on your sales, especially among younger customers, during the year where the initiative is launched.

  Is this initiative renewable? Yes, this initiative is renewable at certain point of the simulation.

- **Retargeting** – Your firm decides to pay for "retargeting": once a user has shown a particular interest in one of your products on your website, this specific preference is stored; the user will face advertising messages (banners) about this specific product on the other websites s/he will visit.

  This initiative is expected to have a positive effect on your sales, during the year where the initiative is launched.

  Is this initiative renewable? Yes, this initiative is renewable at certain point of the simulation.

- **Data Analytics** – You would like to make the most of your databases, as you know that they could be a very rich source of information. You decide to call an external consultant specialized in data analytics, who will help you optimize your decisions and reduce your churn rate (rate at which customers stop doing business with your company).

  This initiative is expected to have a positive effect on your sales, during the year where the initiative is launched.

  Is this initiative renewable? Yes, this initiative is renewable at certain point of the simulation.

- **Contextual Campaign FIFA World Cup** – FIFA World Cup is an important event that takes place every four years. It is considered as one of the most interesting events for a company to communicate at a wide audience. Your firm decides to sponsor this event and to create contextual digital content, taking the form of paid advertising (purchasing advertising space online on some relevant websites, social media, …) and organic content (creating online content, such as unpaid posts on social media, …), specifically to support your national team.

This initiative is expected to have a positive effect specifically on the firm's awareness and on sales, during the year where the initiative is launched.

Is this initiative renewable? Yes, this initiative is renewable at certain point of the simulation.

Circular Initiatives

- **Used Product Recycling (Waste Recyling Initiative 1)** – "Bring back your used product and give it a second life!". This initiative encourages customers to bring back their used product, instead of keeping it at home without using it. If you launch this initiative, you will accept all used products, and even if the customer does not plan to buy a new product in your company. By doing so, you commit yourself to coordinating with a recycling company, so that components of the product (glass, metal, …) can be transformed and used in another sector. A customer who brings back its used product will get a one-week free trial of one of your products.

  Impact and impact duration*?* This initiative is expected to have a positive effect on your sales and on your eco-score during the year where the initiative is launched.

  Is this initiative renewable*?* No, this is a one-shot initiative but allow you to unlock a new initiative on recycling.

- **Waste Recycling (Waste Recyling Initiative 2)** – Your firm decides to transform waste deriving from the production and assembly lines of the company products. A partnership is concluded with a recycling company, so that they transform waste into new components (raw materials). By doing so, you commit yourself to provide a recycling company with your waste.

  Impact and impact duration*?* This initiative is expected to have a positive effect on your eco-score, during the year where the initiative is launched, as the partnership has a one-year validity.

  Is this initiative renewable? Yes, the partnership is renewable each year.

- **Photovoltaic Panels (Energy Initiative 1)** – Your firm decides to invest in photovoltaic panels, in order to produce your own energy at the company level.

  Impact and impact duration? This initiative is expected to have a positive effect on your eco-score. As you communicate about this initiative, it will probably result in an increase in demand, during the year where the initiative is launched, as customers may appreciate this sustainable effort.

  Is this initiative renewable*?* No, this is a one-shot initiative but allow you to unlock a new initiative on energy.

- **Windmill Park (Energy Initiative 2)** – Your firm decides to create its own windmill park, in order to be more and more independent in terms of energy consumption.

  Impact and impact duration**?** This initiative is expected to have a positive effect on your eco-score. As you communicate about this initiative, it will probably also result in an increase in demand, during the year where the initiative is launched, as customers may appreciate this sustainable effort.

  Is this initiative renewable? Yes, renewable annually: you may want to increase each year your current own energy production by extending your windmill park.

- **Global Firm Carbon Footprint (Carbon Initiative)** – Your firm decides to optimize product transportation between the company's warehouses and stores/retrieval points and to optimize the car rides linked to sales force's store visits. Besides cost savings, this initiative aims at reducing global carbon footprint of the company. To achieve this goal, your firm buys the one-year license of a famous transportation optimization software.

  Impact and impact duration**?** This initiative is expected to have a positive effect on your eco-score, only during the year where the initiative is launched. As you communicate about this initiative, it will probably result in an increase in demand, also during the year where the initiative is launched, as customers may appreciate this sustainable effort.

  Is this initiative renewable? Yes, the software license can be renewed each year.

- **Global Product Packaging (Packaging Initiative)** – Your firm intends to work on product packaging, so that plastic gets removed and replaced by recyclable packaging.

***Impact and impact duration*?** This initiative is expected to have a positive effect on your eco-score. As you communicate about this initiative, it will probably result in an increase in demand, during the year where the initiative is launched, as customers may appreciate this sustainable effort.

Is this initiative renewable? No, this is a one-shot initiative.

- **Education (Education Initiative)** – "We care about Education". Your company undertakes to provide an Educational Institution (school, university, etc) with spare parts and technical help to repair their hardware material. It helps lower the education sector impact on global planet resources, as fewer natural resources are used when products get repaired compared to building new products.

  ***Impact and impact duration*?** This initiative, showing your effort on global planet resources, is expected to have a positive effect on your eco-score, during the year where the initiative is launched. As you communicate about this initiative, it will probably result in an increase in demand (during this year), as customers may appreciate this effort.

  Is this initiative renewable? Yes, renewable annually.

All initiatives may thus be ordered each year and have an impact for one year only.

7. Economic Environment

You operate in an economy that currently has an average inflation rate of 2%. Inflation affects the production, advertising, commercial and market research costs of your company. It is unlikely that inflation will reach much higher levels in the future. Should this be the case, the government may decide to impose price control on all brands.

The Gross National Product (GNP) provides you with information about trends in the Circular Markstrat economy. In the recent past, the overall economy has been growing at a rate of 4%.

8. Eco-score, Government actions and Greenwashing

A. Company Eco-Score

Your **company Eco-Score** is defined by an external certified organization. It is based on two elements on which you can work as a company: Eco-scores of each of your company brands and circular initiatives. More precisely:

$$Firm\_EcoScore = \left[\sum_{brand=1}^{nBrands} \left(Weight_{brand} * Brand\_EcoScore_{\ brand}\right)\right] + Boost\_Initiative$$

(i) (ii)

(i) **Eco-scores of each of your company brands**: a *brand* eco-score depends on the physical characteristics of this specific brand (product) manufactured by your company. The better are the circular attributes of a brand ("recyclable materials", "carbon footprint", "durability" and "repairability"), the higher this brand eco-score is. More precisely, Brand EcoScores evaluate how much each circular attribute moves away *from the minimum value of the attribute, this minimum evolving with government eco-taxes on attributes *(*or from the maximum value, regarding the carbon footprint attribute).*

The global *company (firm)* Eco-score is formed by the weighted average of the eco-scores of the firm brands, this weight being the number of units sold for the product: **the more units of an environmental-friendly product you sell**, the higher will be its weight on the company eco-score; in the same way, the more units of a less environmental product you sell, the higher will be its weight on the company eco-score.

(ii) Circular initiatives: implementing circular initiatives at the company level leads to an increase in the company Eco-score.

All companies start with similar situations in P0, i.e. an initial FPI of 1000 and an Eco-Score of 200 (leading to an average SPI of 600 for all companies). Starting from P1, the Eco-Score is updated by Brand EcoScores and circular initiatives implemented *(see equation above)*.

B. Government actions

Markstrat government will regularly intervene during the simulation, as they are more and more concerned by ecological stakes and encouraged by lobbies to give a clear setting for manufacturers in terms of ecological efforts to be made. Two types of intervention are considered as plausible during the simulation:

- **Eco-taxes specific to circular characteristics** of your products. A tax may be applied to companies that are not circular enough on specific characteristics of their products. For instance, a company producing a product whose Percentage of Recyclable Materials is *under* a given threshold may be taxed at some point; on the opposite, a company producing a product whose carbon footprint is *above* a given threshold may be taxed. The tax will be applied for each unit sold. We know that the government will announce taxes before they are applied (probably two periods before), so that companies can launch R&D projects to adapt their products if they want to avoid being taxed.
- **Eco-bonus or Eco-malus (at the company level)**. Experts believe that it is very likely that the Markstrat government gives companies exceptional grants (eco-bonus) for making sustainable achievements or having improved their sustainable approach. Experts also believe that the government will charge companies that do not make sustainable achievements (or low ones) with exceptional taxes (eco-malus). The indicator that the Markstrat government will use to assess achievements is your company *eco-score*, as it is calculated by an external institution acknowledged by the government. The government is *not* likely to announce eco-bonus/eco-malus, so each company needs to pay attention to the level of its eco-score. Improving a company eco-score may be done (i) either by making your product physical characteristics more environmentally friendly (i.e. increasing your product repairability) or (ii) by implementing circular initiatives.

  Eco-bonus and eco-malus are defined by your professor. **By default**, Figure 2 gives some estimation:

  - If the company eco-score is between 400 and 600: eco-bonus between $1 and K$10,000, following a linear relationship (an eco-score of 500 will lead to an eco-bonus of $K5,000). K$10,000 is the maximum (ceiling) eco-bonus that can be obtained (even if the company eco-score is > 600).
  - If the company eco-score is between 200 and 399: no eco-bonus.
  - If the company eco-score is between 0 and 199: eco-malus between $1 and K$10,000, following a linear relationship (a eco-score of 100 will lead to an eco-bonus of $K5,000). K$10,000 is the maximum eco-malus that can be obtained.

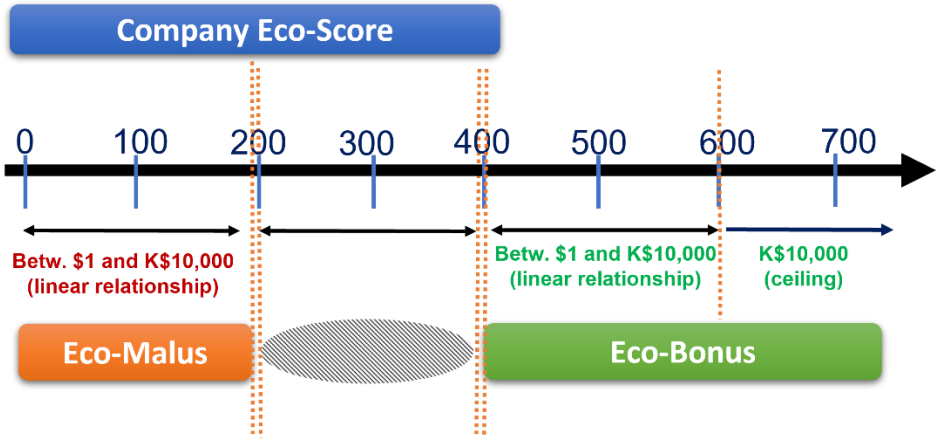


Figure 2 – Company Eco-Score

All companies should thus carefully check government messages in their report and check their eco-score to anticipate potential government actions *(see section IV.1.B).*

C. Greenwashing

Temptation may be high for some companies to pretend that they are doing more to protect the environment than what they are really doing: they lie to appear more environmentally friendly than in reality. This phenomenon, called greenwashing, is condemned in Markstrat world, as the market considers such a company behavior as misleading. **Greenwashing** may occur in Markstrat in two situations:

- Greenwashing may occur when a company uses *advertising* to communicate in an exaggerated way about the circular aspects of its products. Companies can guide advertising to convey a *perceptual message* and emphasize, for instance, that a given brand has low carbon footprint. If a company frames an advertising message very far from the real position of the brand physical attribute on a perceptual map (in our example, it means that the brand has actually high carbon footprint, while advertising says it is lower), then communication will fail and there will be no repositioning. If greenwashing is really exaggerated, there could even be a *greenwashing backlash*, i.e. a regression of the current position further away from the ideal point. This happens when setting up "perceptual objectives" in semantic scales or in Multidimensional Scales - MDS (*see section V.8. on "Making Marketing Mix Decisions"*).
- Greenwashing may also occur when students want to raise circular initiatives (*see section III.6. on "Marketing Powerhouse"*) while their product is actually bad on environmental (circular) attributes. If a product (brand) is good on circular attributes, the effect of the circular initiative will be greater than for a brand that has poor circular attributes (the effect will be zero if the circular attributes are very bad).

- This impact will be bigger though for companies whose products already have a good product eco-score because they are good on circular characteristics (**the effect of circular initiatives will be null if circular product attributes are very bad**, as this is considered as greenwashing –

In both situations, greenwashing is observed, and the concerned company gets a **message** *(see "messages library" in the "Company Results" of Circular Markstrat)* explaining (i) either that **advertising** was perceived as greenwashing by consumers, resulting in no repositioning of the brand on perceptual maps in terms of sustainability, or even having the brand repositioned further away from the sustainability ideal point. (ii) or that the **circular initiatives** did not provide as much effect as it could have on your eco-score and on demand.

9. Integration of Circular Economy Principles in your decisions

One of the objectives of Circular Markstrat is making you aware of the principles of Circular Economy and how companies can apply them. A specific **report**, called "**Eco-Score Performance**" will help you understand how your current eco-score got constructed *(see section IV.2.A)*; the "**circularity wheel**" in this report will also concretely show you the circular dimensions (steps) that you have been working on and the efforts still to achieve.

This circularity wheel is based on five essential aspects of Circular Economy (Figure 3): Durability, Repairability, Resources, Carbon and Recycling. As a company, you can act on these aspects by working on the four **environmentally oriented product attributes** *(see section II.1)* and on **circular initiatives** *(see section II.6)*. More specifically:

- **DURABILITY = Extend your product lifespan:**

  Durability Attribute (rating officially given to the product following external certification rules and related to the life duration of the product - solidity and robustness of the materials used)

- **REPAIRABILITY = Make your products repairable:**

  Repairability Attribute (rating officially given to the product following the Markstrat government law on "repairability" - possibility of repairing the product).

- **RESSOURCES = Use fewer resources:**
  - **Energy initiatives**: photovoltaic panels, windmill park
  - **Education initiative**

- **CARBON = Reduce your environmental footprint:**
    - **Carbon footprint attribute** (how much carbon dioxide emission, per kg of CO2e emissions)
    - **Carbon initiative**: Global firm carbon footprint (optimizing product transportation)
- **RECYCLING = Recycle your materials and waste:**
    - **Percentage of recyclable materials attribute** (proportion that can be reused to produce another durable good or biological ingredients that can be safely returned to the biosphere)
    - **Waste recycling initiatives**: used product recycling, waste recycling

- **Packaging Initiative**: Global firm Product Packaging

On the example on Figure 3, it can be seen that this specific company has already achieved many efforts in the "resources" step of Circular Economy, as the "**cursor**" linked to "resources" is close to the maximum value, while this company needs to work more on the "carbon" step, as the cursor linked to this step is far from the maximum value. The cursor linked to each circular dimension thus represents the level reached by the company on the specific dimension. For each dimension, **a cursor set to the maximum** (*filled arc of the circle*) means that the company did the maximum (100%) that can be done on this dimension, through circular attributes (maximum level linked to that specific dimension for all company's brands – *or minimum level if the attribute is carbon footprint*) and/or through initiatives (initiative purchase) also linked to that specific dimension.

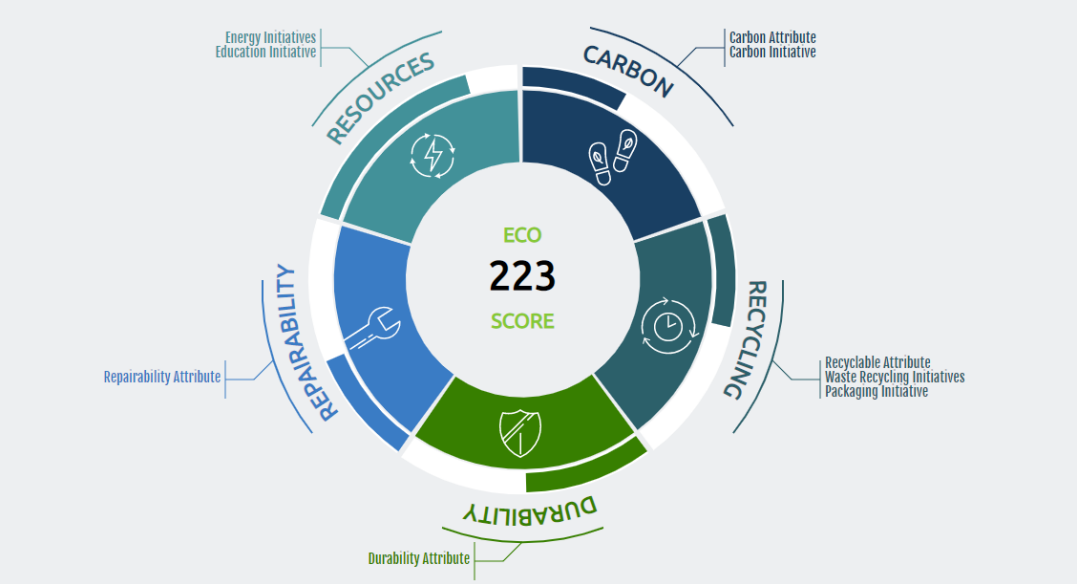


Figure 3 - Eco-Score Performance (Circularity Wheel)

III. MANAGING YOUR FIRM

You and your team will be responsible for the design and implementation of the marketing strategy of your division. You will have to decide the overall direction of the company regarding:

- The *product portfolio strategy* – which brands the company will develop and market.
- The *segmentation and positioning strategy* – which market segments will be targeted and how products will be positioned.
- The *marketing mix strategy* – the day-to-day operational marketing decisions such as pricing, production, communication and distribution.

Your performance will be measured by several indicators such as net contribution generated, brand market shares, your ability to grow the firms' revenues, quality of R&D projects successfully completed, etc. Finally, the best measure of your company's success will be its *stock price index*, a measure that takes all of the above indicators into account.

This chapter describes how your company operates as well as the decisions you will have to make each period. Before making dramatic changes, you should try to get a feel for the behavior of the market. Do not jump hastily to conclusions and bear in mind that obvious solutions may be based upon an incomplete analysis. To reach more robust decisions, use the information from your company results, from the market news and from market research studies to analyze your situation and past competitive behavior. These reports are described in the chapter entitled Understanding Your Annual Report.

You will manage the Marketing department as a profit center. We will see in the next sections that most of your decisions will cost you money: advertising budgets, distribution channels expenditures, R&D expenses, etc. We will recap these costs at the end of the chapter and we will explain where your money comes from.

1. Decision rounds

You will follow a decision-making cycle that will repeat itself for each simulated year, for instance 8 years in total. This cycle is called a *decision round* or a *round*. A simulated year is also called a *period*.

1. At the beginning of each round, the instructor will provide you with your results for the previous year (sales, R&D, production,) together with additional information on the market and your competitors. In the first year, you and your team should begin analyzing this information and then start formulating a strategy for your company and agree on objectives. In the subsequent years, you should appraise your results, check if you have met your objectives and possibly review your initial strategy and decide on what changes should or should not be made.
2. The previous step will lead to a series of decisions, which will be input into the decision forms provided. Decisions can be modified and refined throughout the decision round, until the time is over.
3. At the end of the round, the instructor collects and audits the decisions of all teams. If everything looks fine, the instructor runs the Circular Markstrat mathematical model to simulate the round and produce new results. At this stage, you are ready to start a new round.

2. Product, Brand and Base Project

Each of your Sonite products is sold to consumers under a *brand name* such as MOST, ROCK. The physical characteristics and the unit production cost of the product are defined by its *base R&D project*, i.e. the project that was conducted by your R&D department to develop the first prototype of the product. R&D projects are given a name when they are initiated; project names start with the letter 'P'.

Initially, each firm markets two Sonite products, for instance MOST and MOVE, each one being characterized by its base project, for instance POMOST and POMOVE.

Over the course of the simulation, you will have to upgrade your existing brands to adapt to changing consumer needs or to competitive moves. You may also have to launch new brands to target new consumer segments or to explore new markets. Chapter VI provides you with more information on situations where brand upgrades or brand launches are necessary.

3. Production

Each period, you must submit a production plan for each of your marketed brands, i.e. you must specify how many units you want to produce for the period. This decision must take into account the potential sales for the brand, the existing inventory at the beginning of the period and the flexibility of the Production department.

The Production department of your company is working for several divisions. It can thus be viewed as a highly flexible external supplier. Consequently, you are not concerned about manufacturing investments, fixed costs or capacity utilization.

From one period to the next, you are completely free to increase or decrease the production plan of a given product, without any penalty. The Production department will always manufacture the required quantities in the best possible conditions.

Moreover, the actual production level for each product is automatically adjusted in response to actual demand for that product in the period, within 20% of your initial production plan. Hence, if you did not order enough units to cover the demand, the production will be automatically increased by up to 20%. On the contrary, if you ordered too many units and cannot sell them in the period, the production will be automatically reduced by up to 20%. In case your production plan was inaccurate by more than 20%, you will either lose sales or build inventory.

Figure 4 gives a few examples of varying situations of inventory, production plan and market demand (all numbers are in units).

		Case A	Case B	Case C	Case D
Potential sales	*(a)*	154 000	154 000	154 000	154 000
Beginning inventory	*(b)*	20 000	20 000	20 000	None
Production plan ***(your decision)***	***I***	**150 000**	**100 000**	**200 000**	**200 000**
Actual production *(automatic adjustment)*	*(d)*	134 000 *Reduced to (a) – (b)*	120 000 *Increased to I + 20%*	160 000 *Reduced to I – 20%*	160 000 *Reduced to I – 20%*
Actual sales	*I*	154 000 *= (a) = (d) + (b)*	140 000 *= (d) + (b)*	154 000 *= (a)*	154 000 *= (a)*
Lost sales *Equal to (a) – I*	*(f)*	None	14 000	None	None
Ending inventory *Equal to (b) + (d) – I*	*(g)*	None	None	26 000	6 000

Figure 4 – Inventory and production plan versus market demand

The flexibility of the Production department goes beyond automatic adjustment of production plans. The units produced are charged to the Marketing department only when they are shipped to distributors to be sold to consumers. The price paid by Marketing to Production is called the ***transfer cost****;* it is the real unit cost of the product, as it incorporates all costs associated with the high level of flexibility of the Production department, including depreciation and fixed costs. Section on Productivity Gains will give more insight on base cost and transfer cost.

Units produced in excess are kept in inventory, and inventory-holding costs are charged to the Marketing department until these units are sold. Inventory costs per unit are calculated as a percentage of the transfer cost. This information can be found in the Newsletter.

Production plans must be entered each period in the Marketing Mix decision form. These decisions should be based on your sales forecasts for the upcoming period and should take into account any units left in inventory. If you are holding a high level of inventory, you can set the production plan to 0 but in this case, no automatic adjustment is possible.

4. Pricing

Each period, you must set the *recommended retail price* for each of your marketed brands. The retail price is the list price for customers. The *average selling price* is the price at which you sell your product to distributors. It varies by distribution channel since different margins hold in each of the three channels, as explained in the Distribution Channels *section.*

Specialty stores tend to respect the recommended retail prices set by companies (2% discount). However, mass merchandisers and pure online players use promotions or special offers to sell products. On average, these promotions are equivalent to a discount rate of 5% off the list price for mass merchandisers and 10% for pure online players. Figure 5 provides a summary of prices, margins and discounts for a recommended Retail Price of $400 and a unit transfer cost of $123.

Dumping is strictly forbidden in the Circular Markstrat world; therefore, in all channels the recommended retail price must be set so that the selling price of a product is higher than its transfer cost.

Prices must be entered each period in the Marketing Mix decision form. Price increases or decreases greater than 30% in one period are highly discouraged as they often result in negative market reactions. On one hand, an excessive price increase is usually not accepted by consumers who may react strongly and stop purchasing the brand. On the other hand, an excessive price decrease will result in a proportional cut in the distributors' margin and your commercial team may have a hard time finding distributors for the brand. A message will warn you when such decisions are made. *If you ignore the warning, the recommended retail price will be automatically adjusted up or down to stop such adverse reactions.*

	Specialty Stores	Mass Merchandisers	Pure Online Player	eStore
Recommended retail price	$400	$400	$400	$400
Actual retail price	$392	$380	$360	$400
Distribution margin	35% ($137)	30% ($114)	20% ($72)	20%* ($80)
Selling price	$255	$266	$288	$320
Transfer cost	$123	$123	$123	$123
Unit contribution	$132	$143	$165	$197

* For eStores, there are no distributor margins, the 20% are used for the eStore server management and costs

Figure 5 – From retail price to unit contribution

5. Advertising

Advertising decisions must be made each period for each of your marketed brands. Indeed, the practice in Circular Markstrat is to advertise on brands rather than on company names. Consequently, even if your firm markets several brands, possibly to the same consumer segment, these brands will not benefit from the company's identity and image.

The primary objective of advertising is to build *awareness* for brand names and to make consumers familiar with the characteristics and price of your product. Advertising is crucial for new brands but is also important for brands that have been on the market for some years. Indeed, consumers tend to forget about a brand in the absence of advertising.

Another objective of advertising is to develop *demand for the whole market*. Indeed, as potential consumers become more familiar with the products and their characteristics, they are more likely to purchase one of them. The size and growth rate of consumer segments are influenced by the total amount spent in advertising by the entire industry.

Finally, advertising will influence the decision of distributors to carry your products. Spending more in advertising will most likely increase your *distribution coverage*. It also creates a barrier to entry for your competitors.

The absolute amount of advertising spent on your brands is a key factor in the success of your campaign. But because of the competitive nature of the Circular Markstrat industry, your advertising *share of voice* is important as well. The share of voice is calculated by dividing your own advertising budget (usually several million dollars for a given brand and period) by the industry total advertising budget. A share of voice greater than the ones of your direct competitors is required for a successful new brand launch or for brand repositioning.

There are several ways you can work on advertising:

- **You can invest on two separate advertising budgets: *advertising media* and *advertising research*:**
  - The *advertising media budget* is used to purchase media space and time. Budget invested in *advertising media budget* relates to the '*quantity'* of advertising (e.g. number of TV or radio spots).
  - *Advertising research* is about creative work, media selection or other activities conducted by advertising agencies, in order to improve the persuasive power of your advertising message. Budget invested in *advertising research* aims at improving the *'quality'* of advertising.

  If your objective is to increase or maintain awareness, you should spend the bulk of your budget in media space purchase and only a small percentage in advertising research to make your advertising more effective (for instance 4% to 8%). If your objective is to reposition a brand, i.e. to change consumers' perceptions, then you should spend a significant percentage of your total budget in advertising research (usually from 10% to 15%). In past years, companies have devoted on average 4% of their total advertising expenditures to advertising research.

  Advertising budgets must be entered each period in the Marketing Mix decision form. Both the advertising media and research budgets must be given in thousands of dollars.
- You are also required to specify **which segment(s) should be targeted** with your advertising, by indicating the proportion of the budget targeted to each segment (percentages must add to 100%). This decision, which is free (no budget involved), should be consistent with the marketing strategy of your brand. The advertising agency will select the most appropriate vehicle for the targeted segment(s) that you mentioned (for instance, targeting Professionals through specific magazines, professional associations or on tradeshows). Because media selection is not an exact science, some consumers may be exposed to your advertising campaign even if you do not target them explicitly.
- You may want to define **perceptual advertising objectives** for each brand. This enables you to convey a *perceptual message* and emphasize, for instance, that a given brand is very powerful or that another one has a very large display and a low carbon footprint. You will learn more in the Repositioning section at the end of the handbook; it is devoted to brand positioning through advertising and explains how to set perceptual objectives.

  Note that exaggerated communication made by a company about the circular aspects of its products (perceptual objectives) will be considered as **greenwashing** and will lead to failed communication *(see section II.7. on "Eco-score, Greenwashing and Government actions").*
- Online and Offline **Communication Channels (media categories):** you can choose which media category will broadcast your advertising message, by indicating the proportion of the budget devoted to each media (percentages must add to 100%). You will have to allocate efforts across mass media (offline), outdoor media (offline), digital owned media (online), digital paid (online) and digital earned media (online) for each product *(see definitions in section III.5.)*.

Information on previous years' media consumption by each segment, and media Return on Marketing Investments (ROMI) experiments can be purchased in the Market Research Studies to guide you.

6. Distribution Channels

You decide on your **salesforce and commercial** efforts for each distribution channel and each product:

- **Offline (traditional) channels (*specialty stores* and *mass merchandisers*)**: you must **specify the size of your sales force (commercial team), in Full-Time-Equivalent (FTE),** i.e. the equivalent of one person working full-time for one period) to allocate to each traditional channel and each product (brand). Commercial people may be reallocated at no cost across traditional distribution channels and/or across products. However, hiring or firing costs will be automatically charged to your department when the total size of the commercial team increases or decreases. They are calculated as a percentage of the FTE cost.

  Your commercial team is responsible for increasing sales in traditional channels, obtaining and entering distributors' product orders and for supporting distributors in their tasks. It is organized by channel to better meet the needs of the distributors, and by product (brand). The team includes multiple categories of people and resources depending on the channels: sales representatives, customer (distributor) support, merchandisers, etc. The main tasks conducted by the commercial team are to visit stores (distributors), to enroll them in trade programs, to take orders, to handle out of stock situations, to participate in trade shows and to help stores organize and conduct promotions.

  The commercial team will decide on the best mix of tools depending on the channel and the target consumers. FTE costs include the salary and employee benefits of the person, as well as a sales budget that commercial people can use in their promotional activities or tools aimed at increasing sales, such as trade programs, catalogs, permanent or temporary point-of-sale (POS) materials, gifts, etc.

- **Online (digital) channels (*pure online players* and *eStores*):** you must **specify a commercial budget** in thousands of dollars (K$) to allocate to each digital channel and each product (brand). Budget may be reallocated at no cost across digital channels and/or across products.

  Your commercial budget is used to have your products appear on the homepage of online pure players (i.e. web-only merchants and retailers' websites) and to develop and manage your company eStore (i.e. your company's commercial website on which customers can buy your products).

7. Market Research Studies

One of your decisions will be to order market research studies. All studies are ordered at the beginning of a period and are conducted by a specialized research firm during that period. Hence, the information provided is relevant to the market situation during the analyzed period except for the Market Forecast study. The results are delivered with your annual report at the end of the period and can be used for the next period's decisions. Companies can buy 14 different types of studies, as shown in Figure 6. Studies deal with the Sonite market, consumers and channels. All studies are further detailed in section IV.3.

Note: only four studies will be available in your Period 0 report:
Consumer survey, Consumer panel, Distribution panel and Market Forecast.

Read section V.11 to review the Market Research decision form.

• Consumer survey	• Estimates of Competitive Expenditures on Distribution Channels
• Consumer panel	• Media reporting
• Customer centricity	• Industry benchmarking
• Distribution panel	• Advertising experiment
• Semantic scales	• Distribution Channels experiment
• Multidimensional scaling	• Market forecast
• Competitive advertising estimates	• Conjoint analysis

Figure 6 – Available market research studies

8. Research & Development

In the past, each firm has successfully completed two R&D projects on which the brands marketed in Period 0 are based. The project name starts with the letters *PO* followed by the corresponding brand name. For instance, the R&D project corresponding to the existing brand *MOST* was called *POMOST*.

The Marketing department may ask the Research & Development department to develop new projects to either upgrade/downgrade existing brands or to launch new ones. Indeed, existing products may need to be improved during their lifetime to adapt to the changing needs of consumers and new products may have to be created to target untapped segments in existing or new markets.

Chapter VI includes detailed information on R&D strategies and processes. The overview given below will show you how you can control the marketing strategy of your company and will give you the level of details necessary to understand the other chapters of this handbook.

When requesting a new R&D project, the Marketing department has to:

- specify the **name** of the project *(A. below)*;
- specify the **desired characteristics** for the new or improved product *(B. below)*;
- give the target **base cost** *(C. below)*;
- allocate a development **budget** to the project *(D. below)*.

In order to specify the target base cost and the budget, you have access to **feasibility studies** *(E. below)* and **online queries** *(F. below)*.

Up to five R&D Sonite projects may be ordered each period .

A. Project Name

Project names may have up to 8 characters. The first letter must be a 'P', as in "Project". The second one identifies the market of the product being developed: 'O' for a Sonite product. The other characters may be chosen freely. We advise you to give meaningful names to your projects. For instance, POMOVE2 would be a Sonite project developed to upgrade brand MOVE.

The name of a completed project can never be reused for a new project, even if it is a minor modification of the older project.

B. Project Characteristics

The physical characteristics of the project must be given along with the eight most important attributes described in the sections "Sonite Products". The values entered must within the feasible ranges and in the relevant unit; for instance, Battery Life should be between 24 and 96 hours *(see ranges in Figure 1)*.

Obviously, the Marketing Department should evaluate the attractiveness of various offerings before deciding on specific characteristics. The needs of the target consumers should be considered for this evaluation. There are multiple methodologies to determine the characteristics of a project; they are all discussed in chapter VI.

C. Desired Base Cost

The *base cost* of a project is equal to the cost that will be charged by Production to Marketing for each unit of the future product, assuming an initial production batch of 100,000 units.

The base cost depends on project characteristics: the higher the level in each attribute (Processing Power, Display Size, Design, Recyclable Materials, etc.), the higher the minimum unit cost. There is one exception to this rule: unit cost will increase if you try to reduce the carbon footprint of your products.

You may ask the R&D department to develop the project at the lowest possible base cost also called *minimum base cost*. Developing a project at the minimum base cost will usually be quite expensive in term of the development *budget*. Indeed, the R&D team has to select materials, change processes, negotiate with suppliers, so that the minimum base cost gets reached. You may also ask the R&D department to develop the project at a *specified base cost* (higher than the minimum cost). This will give more flexibility to the R&D team in the materials and processes selection, which will reduce the development budget. Obviously, the desired base cost must be compatible with the expected brand profitability, taking all factors into account:

price, distributor margin, production costs, marketing and sales expenses, etc. Feasibility studies or online queries help you define the amount of this budget (below E. and F.).

D. Project Allocated Budget

As mentioned, the Marketing department must allocate a development budget to cover the project expenses. These expenses include the cost of developing the prototype and all the costs related to the transition from R&D to production, i.e. ensuring that large quantities of identical units can be economically and reliably produced.

At the early stage of the project development, the R&D team will estimate the budget required for completing the project. This budget will depend on how different the new characteristics are compared to the ones of projects already developed. Upgrading a Sonite product will initially cost between a few hundred thousand dollars and two million dollars. R&D costs will decrease over time as more projects are successfully developed.

If the budget allocated by Marketing to the project is equal to or higher than the budget required for completion, then the project will be successfully completed and available during the following period.

As the R&D department works as a profit center, any budget allocated in excess of the required budget will not be given back to Marketing.

If the allocated budget is much lower than the budget required for completion, the project will not be successfully completed. In this case, you have the choice to complete the project in the following period by allocating the amount required by R&D in the annual report, or shelve the project, i.e. put it aside until you have sufficient funds to complete it. Note that a project does not have to be finished in one or two periods; you may well decide to develop a prototype in 3 or more periods.

If the allocated budget is slightly lower than the budget required for completion, there is a chance that the project will be successfully completed despite the lack of funds. Taking such a risk might not be a good idea if millions of dollars in revenues depend on the availability of the project.

E. Feasibility Studies

When launching a new R&D project, you may want to ask for a *feasibility study* after having chosen the physical characteristics of your project. A feasibility study costs $100,000 and takes one period to complete. Information is provided *in the next period* within the R&D section of the company results; it includes:

- the *minimum base cost* at which the product can realistically be manufactured
- the *budget* required to guarantee its completion at the currently requested base cost.

The main advantages of feasibility studies are their low cost and the accuracy of the information provided. Their main drawback is the time it takes to get this information: a full period.

F. Online Queries

An alternative to feasibility studies when launching a new R&D project (after having chosen the physical characteristics of your project) is to ask for an *online query.* Information is provided *immediately* on the online query pop-up window and provides you with :

- *Option 1:* only an *estimate* of the budget required to complete the R&D project if you have specified the base cost that you want to reach for this project.
- *Option 2:* an *estimate* of the budget required to complete a project + an *estimate* of the base cost of the future R&D project ; in this case, you ask the online query to give you the "*lowest possible cost"*; once the online query has provided you with this cost, you can specify it in your R&D project ("Specify a base cost of this project").

The main advantages of online queries are that information is provided to you immediately and is free (you do not have to pay for it). Their main drawbacks are that no more than five queries may be made in any given period and that their results (base cost and budget) are usually over-estimated by as much as 15% (meaning that the "lowest possible cost" you are provided with in option 2 is actually not the minimum base cost).

Important: if you change the specifications of your project (characteristics and/or requested base cost) after you have run the online query, you will no longer be guaranteed that the project will be completed within one period at the budget given by the query. In this case, you should run a new query to adjust your decisions according to the new specifications.

9. Productivity Gains

As already mentioned, *base cost* and *transfer cost* both represent the unit manufacturing cost of a product. The **base cost** is the unit cost that was specified when the project was developed by R&D, for a first production batch of 100,000 units. The **transfer cost** of a product is the real unit cost to bear (i.e. price paid by the Marketing center to the Production center) and is initially equal to the base cost of its R&D project, as long as the production batch is 100,000 units.

The transfer cost usually digresses from the base cost. The reason is that manufacturing costs tend to decrease over time thanks to the ***experience effect***. Transfer cost (per unit) will decrease over time because of *experience effects*: as the production center produces more and more units (*high cumulative volume of production*), benefits of experience are observed: labor efficiency leads to fewer mistakes in the production process, processes and methodologies are improved, new and less expensive materials are used, … As a consequence, **the (unit) transfer cost decreases as the cumulative volume of production increases.**

Hence, one way to reduce manufacturing costs is simply to produce more units of the same product. On average, you can expect the transfer cost to be reduced by 15% each time the cumulative production of a given product gets doubled. This is represented by the blue curve on Figure 7:

- Suppose that a base cost of $150 was specified by the R&D (at the development of the project) for a production of 100,000 units (*point A*);
- A few periods later, if cumulative production has doubled compared to the initial batch of 100,000 units (i.e. 200,000 units have been produced so far), the (unit) transfer cost will be around $127 (15% less than the initial $150) *(point C)*.
- Each time cumulative production doubles, the (unit) transfer costs decreases by 15%: at cumulative production = 400,000 units, the transfer cost would be around 108 (15% less than $127 at 200,000 units); at cumulative production = 800,000 units, the transfer cost would be around 92 (15% less than $108 at 400,000 units). In other words, the additional production necessary to get an additional 15% reduction in unit cost gets bigger and bigger (as it is no linear relationship). On Figure 6, point B represents the transfer cost when cumulative production reached 600,000 units. When compared to the initial base cost, the unit cost of this brand only decreased from $150 to $100 (a 33% reduction), showing that the slope of the experience curve decreases quite rapidly.

Experience effect also involves that if your *cumulative production* is *less* than the production batch of 100,000 units, the product transfer cost will be **higher** than the initial base cost specified when the project was developed by R&D. As a rule of thumb, you can expect the transfer cost to be higher by about 15% if the cumulative production of a given product is 50,000 units, i.e. half the initial production batch of 100,000 units.

Finally, be aware of the fact that costs will be adjusted for inflation; but companies won't actually observe any cost increase, as this impact will be offset by the reduction obtained through experience, as cumulative production increases at each period (unless production is 0; in that case, the average transfer cost will increase by the inflation rate, ususally around 2%).

Experience effect should not be confused with economies of scale, where manufacturing costs decrease with the size of the production, as fixed costs are amortized on large production batches, negotiation power with suppliers is higher, investment in machines of varying sizes and speeds ensures higher usage ratio, access to less expensive financing is made possible, … As the Marketing department is not responsible for production capacity, you are not concerned with economies of scale.

Firms can further reduce manufacturing costs by launching a ***cost reduction* R&D project**, i.e. a project specifying *the same physical characteristics as the initial project, but at a lower base cost*. This is represented by the red curve on Figure 7. Although the unit cost will initially be higher than $100 (point A'), the curve

shows that transfer costs below $100 will be obtained as soon as cumulative production goes beyond point B'. Then, the transfer costs will be much lower than the ones achievable by the original blue curve.

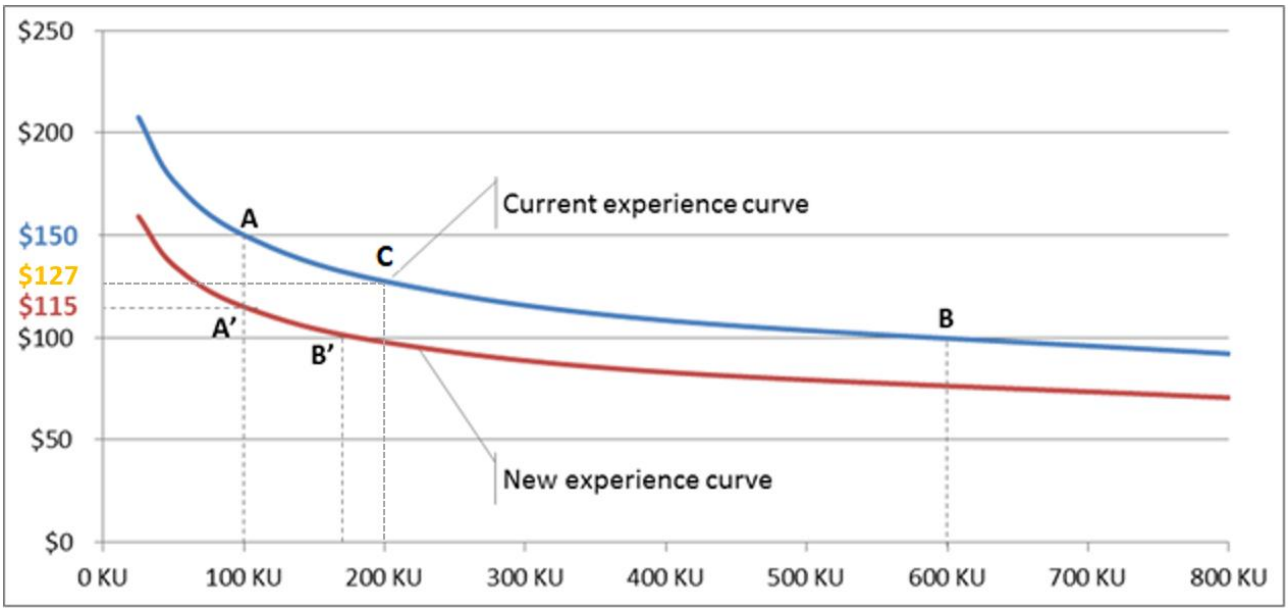


Figure 7 – Productivity gains

10. Marketing as a Profit Center

You will operate the Marketing department as a profit center. Your performance will be measured by the contribution that you generate. Contribution is defined as revenues from sales minus the costs listed below. Note that your *Profit and Loss* statement is described in detail in the section IV.2.C.

- R&D: budgets allocated to R&D projects;
- Production: costs of goods sold and inventory holding costs;
- Advertising: advertising media & research budgets allocated to marketed brands;
- Distribution Channels: costs incurred by distribution channels (commercial team and commercial budget), in all four channels;
- Market research: costs of market studies ordered in the period;

A. Marketing Budget

Each period, you are allocated a budget to cover your expenses in R&D, advertising, commercial activities and market research purchase. This budget is linked to the success of the department, being equal to 20% of the net contribution generated in the previous period. However, there is a maximum level where resources are reallocated to other divisions of the company to maximize the return on investment at the corporate level. Similarly, there is a minimum budget level for each period, whereby headquarters may effectively subsidize your division if you are not generating the contribution sufficient for your division can continue operations.

In general, your budget for each period will be between 10 and 20 million dollars, adjusted for inflation. You will have to work within this given budget: if total spending exceeds the allocated budget for a period, expenses will be automatically cut by the Finance Control department, starting with advertising expenditures.

Your objective is to maximize your return on investment. Consequently, you should not necessarily spend your entire budget in every situation. Indeed, you should not spend one additional dollar unless you expect this dollar to generate a return higher than one dollar. If you perform outstandingly, you may be granted a large budget; however, spending it completely might be a waste of money.

Please note that unused budget will not be carried forward to the next period.

B. Loans & Budget Increase or Decrease

Your instructor may decide to grant you a loan or a budget increase or decrease. This will usually be done at specific periods and under certain conditions to be defined by your instructor.

A loan is characterized by its principal – the amount of additional money that you will get – its interest rate in %, its duration in years and the period P at which it is granted. For example, a $5 million loan is granted to team R in Period 3 at 4% interest rate over 5 years.

In the Circular Markstrat world, loans are granted at the beginning of the year so that you can use the principal immediately, for instance to invest in new R&D projects. Consequently, you will incur interest in the first year of the loan. However, you will not start to reimburse the principal before period P+1 so that it can be paid with the outcome of the period P investment. A complete example is detailed in Figure 8.

	Principal Received	Principal Reimbursed	Interests Paid
Period P	5 000 000	0	200 000
Period P+1		923 136	200 000
Period P+2		960 061	163 075
Period P+3		998 463	124 672
Period P+4		1 038 402	84 734
Period P+5		1 079 938	43 198
Period P+6	0	0	0

Figure 8 – Sample Loan Schedule

IV. UNDERSTANDING YOUR ANNUAL REPORT

You will receive your annual report at the beginning of each decision round. This report provides you with the results of the period that just ended. For instance, you will be making decisions for period 5 based on your annual report of period 4. The annual report is composed of three sets of documents fully described in this chapter: the *Market & Competitive News*, the *Company Results* and the *Market Research Studies*.

We suggest that you log into Circular Markstrat and access you first annual report while reading the following pages. If your professor has not yet started your course, you may use the Preview data, as explained in section I.4.B.

In order to illustrate varying situations, the following tables and charts have been captured in multiple industries, with different firm and at different periods. Hence, a brand, project or firm may appear on a chart and not on another one.

In additional to your annual report, you may access additional tables, graphs and interactive tools that have been especially designed to help you make better decisions and more precisely to: review and analyze your latest results in a graphical format; design R&D projects; position or reposition your product offering; determine price; or allocate your resources across market and segments. In order to simplify this manual, all these additional elements are only documented online.

1. Market & Competitive News

The Market & Competitive News provides general and financial data on the industry, on the competing firms and on marketed brands. This is publicly held information; i.e. all competing firms have access to the same documents. The news consists of three or four sections.

A. Industry Dashboard

The industry dashboard provides you with a one-page summary of key performance indicators at firm and brand levels such as stock market data, retails sales and market shares in value and volume, revenues and contribution. The layout will vary over time. A sample industry dashboard is depicted in Figure 9 and Figure 10.

B. Industry Information

This is a short report showing the evolution of economic variables such as inflation rate and GNP growth rate, and providing the cost for the next period of items such as market research studies, commercial people, holding units in inventory or the disposal of inventory units in the case of a product withdrawal or upgrade. All cost calculations are done for you by the simulation. So, you should not need to look at the report in detail.

You will also find in this report government messages about ecology-related taxes *(see I.7.B for details)*:

- **Eco-taxes linked to each circular attribute** (Recyclable Materials, Carbon Footprint, Durability, Repairability).

Eco-bonus or eco-malus resulting from your company eco-score. Please note that all messages can also be found in the "messages library" *("Company Results" section in Circular Markstrat).*

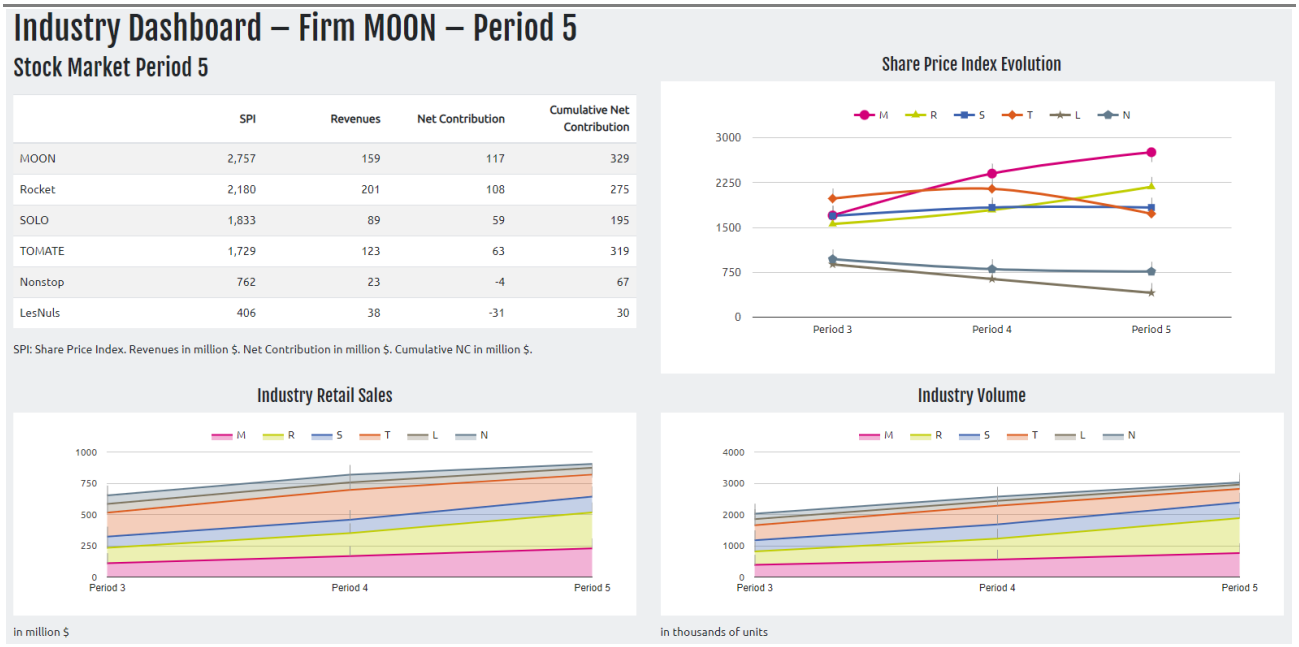


Figure 9 – Market & Competitive News – Industry dashboard (part 1)

Figure 10 – Market & Competitive News – Industry dashboard (part 2)

C. Market Report

This report provides you with the market shares (in units and in dollar value), the volume sold and the retail sales of all marketed brands (Sonite). Volume and retail sales are given for the current period, and the variation with the previous period is provided as well. Newly launched or upgraded brands are flagged. The physical characteristics, base cost and price of all marketed brands are given as well. Again, newly launched or upgraded brands are flagged.

Brand Characteristics

The table below lists the physical attributes of marketed brands, as well as their price and estimated unit cost, both in $.

Brand	Launched in	Recyclable Materials (5)	Carbon (6)	Durability (7)	Repairability (8)	Design (1)	Battery (2)	Display (3)	Power (4)	Price	Base Cost ($)	Base Cost (%Price)
LOCK	Period 0	24	39	31	41	4	35	13	19	230	92	39 %
LOOP	Period 0	50	32	41	51	7	67	27	71	520	161	30 %
MOST	Period 0	28	25	16	21	3	46	15	29	250	90	36 %
MOVE	Period 0	35	28	41	36	7	64	9	81	390	174	44 %
NOON	Period 0	13	39	11	16	6	49	15	30	340	94	27 %
NOVA	Period 0	50	32	51	26	7	78	22	62	550	163	29 %
ROCK	Period 0	28	37	21	36	8	67	35	91	450	182	40 %
ROLL	Period 0	35	39	55	60	10	60	9	76	550	167	30 %
SOFT	Period 0	13	23	21	11	5	60	8	19	230	65	28 %
SOLO	Period 0	13	30	31	21	5	31	20	53	370	108	29 %
TONE	Period 0	43	45	51	51	8	74	40	72	520	180	34 %
TOPS	Period 0	20	41	16	55	9	46	9	62	420	140	33 %

(1) Design (Index): From 3 To 10. (2) Battery (Hour): From 24 To 96. (3) Display (Inch): From 4 To 40. (4) Proc. Power (GFlops): From 5 To 100. (5) Recyclable Materials (%): From 5 To 80. (6) Carbon Footprint (Kg): From 5 To 50. (7) Durability (Index): From 1 To 100. (8) Repairability (Rating): From 1 To 100.

Figure 11 – Market & Competitive News – Brand Characteristics

2. Company Results

The Company Results provides confidential company information. You and your team members are the only ones who have access to the information disclosed in your company results, except for data given in the *Industry Benchmarking* study. The company results are comprised of the following eight sections:

- Eco-Score Performance
- Company Dashboard
- Financial Report
- Production Report
- Research & Development Report
- Decision Review (past decisions)
- Message Library
- Feedback from your Coach

A. Eco-Score Performance

The Eco-Score Performance report is first made of a **circularity wheel** (Figure 12) that concretely identifies the circular dimensions (steps) that you have been working on (Durability, Repairability, Resources, Carbon and Recycling) and the efforts still to achieve for each step *(see section II.1 for details)*.

This report also helps you understand how your current eco-score got constructed. Starting from the equation mentioned in section II.7:

$$Firm\_EcoScore = \underbrace{\left[\sum_{brand=1}^{nBrands} \left(Weight_{brand} * Brand\_EcoScore_{brand}\right)\right]}_{(i)} + \underbrace{Boost\_Initiative}_{(ii)}$$

Charts in Figure 12 show how the global firm Eco-Score can thus be broken down between:

(i) Eco-scores of company brands: “Brands impact on Eco-Score” (= 179 in the example in Figure 12)
(ii) Circular initiatives: “Initiatives impact on Eco-Score” (= 44 in the example in Figure 12)

Knowing that both add up to the global firm Eco-Score (179+44=223 in the example in Figure 12).

Regarding (i), more specifically:

- ***Brands' eco-score***: depends on the physical *circular* **attributes** of this specific product: brands' Eco-Score evaluates how much each circular attribute moves away *from the minimum value of the attribute, this minimum evolving with government eco-taxes on attributes *(*or from the maximum value, regarding the carbon footprint attribute).* A maximum value of 100% for a brand's eco-score would mean that this brand undertook all possible efforts on each physical circular attribute.
  In Figure 13, the table *"brand's eco-score"* shows that brand MOST moves away from the minimum values of the circular attributes by 68%. As 68% is the highest brand's eco-score among this company's brands (the lowest being linked to MOOD with 23%), it implies that the company is doing its biggest circular effort with MOST.
- $Weight_{brand}$: is measured by ***Brands' impact on eco-score (per brand)***. It is the proportion of the number of units sold for each product, compared to the total number of units sold for all brands of the company: the more units of an environmentally friendly product you sell, the higher will be its weight on the company eco-score. In Figure 13, MOST and MOVE represent the highest percentages in terms of units sold (respectively 39% and 38%, all brands not surprisingly adding to 100% of the units sold).

Lines in "Evolution of Brand Eco-score" and "Evolution of Brand Impact on Eco-Score (per brand)" represent the evolution of these percentages, period after period.

Figure 12 also shows how the five dimensions (steps) of Circular Economy (Durability, Repairability, Resources, Carbon and Recycling) influence the global eco-score and the two elements composing this eco-score:

- ***Eco-Score composition***: shows how each dimension contributes to the global company eco-score. In the example (Figure 12), carbon footprint contributes to 29% of the eco-score (the 5 contributions, respectively of 29%, 26%, 21%, 14% and 11% adding up to 100%).

  These percentages are obtained by multiplying each dimension weight on the eco-score by the efforts made on the dimension by the company, and then normalized to 100%:

  - **weight of each dimension on the eco-score**: dimensions are not equally important in determining the eco-score, and this is **common to all companies**. The weights correspond to the importance of the dimensions in the purchase intention found in the semantic scales report.
  - **circular efforts** made by the company on this dimension **(specific for a given company)**.

  It means that a "lower weight" dimension (e.g. durability) may contribute more to the eco-score of the company than a "higher weight" dimension (e.g. carbon) if the company sells products with a particularly high level of durability.
- ***Brands' impact on eco-score (per dimension)* :** shows how each dimension, when focusing on brand circular attributes (carbon footprint, recyclable materials, durability, repairability attributes), contributes to the global eco-score. 12 shows that the carbon footprint attribute contributes to 32% of the global eco-score, meaning that it is the attribute with the highest impact on the eco-score for this specific company (the contributions of the 4 attributes, namely 32%, 27%, 24%, 16%, adding up to 100%).
- ***Initiatives impact on eco-score*** *(related to (ii) in equation)***:** shows how each dimension, when focusing on initiatives (global carbon footprint initiative, recycling initiatives, resources initiatives), contributes to the global eco-score. 12 shows that the resources initiative contributes to 50% of the global eco-score, meaning that it is the initiative with the highest impact on the eco-score (the contributions of all initiatives, namely 10%, 40%, 50% adding to 100%).

Lines in "Evolution of Eco-score composition", "Evolution of Brand Impact on Eco-Score (per dimension)" and "Evolution of initiatives impact" simply represent the evolution of these percentages, period after period.

Figure 12 - Eco-Score performance report – part 1

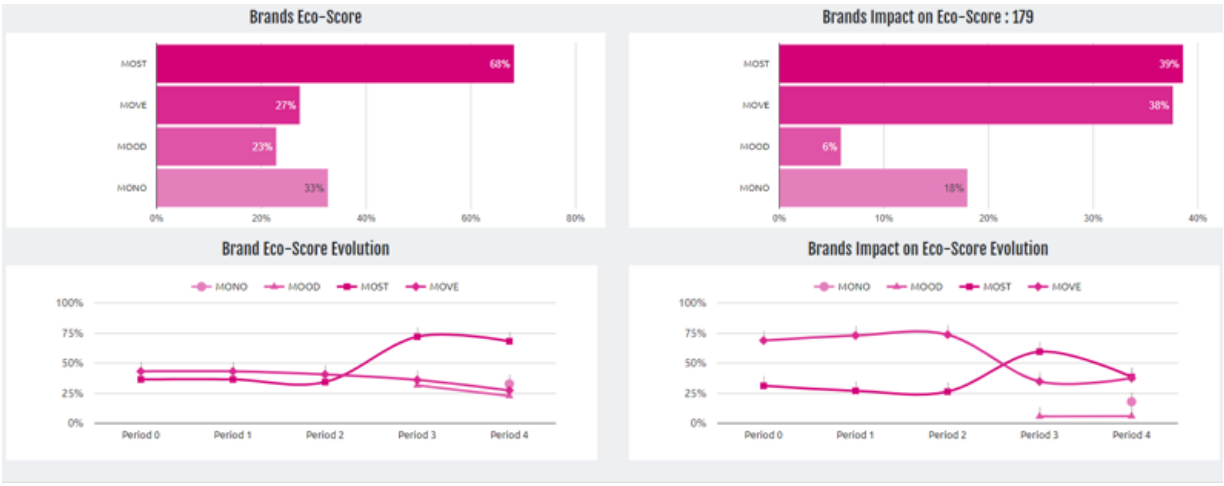


Figure 13 - Eco-Score performance report – part 2

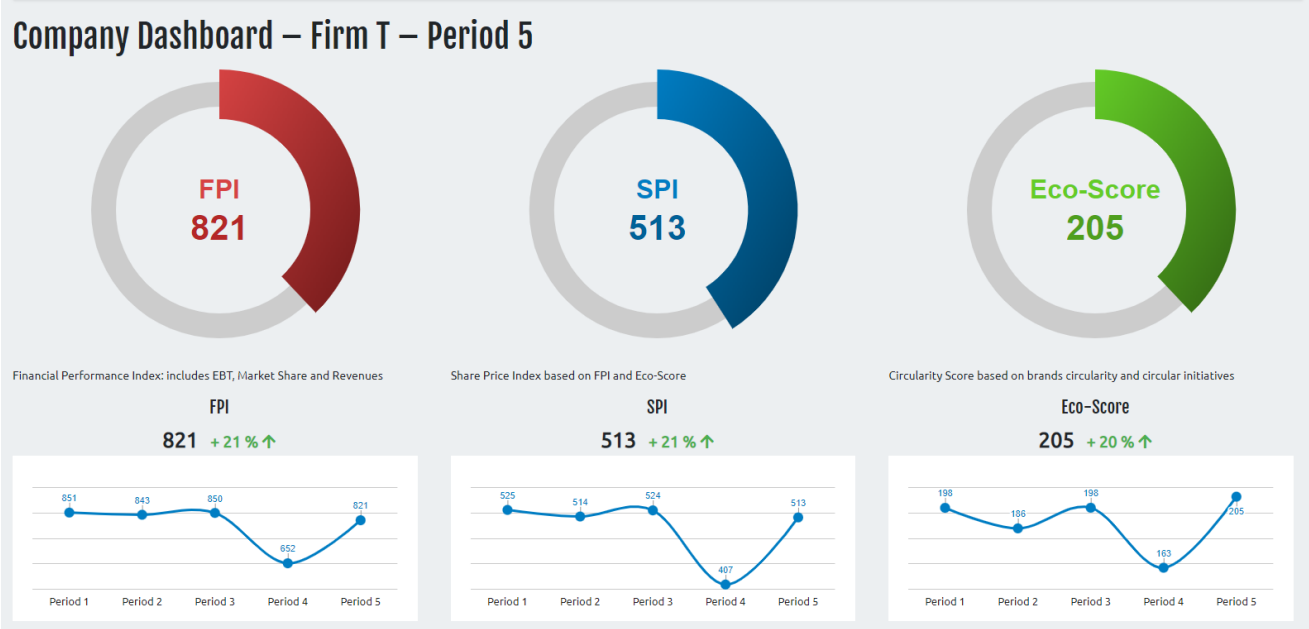
B. Company Dashboard

The company dashboard provides you with a one-page summary of the key performance indicators of your firm and your brands such as:

- The Share Price Index (SPI), which is based on:
  - The **Financial Performance Index (FPI).** The FPI takes into account your company's EBT (Earning Before Taxes), the net contribution generated, product market shares and company's revenues.
  - The global **Eco-Score** of your company. The Eco-Score, at the company level, is calculated based on (i) brand eco-scores, depending on physical characteristics of each product manufactured by your company (e.g. your product durability or carbon footprint); (ii) circular initiatives that you implement (or not) at the company level.

  Besides the actual value of each index (SPI, FPI, Eco-score), the **circles** represent the company value (in terms of SPI, FPI, Eco-score) compared to the *minimum* value obtained on the industry (by a competitor) and the *maximum* value obtained on the industry.
- Company's Revenues, Earning before taxes (EBT), Market shares in value and volume, Brand revenues and brand contributions contributing to the FPI index.

The layout will vary over time. A sample company dashboard is depicted in Figure 14.



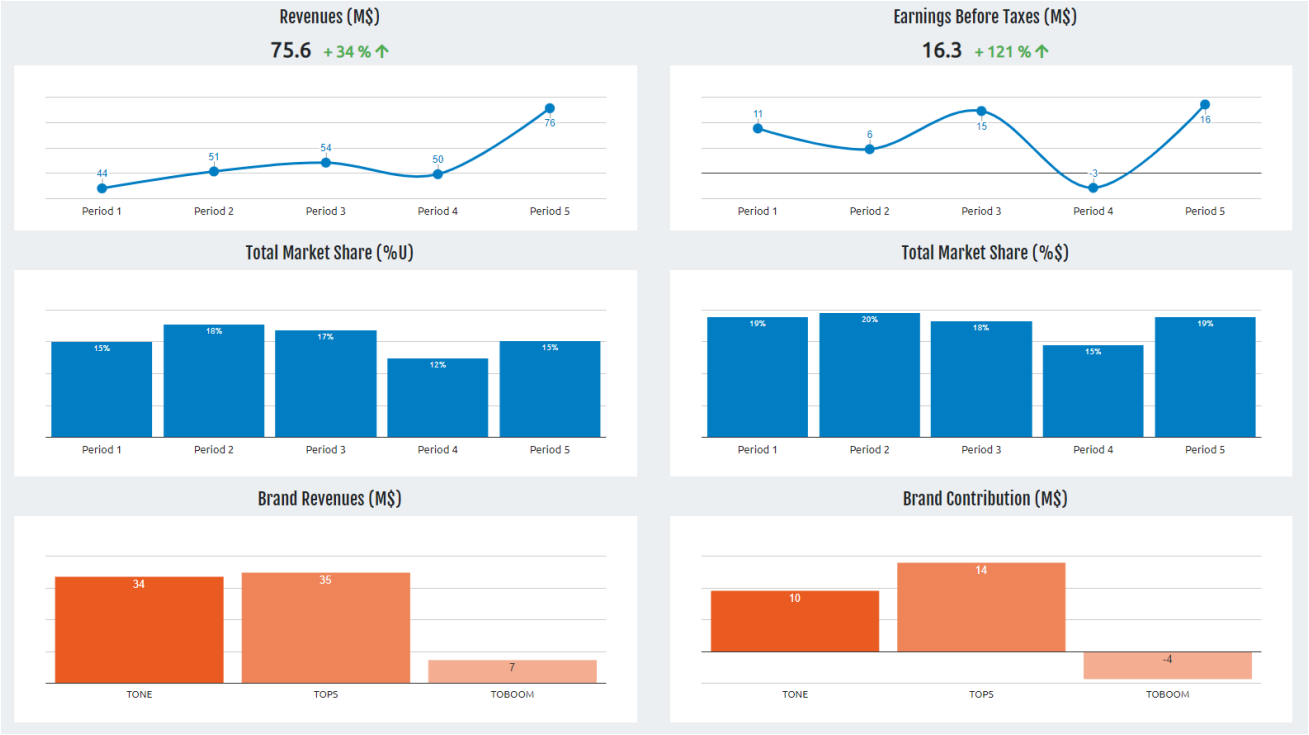


Figure 14 – Company dashboard

C. Financial Report

This report provides you with revenues, costs and profit information at the company, market and brand levels.

The *Profit & Loss statement* of your company is illustrated in Figure 15 and is explained below.

- **Revenues**: Number of units sold x Average selling price. The selling price is equal to the retail price (your decision) minus the distributors' margin.
- **Cost of goods sold (COGS)**: Number of units sold x Unit transfer cost. The transfer cost is equal to the base cost of the underlying R&D project minus the productivity gains.
- **Inventory costs:** Inventory holding cost + Inventory disposal loss
  - Inventory holding costs: Units in inventory x Unit transfer cost x Inventory holding cost in % (given in the market news report).
  - Inventory disposal loss: Loss incurred when selling inventory to a trading company because of a product upgrade. Units in inventory x Unit transfer cost x Inventory disposal cost in % (given in the market news report).
- **Contribution before marketing (CBM)**: Revenues – COGS – inventory costs.
- **Contribution after marketing (CAM)**: CBM – advertising media – advertising research – distribution channels costs (your decisions).
- **Market research studies**: costs of the market studies purchased during the period (your decision).
- **Research & Development**: budgets allocated to R&D projects during the period (your decision).
- **Marketing & Digital Initiatives**: costs of the initiatives implemented during the period (your decision).
- **Interests paid**: Interest paid on loans granted in previous periods.
- **Exceptional cost or profit (ECP)**: Exceptional items such as brand withdrawal costs.
- **Net earnings**: CAM – market research studies – R&D – interests paid – ECP.

Company Profit & Loss Statement

The table below shows the evolution of firm Nonstop financial results in thousands of dollars, as well as the cumulative results since Period 0.

	Period 5	Period 4	Period 3	Period 2	Period 1	Cumulative
Revenues	22,606	43,047	48,079	37,911	39,054	230,298
Cost of goods sold	-10,028	-15,521	-20,643	-14,075	-15,955	-93,877
Inventory costs	-2,054	-1,194	-1,026	-1,117	-751	-6,569
Contribution before marketing	10,524	26,332	26,410	22,719	22,348	129,852
Advertising expenditures	-4,000	-4,600	-5,600	-4,000	-4,000	-26,200
Distribution channels costs	-4,952	-2,481	-2,229	-1,646	-1,624	-14,130
Contribution after marketing	1,572	19,250	18,581	17,072	16,725	89,522
Market research studies	-614	-592	-558	-515	-505	-3,089
Research and development	-1,250	-2,440	-1,610	0	0	-5,300
Initiatives costs	0	0	0	0	-415	-415
Loan reimbursed	0	0	0	0	0	0
Loan received	0	0	0	0	0	0
Loan interest paid	0	0	0	0	0	0
Exceptional cost or profit	-4,150	-7,292	0	-2,413	0	-13,855
Earnings before taxes	-4,442	8,927	16,413	14,145	15,805	66,863

Figure 15 –Financial Report – P&L statement

The *Market and Brand Contribution* reports are similar to the company profit & loss statement. They provide financial elements for each marketed brand as well as the consolidation of all brands by market. A sample brand contribution chart is shown on Figure 16.

Brand contribution

The table below shows a comparison of the net contribution generated by the brands marketed by firm MAGENTO in Period 4.

	MOMM Sonites	MOVE Sonites	MEMEM Vodites
Revenues	13,180	21,138	48,243
Cost of goods sold	-3,506	-10,967	-18,103
Inventory holding cost	-607	0	0
Inventory disposal loss	0	0	0
Contribution before marketing	9,067	10,171	30,140
Advertising media	-1,500	-1,000	-1,500
Advertising research	-750	-500	-750
Commercial costs	-394	-394	-394
Contribution after marketing	6,422	8,277	27,496

Figure 16 – Financial Report – Brand contribution

The Financial report also mentions Government messages about Eco-taxes on specific product characteristics, Eco-bonus and Eco-malus *(see section on "Eco-Score, Greenwashing and Government activities").* Note that all messages also appear in the "messages library" ("Company Results" section in Circular Markstrat).

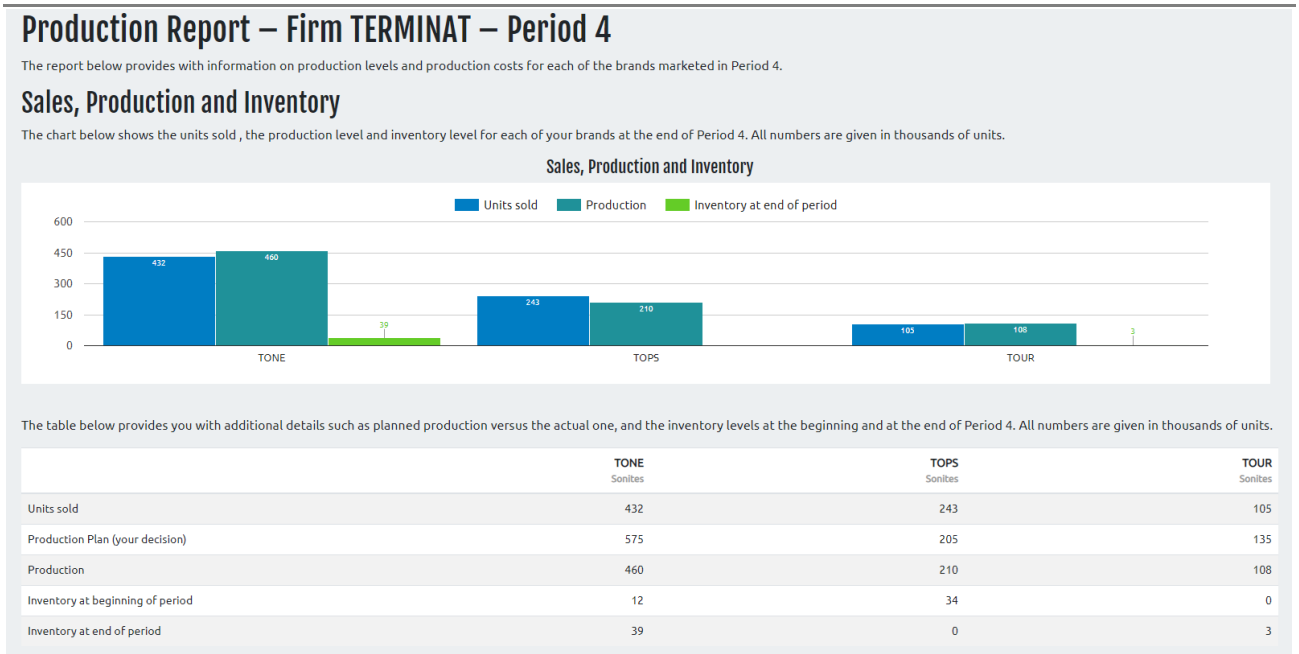
D. Production Report

The Production Report provides you with information on the number of units produced, the number of units in inventory and on production costs for each of the brands marketed in the period.

The *Sales, Production and Inventory* table shows detailed information on planned production versus actual production and the inventory levels at the beginning and at the end of the current period. All numbers are given in thousands of units.

The variation between the production plan (your decision) and the actual production (number of units produced) is due to the automatic adjustment of plus or minus 20%, depending on market demand.

The inventory at the end of period is equal to (inventory at beginning of period + actual production – units sold).



	TONE Sonites	TOPS Sonites	TOUR Sonites
Units sold	432	243	105
Production Plan (your decision)	575	205	135
Production	460	210	108
Inventory at beginning of period	12	34	0
Inventory at end of period	39	0	3

Figure 17 – Production report – Sales, production & inventory

The *Unit Cost, COGS and Inventory Holding Cost* chart shows the unit transfer cost for each of your marketed brands. The *current* unit cost is the cost of the most recently produced units, while the *average* unit cost takes into account the units that were in your inventory at the beginning of the period. You may ignore the difference in most cases. Unit transfer costs are given in $; units sold in thousands of units. Cost of Goods Sold (COGS) are equal to Units sold x Average unit transfer cost. COGS are given in thousands of $.

This table also shows the costs incurred for holding your inventory throughout the period. These costs include for instance the storage cost, the cost of capital, etc. Inventory holding cost is equal to Units in inventory x Average unit transfer cost x H%. In the case of a product upgrade or brand withdrawal, you must dispose of your inventory at the beginning of the period and a loss is incurred. Inventory disposal loss is calculated as D% of the value of your inventory at the beginning of the period. H and D are given in the market news. Inventory holding and disposal costs are given in thousands of $.

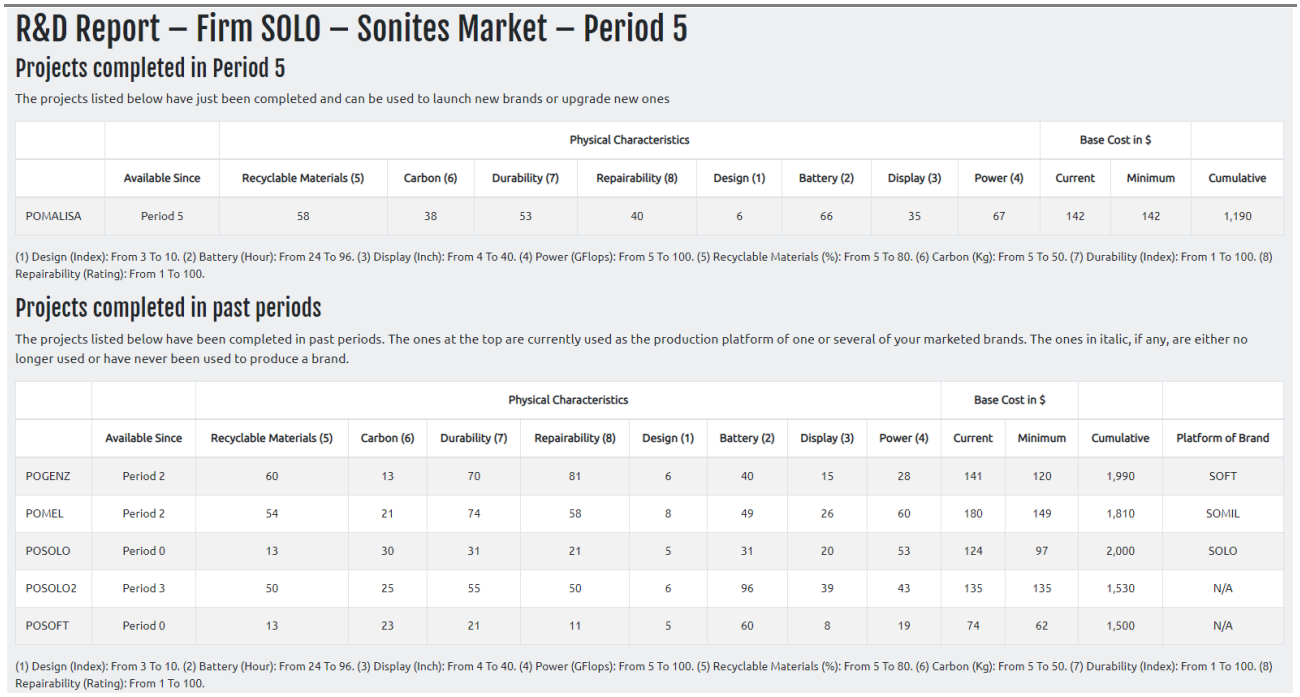
E. Research & Development Report

This set of reports provides information on all R&D projects launched in the previous periods. To facilitate the reading, separate charts are provided for projects that have just been completed, for the ones that were completed in previous periods, and for projects that are not yet finished either because the allocated budget was not sufficient or because you have decided to shelve them.

The report in Figure 18 shows the list of R&D projects completed in past periods. All reports share the same layout and include the same information:

- **Project name**.
- **Available since**. Completed projects only. This is the period when the project was completed.
- **Physical Characteristics.** The physical characteristics of the future product. This data is given in the relevant units for each characteristic, e.g. gigaflops for processing power or kilograms for carbon footprint.
- **Current and minimum base cost**s. The base cost is the manufacturing unit cost of the future product, assuming an initial production batch of 100,000 units. The *current* base cost is the one that you entered in the R&D decision form when specifying the project. The *minimum* base cost is the cost below which it is *impossible* to manufacture the future product without taking productivity gains into account.
- **Platform of brand**. This is the name of the brand that is based on this project. This column is void for projects that are not yet or no longer in use.

- **Cumulative and required allocated budgets**. Uncompleted projects only. The *cumulative* budget is the total budget that has been allocated to this project over time. The *required* budget is the budget required to finish the project, i.e. the additional budget that must be invested to ensure that the project will be completed in the following period. You may attempt to finish the project with a lower budget, but its successful completion is not guaranteed.



R&D Report – Firm SOLO – Sonites Market – Period 5

Projects completed in Period 5

The projects listed below have just been completed and can be used to launch new brands or upgrade new ones

		Physical Characteristics								Base Cost in $		
	Available Since	Recyclable Materials (5)	Carbon (6)	Durability (7)	Repairability (8)	Design (1)	Battery (2)	Display (3)	Power (4)	Current	Minimum	Cumulative
POMALISA	Period 5	58	38	53	40	6	66	35	67	142	142	1,190

(1) Design (Index): From 3 To 10. (2) Battery (Hour): From 24 To 96. (3) Display (Inch): From 4 To 40. (4) Power (GFlops): From 5 To 100. (5) Recyclable Materials (%): From 5 To 80. (6) Carbon (Kg): From 5 To 50. (7) Durability (Index): From 1 To 100. (8) Repairability (Rating): From 1 To 100.

Projects completed in past periods

The projects listed below have been completed in past periods. The ones at the top are currently used as the production platform of one or several of your marketed brands. The ones in italic, if any, are either no longer used or have never been used to produce a brand.

		Physical Characteristics								Base Cost in $			
	Available Since	Recyclable Materials (5)	Carbon (6)	Durability (7)	Repairability (8)	Design (1)	Battery (2)	Display (3)	Power (4)	Current	Minimum	Cumulative	Platform of Brand
POGENZ	Period 2	60	13	70	81	6	40	15	28	141	120	1,990	SOFT
POMEL	Period 2	54	21	74	58	8	49	26	60	180	149	1,810	SOMIL
POSOLO	Period 0	13	30	31	21	5	31	20	53	124	97	2,000	SOLO
POSOLO2	Period 3	50	25	55	50	6	96	39	43	135	135	1,530	N/A
POSOFT	Period 0	13	23	21	11	5	60	8	19	74	62	1,500	N/A

(1) Design (Index): From 3 To 10. (2) Battery (Hour): From 24 To 96. (3) Display (Inch): From 4 To 40. (4) Power (GFlops): From 5 To 100. (5) Recyclable Materials (%): From 5 To 80. (6) Carbon (Kg): From 5 To 50. (7) Durability (Index): From 1 To 100. (8) Repairability (Rating): From 1 To 100.

Figure 18 – R&D report – Sample chart & explanations

F. Decision Review (Past Decisions)

This report recalls the decisions that your team made at the beginning of the current period: brand management, distribution channels management, R&D projects and the market research studies purchased. Note that the decisions shown in Period 0 were made by the previous management team which you and your teammates have replaced.

The *Brand Portfolio* chart lists the brands that were marketed during the period, including the ones that were launched in that period. The base R&D project indicates which project was used as the platform of the brand.

The *Marketing Initiatives* table lists the initiatives that were ordered by your company.

The *Marketing Mix, Segmentation* and *Perceptual objectives* tables respectively show the marketing decisions made for the brand (advertising media and research budgets), segmentation strategy (i.e. how to allocate advertising across consumer segments), and communication objectives (in case of brand positioning or repositioning through advertising).

The *Distribution Channels* table shows the budget allocated to each brand and each distribution channel. Two graphs show how your commercial team resources (sales force) were allocated across channels and brands. The *R&D Projects* chart shows the projects that you have initiated or continued in the period in a format similar to the one of the R&D Report. The *Online Queries* chart reminds you of the online queries that you have requested from R&D while making your decisions to evaluate the budgets to allocate to projects. Note that this chart might be empty in case you ordered no R&D projects.

Finally, the *Market Research Studies* chart lists the studies that you have ordered. Note that this table might be empty in case you ordered no study.

G. Feedback from your coach

This report provides you with a list of feedback messages that have been generated by the simulation based on your firm and brand situations. This report is aimed at helping identify some critical issues within your

decisions and results. It is a nice complement to your own analysis, but certainly not a substitute. Make sure to spend a good part of your decision time to review and analyze your report and your market studies.

Your professor may decide to *hide* the automated feedback. Some professors prefer to provide their own feedback while facilitating the Circular Markstrat group work. Others want to make sure that you to do your own analysis and are not misled by automatically generated messages.

The feedback starts with a section on your firm and continues with a section for each of your brands. The feedback messages focus mainly on your weaknesses and issues rather than on your strengths or successes. So, do not be surprised if your only get *negative* messages.

Some messages are highly important and require immediate corrective actions. Other messages are less important as they will only lead to a minor improvement of your decisions and results. Finally, a few messages cannot be ignored if the suggested actions are not part of your strategy.

At the firm level, you will be notified if:

- A large proportion of your contribution is generated by a unique brand.
- You market a small number of offerings compared to other competitors.
- No or few leading brands.
- Your brands are targeted at non-attractive segments and/or markets.
- Your revenues are not growing and/or your costs are growing more rapidly than your revenues.
- Etc.

At the brand level, you will be notified if:

- Your market share in decreasing.
- Your brand perceptions are not quite different from segment's expectations.
- Your price is too high.
- Your price does not take advantage of a strong competitive position.
- You have lost sales due to production shortage.
- You have accumulated a large inventory because of a production surplus.
- Your awareness is much lower than that of your competitor and your sales would increase with additional advertising.
- You have not set perceptual objectives or your spending in advertising research is too low.
- You have lost sales due to a poor distribution (small budget allocated to distribution channels).
- Your commercial efforts are not aligned with the shopping habits of your consumers.
- You could benefit from a cost-reduction R&D project.
- Etc.

Some numbers will be hidden in the messages if you did not purchase all market studies.

3. Market Research Studies

You may purchase up to 23 Market Research Studies each period. The following list provides a brief summary of information within each study.

A. Industry Benchmarking

The benchmarking study compiles general information from annual reports about each of the Circular Markstrat competitors. The same data is provided in a common format for all companies in such a way that would allow you to compare competitive performance. Summary graphs are provided as well to facilitate the comparison of key data across competitive teams.

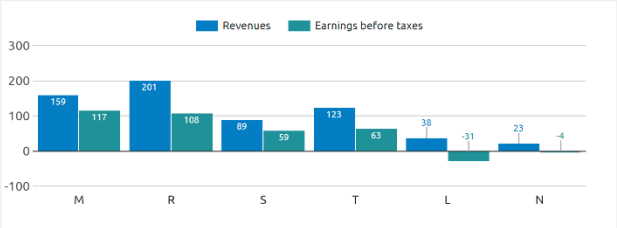
The data provided includes sales, production costs, marketing expenditures and other expenses, including R&D. See Figure 19 for a sample benchmarking study.

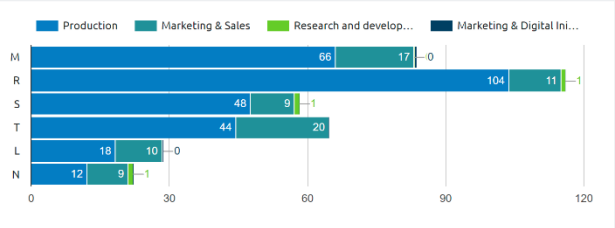
Industry Benchmarking – Period 5

The benchmarking study compiles general information from annual reports about each of the Markstrat competitors. Data is provided in a common format for all companies to allow an easy comparison of competitive performance.

Overall Company Performances and Expenditures

The two charts below show the overall performances of the competing firms in terms of revenues and profits, in million $, as well as their expenditures in the main cost categories in million $.





Company Profit & Loss Statements

The table below provides an estimated P&L statement of the competing firms, in the same format as the one in your financial statements. All numbers are given in million $.

	MOON	Rocket	SOLO	TOMATE	LesNuls	Nonstop
Revenues	159.3	201.4	88.5	122.6	37.5	22.6
Cost of goods sold	-66.0	-101.8	-44.2	-42.3	-14.2	-10.0
Inventory costs	0	-2.0	-3.5	-2.2	-4.1	-2.1
Contribution before marketing	93.4	97.6	40.8	78.1	19.2	10.5
Advertising expenditures	-12.7	-7.3	-6.4	-13.1	-6.7	-4.0
Distribution Channels	-4.4	-3.9	-3.1	-7.2	-3.4	-5.0
Contribution after marketing	76.2	86.4	31.4	57.9	9.1	1.6
Market research studies	-0.6	-0.3	-0.6	-0.6	-0.6	-0.6
Research and development	-0.1	-1.0	-1.2	0	0	-1.3
Initiatives	-0.5	0	0	0	-0.2	0
Loan reimbursed	0	0	0	0	0	0
Interests paid	0	0	0	0	0	0
Exceptional cost or profit	41.8	22.9	29.3	5.6	-39.3	-4.2
Earnings before taxes	116.8	108.0	58.8	62.9	-31.0	-4.4
Next Period Budget	23.4	21.6	11.9	12.6	11.9	11.9

Figure 19 – Market Research – Industry Benchmarking

B. Consumer Survey

The consumer survey is a survey questionnaire administered to 3,000 individuals during the simulated period. It gives brand *awareness*, *purchase intentions* and *shopping habit* data for each consumer segment in the market.

The brand awareness figures represent the proportion of individuals who have unaided recall of a brand name. This is obtained by asking respondents a question such as: “What Sonite brands do you know?” and allowing them to list several brands. The report gives the information for each brand currently on the market in total and by consumer segment. See Figure 20 for a sample graph showing average awareness figures.

Brand Awareness

The brand awareness figures in the chart and table below represent the proportion of individuals who have unaided recall of a brand name. The report gives the information for each brand currently on the market, in total and by consumer segment.

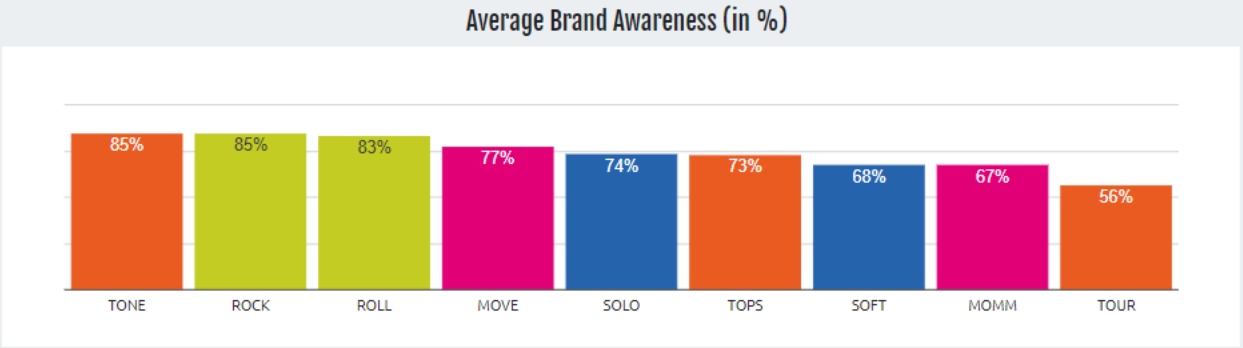


Figure 20 – Market Research – Consumer Survey – Average Awareness

The purchase intentions figures represent the proportion of individuals who would select a brand as their first choice, if they were buying within a year. This is obtained by asking respondents a question such as: *"Do you intend to purchase a Sonite brand this period?"* If the response is yes, then respondents are asked to indicate the brand of their choice. The report gives the information for each brand currently on the market in total and by consumer segment. See Figure 21 for a sample chart. Please note that these figures correspond to the period when the study is done and does not necessarily represent purchase intentions for the following year.

Two points require additional explanations. First, awareness is *factored in* purchase intentions. Indeed, if respondents are not aware of a specific brand, they will not list this brand as the brand of their first choice. Second, purchase intentions are *normalized* to sum up to 100%. This facilitates the comparison between purchase intentions and market shares.

Purchase Intentions by Consumer Segment

Brand	Firm	Professional	Baby Boomers	Gen-X	Millennials	Gen-Z
MOMM	MAGENTO	1 %	1 %	17 %	6 %	2 %
MOVE	MAGENTO	0 %	2 %	2 %	22 %	23 %
ROCK	RATIONAL	43 %	7 %	19 %	8 %	2 %
ROLL	RATIONAL	44 %	6 %	18 %	8 %	2 %
SOFT	Strong	0 %	1 %	1 %	6 %	23 %
SOLO	Strong	0 %	2 %	2 %	14 %	17 %
TONE	TERMINAT	12 %	9 %	38 %	11 %	3 %
TOPS	TERMINAT	0 %	72 %	2 %	20 %	3 %
TOUR	TERMINAT	0 %	0 %	1 %	6 %	26 %

Figure 21 – Market Research – Consumer Survey – Purchase intentions by segment

The shopping habit data represent, for each of the three channels, the proportion of individuals who would choose that channel when shopping for a Sonite product. See Figure 22 for a sample graph.

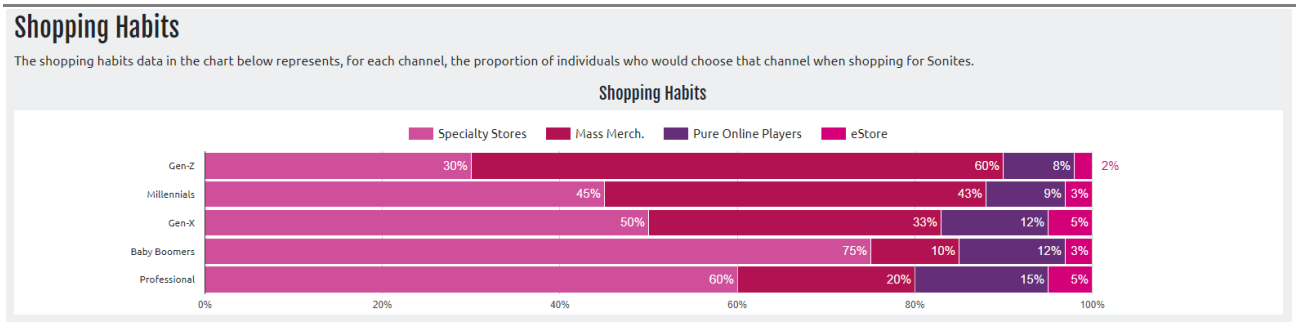


Figure 22 – Market Research – Consumer Survey – Shopping habits

C. Consumer Panel

The consumer panel study is based on a sample group of over 500 consumers whose buying behavior is believed to be representative of the entire market. It provides market share by consumer segment, as well as industry sales in the product category. The market share figures represent the proportion of individuals who have purchased a given brand during the simulated period. The report gives the information for each brand currently on the market in total and by consumer segment; see Figure 23.

Market Shares by Consumer Segment (%Unit)

Brand	Firm	Professional	Baby Boomers	Gen-X	Millennials	Gen-Z
MOMM	MAGENTO	1 %	0 %	8 %	4 %	2 %
MOVE	MAGENTO	0 %	1 %	1 %	14 %	20 %
ROCK	RATIONAL	48 %	5 %	15 %	9 %	3 %
ROLL	RATIONAL	22 %	2 %	6 %	4 %	1 %
SOFT	Strong	0 %	0 %	0 %	2 %	11 %
SOLO	Strong	0 %	0 %	0 %	1 %	2 %
TONE	TERMINAT	28 %	13 %	67 %	26 %	8 %
TOPS	TERMINAT	0 %	78 %	3 %	31 %	5 %
TOUR	TERMINAT	0 %	0 %	1 %	9 %	49 %

Figure 23 – Market Research – Consumer Panel – Market shares

Additional charts give the unit product category sales by consumer segment and in total. The relative sizes of the consumer segments are provided as well in Figure 24.

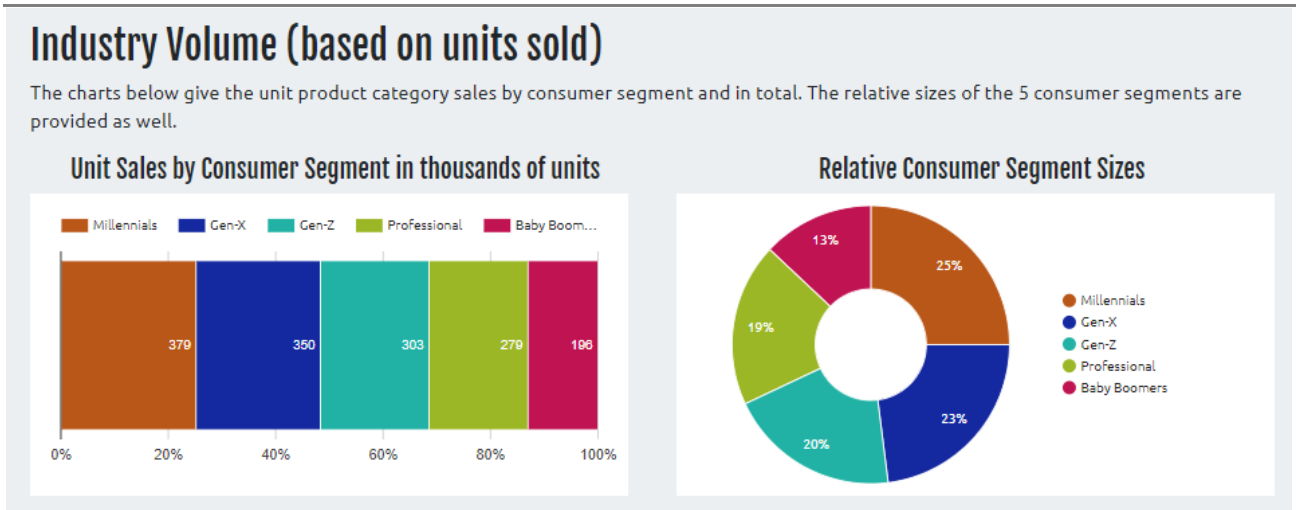


Figure 24 – Market Research – Consumer Panel – Market shares

D. Customer Centricity

Customer centricity is a report analyzing the customer purchasing decision. The result takes the shape of the "purchase funnel", presenting the steps in customer's purchase decision:

- **Awareness** – Extent to which a product is recognized by potential consumers and is correctly associated with a particular product.
- **Consideration** – Consumer evaluation of how your offering meets this need, including the evaluation of offerings from your competitors.
- **Preference** – Consumer's logical and emotional inclination towards one solution or another, which may ultimately lead to a purchasing decision.
- **Purchase intention** – Extent to which consumers intend to purchase the product if they can find it.
- **Market share** – Extent to which consumers did buy your product.
- **Loyalty** – Likelihood that previous consumers will continue to buy your product.
- **Advocacy** – Likelihood that consumers will promote and recommend your product.

The purchase funnel can be examined by products and by consumer segment (using drop down menus).

Note that awareness, purchase intentions and market shares mentioned in the purchase funnel (customer centricity) are also mentioned in consumer survey and consumer panel discussed above (B. Consumer survey and C. Consumer panel).

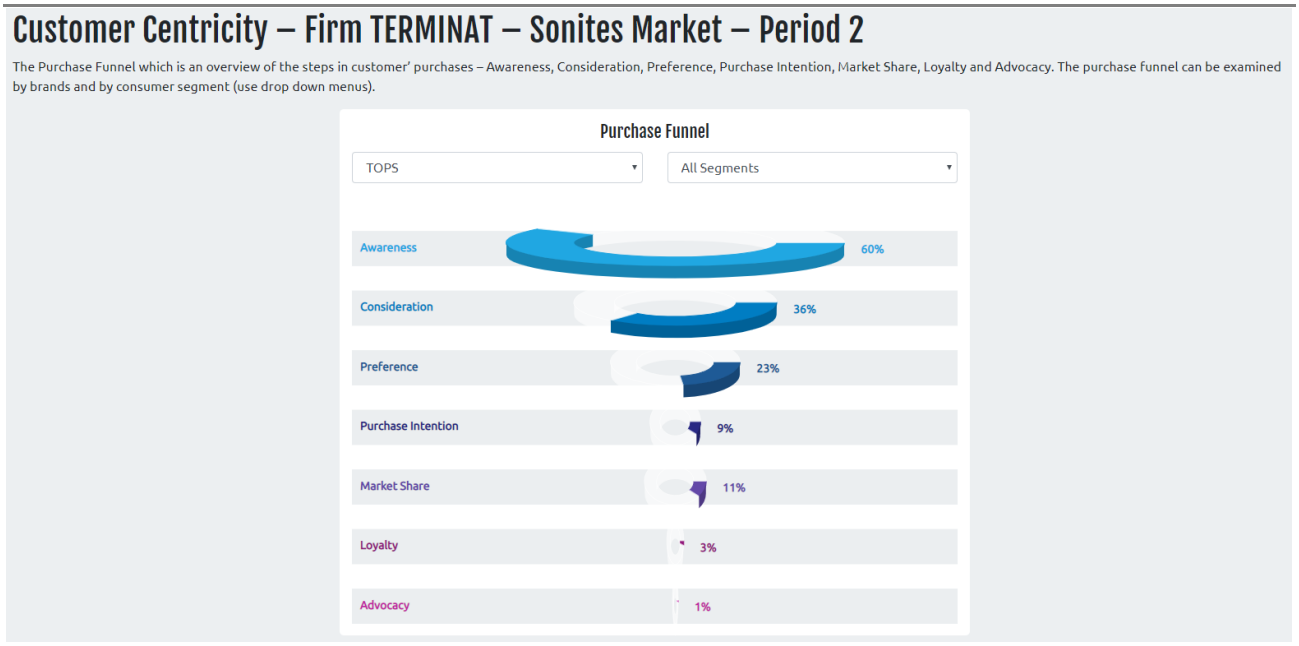


Figure 25 – Market Research – Customer Centricity – Purchase Funnel

Marketing, Digital Marketing and Circular Economy Initiatives ("marketing powerhouse") do have an impact on the consumer's purchase funnel. Initiatives impact the purchase funnel differently:

- some initiatives are more relevant to stimulate the top of the funnel: **AWARENESS**
- other initiatives are more useful to generate more **INTEREST (consideration + preference)**
- others are more likely to boost sales and raise **ACTION (purchase intentions + market shares)**
- others are more relevant to enhance customer's **ENGAGEMENT (loyalty + advocacy)**

In addition to the purchase funnel of each of your brands, the Customer Centricity report provides a review of the marketing, digital and circular initiatives implemented in last period with their impact at firm and brand levels as shown in Figure 26.

Initiatives Impact

Marketing, Digital Marketing and Circular Economy Initiatives ("marketing powerhouse") do have an impact on the consumer's purchase funnel ("Customer's centricity").
More specifically, depending on the type of initiative that you launch, it may impact:

- AWARENESS
- INTEREST (consideration + preferences)
- ACTION: (purchase intentions + market shares)
- ENGAGEMENT (loyalty + advocacy)

The Table below reflects the estimated impact of having launched an initiative at the brand level.

You have implemented 1 marketing/digital/circular initiative(s) last period (Packaging). These initiatives had an estimated global effect at the firm's level as follows: Medium impact on Awareness, No impact on Interest, Very high impact on Action and No impact on Engagement. The Table below reflects the estimated impact at the brand level.

	Awareness	Interest	Action	Engagement
SOFT	0.13 %	0.00 %	1.70 %	0.00 %
SOLO	0.00 %	0.00 %	0.00 %	0.00 %
SOMIL	0.14 %	0.00 %	0.26 %	0.00 %

Figure 26 – Market Research – Customer Centricity – Marketing, Digital and Circular Initiatives

E. Distribution Panel

The distribution panel provides continuous tracking of product sales to consumers based on information gathered at the retail point-of-sale. Information is primarily gathered from scanning cash-registers with supplementary store audits. Our read represents sales in about 17,000 retail outlets in the Circular Markstrat world. The table and charts of this study provide the market shares, based on unit sold, by channel for each brand currently on the market. They also give the unit product category sales by channel and in total. The relative sizes of the channels are provided as well in Figure 27.

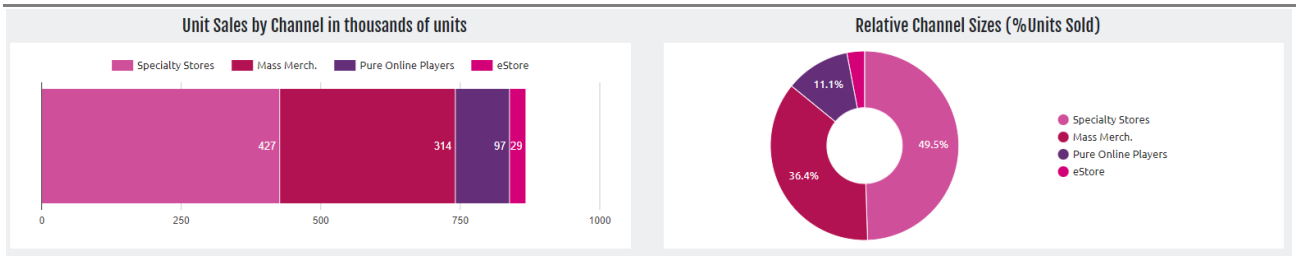


Figure 27 – Market Research – Distribution Panel – Channel sales

The distribution coverage figures in Figure 28 represent the proportion of stores that carry a given brand. The report gives the information for each brand currently on the market. The number of outlets in each distribution channel is provided as well. eStores are not referenced in the "distribution coverage" table, as it is direct distribution (company's own online store).

Distribution Coverage

The distribution coverage figures in the charts and table below represent the proportion of stores who carry a given brand. The report gives the information for each brand currently on the market. The number of outlets in each distribution channel is provided as well.

eStore is not part of this study, as it represents the online « store » of your company and distributes directly your products as a direct distributor.

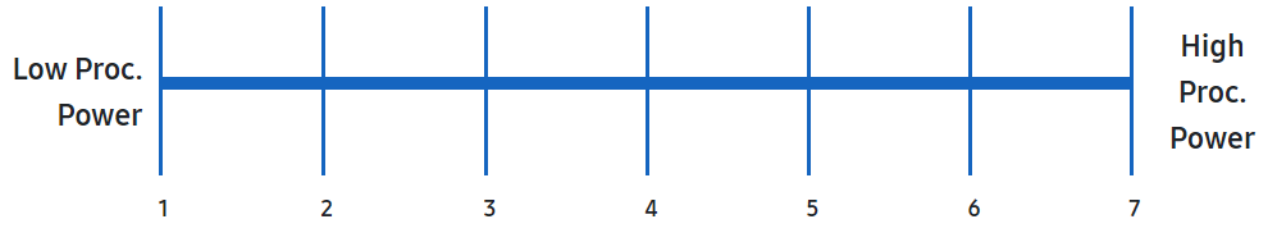
Distribution Coverage by Channel (%Stores)

Brand	Firm	Specialty Stores	Mass Merch.	Pure Online Players
LOCK	L	39 %	32 %	34 %
LOOP	L	42 %	34 %	41 %
MOST	M	20 %	47 %	35 %
MOVE	M	23 %	48 %	38 %
ROCK	R	50 %	37 %	40 %
ROLL	R	48 %	35 %	39 %
SOFT	S	31 %	43 %	43 %
SOLO	S	31 %	41 %	43 %
TONE	T	45 %	36 %	41 %
TOPS	T	45 %	36 %	41 %

Figure 28 – Market Research – Distribution Panel – Distribution coverage

F. Semantic scales

The semantic scales study provides data based on a semantic differential questionnaire administered to 600 individuals. Several semantic scales corresponding to the physical attributes were presented to the respondents. The figure below shows a sample scale for “Processing Power”.



Crucial information is derived from these questionnaires: brand perceptions, ideal value along each scale, ideal value evolution, brand maps and ship between brand attributes and brand perceptions.

Brand perceptions. Respondents are asked to rate each brand on a scale from 1 to 7 according to the way they perceive the brand. The reported results are summarized in a table such as the one in Figure 29, using the mean value for each brand. For example, a brand rated 2.3 on the Power scale is perceived as being less *powerful* than a brand rating 5.5 on the same scale.

Brand perceptions

Respondents are asked to rate each brand according to the way they perceive the brand on each characteristic. The reported results are summarized in the table below, using the mean value for each brand.

Brand	Firm	Design	Battery	Display	Proc. Power	Recyclable Materials	Carbon Footprint	Durability	Repairability	Price
LOCK	L	1.8	1.7	2.4	1.8	2.4	5.9	2.7	3.3	2.3
LOOP	L	4.5	5.0	4.9	5.3	4.7	5.0	3.3	4.0	6.3
MOST	M	1.5	2.5	2.7	2.4	2.7	3.4	1.8	2.1	2.5
MOVE	M	4.5	4.6	1.8	5.9	3.3	4.2	3.3	3.0	5.3
ROCK	R	5.4	5.0	6.2	6.5	2.7	5.6	2.1	3.0	5.8
ROLL	R	6.5	4.0	1.8	5.6	3.3	5.9	4.3	4.7	6.4
SOFT	S	2.6	4.0	1.6	1.8	1.6	3.0	2.1	1.6	2.3
SOLO	S	2.6	1.5	3.6	4.1	1.6	4.6	2.7	2.1	4.9
TONE	T	5.4	5.5	6.5	5.3	4.1	6.5	4.0	4.0	6.3
TOPS	T	6.2	2.5	1.8	4.7	2.1	6.1	1.8	4.3	5.6

Figure 29 – Market Research – Semantic Scales – Brand perceptions

Ideal values. Respondents are also asked to indicate their preferred (also called “Ideal”) value on each scale. The reported results are summarized in a table such as the one in Figure 30, using the mean value for each segment.

Ideal Values

Respondents are also asked to indicate their preferred (also called “Ideal”) value on each scale. The reported results are summarized in the table below, using the mean value for each segment.

Segment	Design	Battery	Display	Proc. Power	Recyclable Materials	Carbon Footprint	Durability	Repairability	Price
Professional	5.7	5.0	5.3	5.0	2.2	5.3	5.1	3.7	4.8
Baby Boomers	1.7	6.2	6.1	6.4	3.6	5.3	4.7	3.3	3.4
Gen-X	6.1	3.5	4.7	4.7	4.0	4.3	3.4	3.2	5.5
Millennials	5.2	3.0	4.0	3.8	4.7	3.0	5.5	4.3	3.2
Gen-Z	3.9	1.7	2.5	2.2	5.2	1.6	4.8	5.8	2.1

Figure 30 – Market Research – Semantic Scales – Ideal values

Importance of characteristics. Finally, respondents are asked to rate the importance of each characteristic in their purchasing decision. Although consumer segments differ on the exact importance attributed to each characteristic, they tend to agree on the ranking of the scales, i.e. their “relative” importance. This is why only average values are reported on the chart of Figure 31. Ratings are given on a scale from 1 (not important) to 10 (very important).

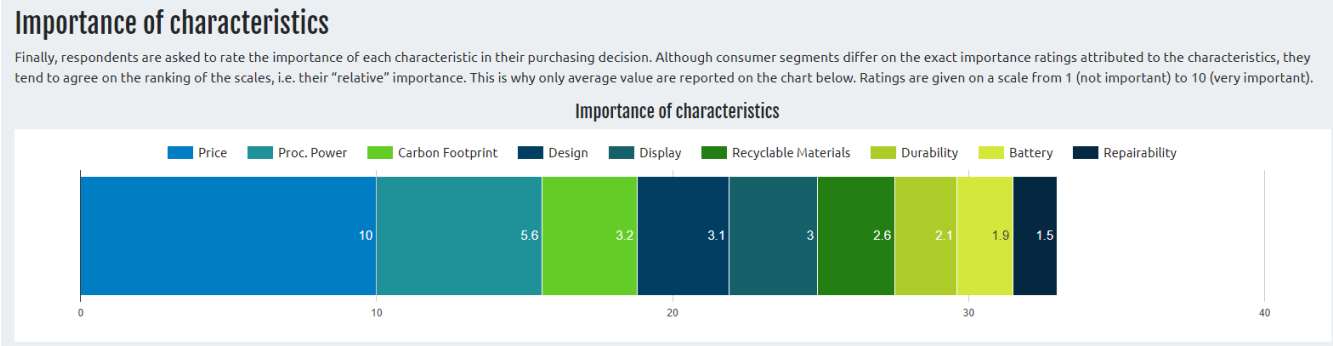


Figure 31 – Market Research – Semantic Scales – Importance of characteristics

Brand maps. Additional charts and graphs are available in the study. Brand maps provide a graphical representation of ideal values and brand perceptions on two dimensions at a time. Five maps are provided in the study.

Ideal value evolution. The study monitors the evolution of consumer needs over time. The preferred values on each scale over the past 3 years are recorded and displayed in a table for each consumer segment, as shown on Figure 58.

Additional graphs. The charts and graphs listed above are given in the main report of the study. Two additional series of charts can be found by clicking on a link at the top of the study. The first series will provide you with a graphical representation of ideal point evolution since the beginning of the simulation. The second series shows the relationships that exist between brand physical characteristics and brand perceptions. These charts are mostly used to design R&D projects are discussed in more details in chapter VI.

G. Multidimensional scaling of brand similarities and preferences

This study provides a joint space configuration obtained with non-metric multidimensional scaling (MDS). It relies on similarity and preference data on the complete set of brands available in the market. These data were obtained through interviews with 200 individuals. Several charts and graphs are given in this study, as explained in the next few paragraphs.

Perceptual Maps. Respondents are asked to indicate how similar (or dissimilar) they perceive each pair of brands manufactured in the market (e.g. Sama and Most). Starting from this similarity assessment of all pairs possible, MDS is used to translate pairwise similarities into a configuration of points along several dimensions. The study gives the minimum number of dimensions that are sufficient to provide a good fit to the data. In the case of the Sonite product category, four dimensions are necessary: *Economy, Performance, Convenience and Circularity*. Then, the study provides a graphical representation of the perceptual positioning of the marketed brands.

Respondents are also asked to indicate their preferred (also called "Ideal") position on the map. The reported results are summarized on the map, using the mean value for each segment. A sample perceptual map is depicted in Figure 32.

Obviously, only two dimensions out of the four can be represented simultaneously. The circles *Profs, Boomers, GenX, GenZ, Millenials* on the graph represent the ideal points of the five segments, i.e. the *average* position of the whole segment. The various geometric shapes (square, triangle, star...) correspond to the positioning of the brands as they are perceived by the market at the time of the study. Each brand name is clearly labeled. One specific color and shape is attributed to each firm (for example, all brands marketed by firm S are represented by blue circles).

One key difference between this study and the semantic scale one is that the dimensions on which to evaluate the brands are not given to the respondents. Instead, these dimensions are identified by the methodology from the respondents' data on perceived similarity between pairs of brands.

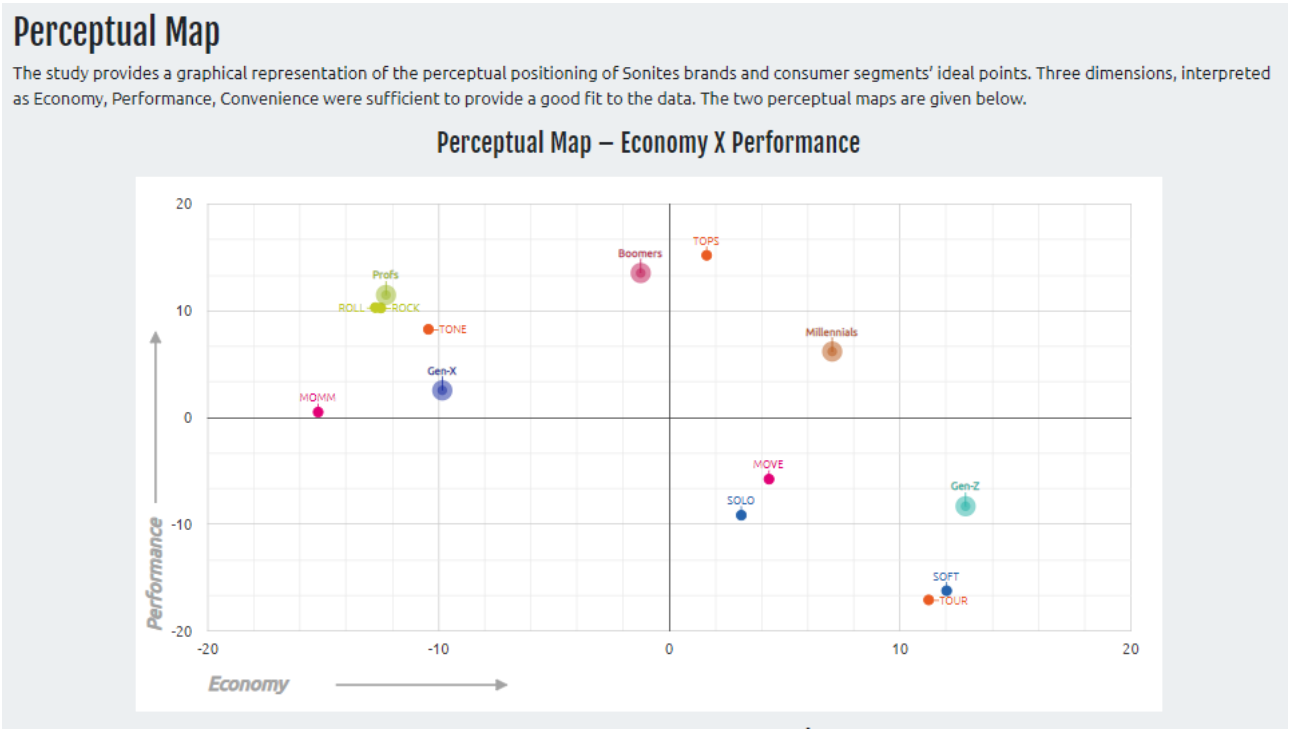
Building a perceptual map is a complex task that requires many data points. As enough brands are commercialized from the beginning of the simulation in period 0 (two Sonite brands per firm), this study will be available in period 1 Market Research report (if ordered).

Two tables give the coordinates of the brand positions and of the consumer segment ideal points on the perceptual map, on a scale from -20 to +20.

Ideal value evolution. The study monitors the evolution of consumer needs over time. For each consumer segment the preferred values on each dimension over the past 3 years are recorded and displayed in a table.

Influence of Product Characteristics on Perceptual Dimensions. We will see in the chapter "Positioning and Research & Development" that the MDS study is useful in positioning brands. This is why it is important to relate the three dimensions identified by the MDS study to the most important physical characteristics of the category. An indication of the influence of product characteristics on perceptual dimensions is provided in a table such as the one in Figure 33. For example, you may see that "Performance" is strongly related to "Processing Power" and moderately to "Display Size", while "Convenience" is strongly related to "Design" and only slightly related to "Battery Life" or "Features".

Additional graphs. The charts and graphs listed above are given in the main report of the study. Two additional series of charts can be found by clicking on a link at the top of the study. The first series will provide you with a graphical representation of ideal point evolution since the beginning of the simulation. The second series shows the relationships that exist between brand physical characteristics and brand perceptions. These charts are mostly used to design R&D projects are discussed in more details in chapter VI.



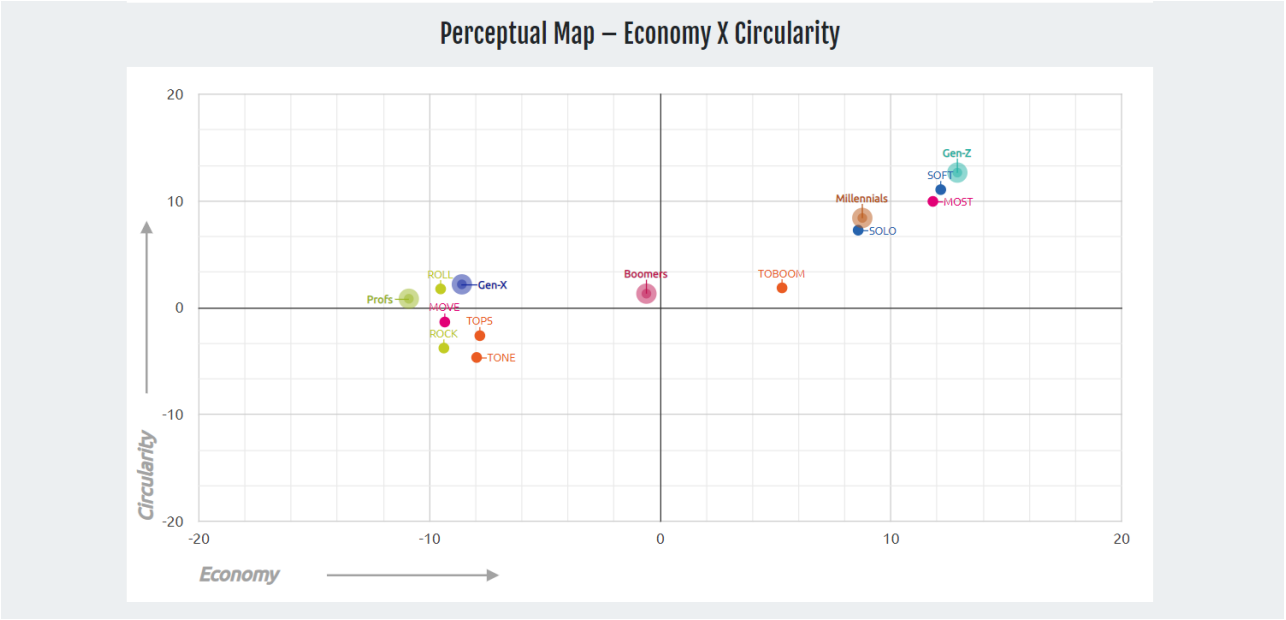


Figure 32 – Market Research – MDS Study –
Perceptual map (Economy X Performance) and (Economy X Circularity)

Influence of Product Characteristics on Perceptual Dimensions

An indication of the influence of product characteristics on perceptual dimensions is provided in the table below to help you interpret the dimension that were derived from the study.

Dimension	Design	Battery	Display	Proc. Power	Recyclable Materials	Carbon Footprint	Durability	Repairability	Price
Economy	Slight	None	None	Slight	None	None	None	None	Strong
Performance	None	None	Slight	Strong	None	None	None	None	Slight
Convenience	Strong	Slight	None	Slight	None	None	None	None	Slight
Circularity	None	None	None	None	Moderate	Strong	Moderate	Slight	None

Figure 33 – Market Research – MDS Study – Influence of Product Characteristics

H. Competitive Advertising and Distribution Channels Estimates

The "Competitive Intelligence" report provides estimates of the advertising and commercial budgets spent by the companies in each market during the simulated period.

Competitive Advertising. Competitive advertising budgets are given by firm, by brand and by consumer segment. The breakdown by brand and consumer segment is also provided. All brands marketed in the current period are included in the study. See Figure 34 for an extract of this study.

Estimated Communication Dimensions and Message Quality. This section provides an estimate of the dimensions that have been used by all brands in their communication, as well as an estimate of the message quality. The message quality is a function of the level of *advertising research* budget allocated to a brand, as well as its position towards the targeted segment's ideal point *(perceptual communication objectives)*.

Estimates of Competitive Expenditures on Distribution Channels. This study estimates the expenditures (in $), by firm, brand, for all four distribution channels (expenditures linked to the commercial team are provided in $), in total and by distribution channel. All brands marketed in the current period are included in the study. See Figure 35 for an extract.

Estimated Brand Advertising Expenditures (in thousand dollars) – Total and by Consumer Segment

Brand	Professional	Baby Boomers	Gen-X	Millennials	Gen-Z	Total
MOMM	380	160	270	170	160	1,140
MOVE	190	190	440	120	310	1,250
ROCK	680	570	420	620	310	2,600
ROLL	530	480	590	430	320	2,350
SOFT	110	110	110	110	800	1,240
SOLO	110	110	800	110	110	1,240
TONE	730	260	1,100	470	260	2,820
TOPS	100	680	100	310	100	1,290
TOUR	100	100	100	210	570	1,080

Figure 34 – Market Research – Competitive Advertising – Brand expenditures

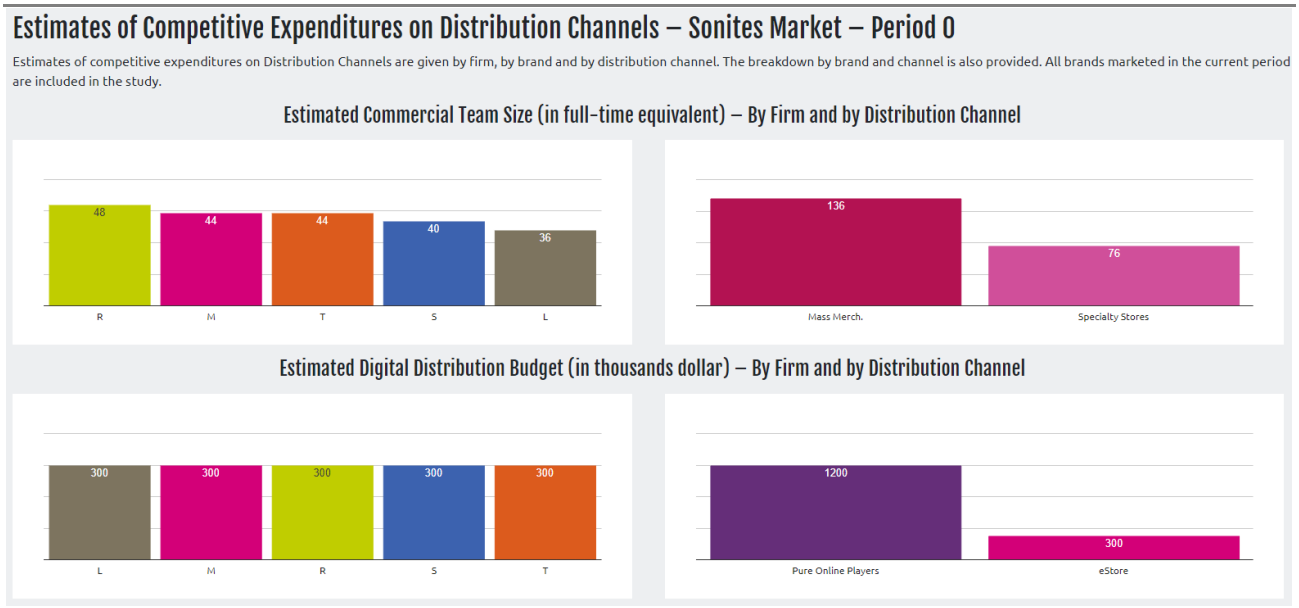


Figure 35 – Market Research – Competitive Distribution Channels – by firm and channel

I. Media Reporting

This Report contains all information related to media.

Media Share of Voice & Coverage. Share of voice measures how much of the conversation with target consumers your product owns versus your competitors. This conversation can be on social media, your blog, and any other place your target audience can hear from products. Media coverage is used to refer to all blog articles, RSS feeds, video content or other types of digital content (produced by individuals or organizations other than your own company) where your product, products or services are discussed or shown.

Media Habits & Return on Marketing Investment. The segments media habits represent the media usage of any target group. Usually, this research is used by media planners at the highest levels of media buying. Return on marketing investment (ROMI) is the contribution to profit attributable to marketing (net of marketing spending), divided by the marketing 'invested' or risked.

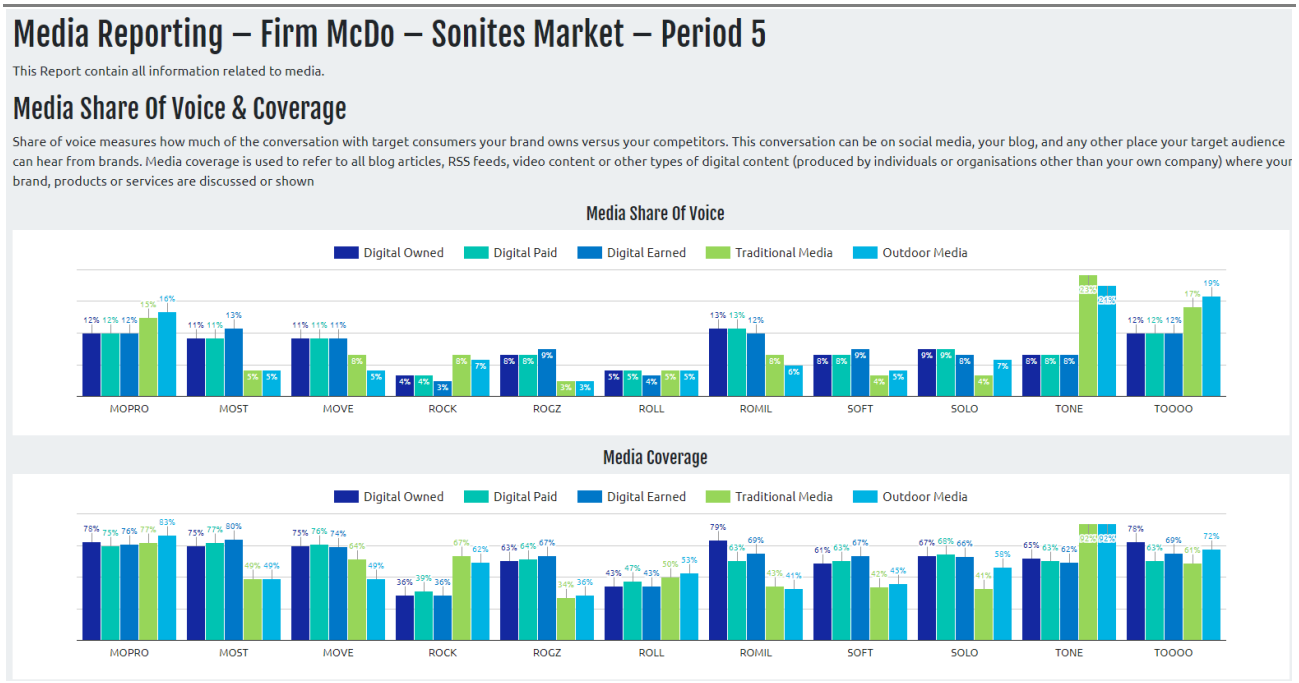


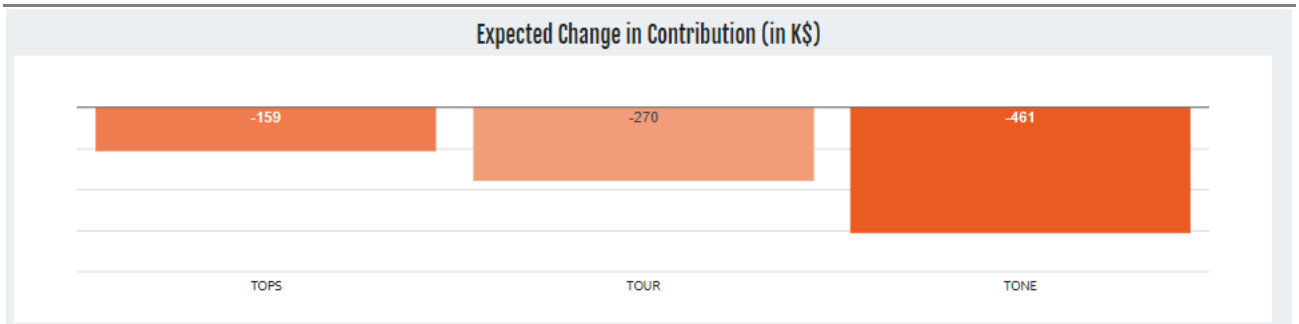
Figure 36 – Market Research – Media Reporting – Media share of voice & coverage

J. Advertising and Distribution Channels Experiments

The "Experiment" report provides the results of advertising and distribution channels experiments that are conducted in a selected regional test market during the simulated period.

Advertising experiment. An advertising experiment is conducted by increasing advertising budgets in a selected regional market. The results of the study are used to predict the level of awareness, of market share and of brand contribution that would have been achieved nationwide by each brand with an of increase by 20% of advertising budget and if competitive actions had remained unchanged. An increase in contribution for a given brand shows that you would have benefited from advertising for this brand. The layout of this study is very similar to that of the distribution channels experiment, illustrated in Figure 37.

Distribution Channels experiment. This experiment is set up by increasing the size of the commercial team or budget in each channel in a selected regional market. The results of the study are used to project the additional number of distributors, the market share and the brand contribution that would have been achieved nationwide by each brand with an increase of 10 salespeople (in Specialty Stores and Mass Merchandisers) or with an increase of 10% of the commercial budget (in Pure Online Players and eStores), if competitive actions have remained unchanged. An increase in contribution for a given brand shows that you would have benefited from allocating more budget to this brand. See Figure 37 for a sample screenshot of this study.



Expected Change in Number of Distributors

Brand	Specialty Stores	Mass Merch.	eCommerce	eStore
TONE	0	32	2	0
TOPS	0	39	3	0
TOUR	42	0	3	0

Expected Change in unit Market Share (%U)

Brand	Specialty Stores	Mass Merch.	eCommerce	eStore
TONE	0.0 %	0.0 %	0.1 %	0.1 %
TOPS	0.0 %	0.1 %	0.1 %	0.1 %
TOUR	0.1 %	0.0 %	0.1 %	0.1 %

Figure 37 – Market Research – Distribution Channels Experiment

K. Market Forecast

This study provides estimates of the expected market size in one period and in five periods. Results are given for the whole market and are also broken down by consumer segment. These estimates are based on the current market situation and assume that no substantial changes such as brand introductions, or significant price increases or decreases will take place in the future. Consequently, depending on what actions are taken by your firm and your competitors, the resulting market size will either be higher or lower. See Figure 38 for an extract of this study.

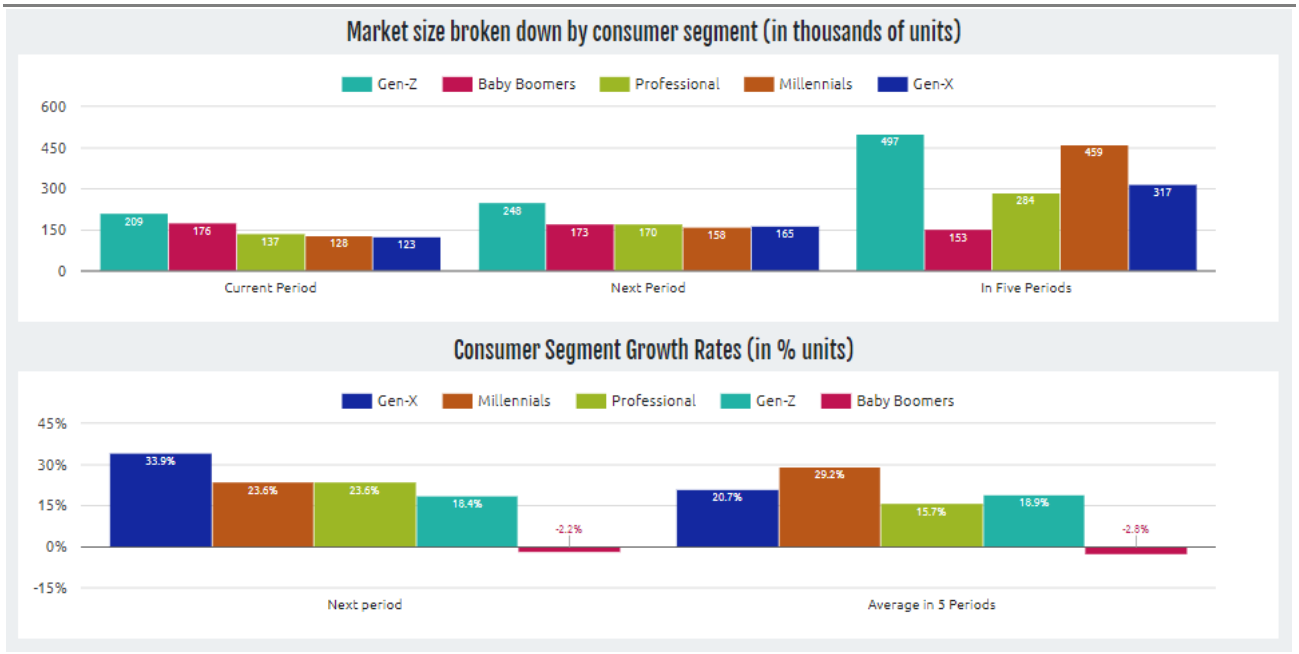


Figure 38 – Market Forecast – Market Size broken down by Consumer Segment

L. Conjoint Analysis

Conjoint analysis is a statistical technique used to calculate the value – also called *partial utility* – attached by consumers to varying levels of physical characteristics and/or price. Conjoint analysis is conducted by showing respondents a set of fictitious products called profiles – each profile having a specific price and specific levels of a limited number of attributes – and asking respondents to sort these profiles by decreasing order of preference (or to rate them). By analyzing the preference data and the combination of attributes

and price for each product, the methodology evaluates the partial utility (preference) attached by respondents to each individual characteristic making up the product (from global preferences expressed by respondents about each profile).

This study is rather complex and expensive and is therefore not always made available to participants. Check with your professor if this study will be available in your course. The complexity of the study increases dramatically with the number of attributes and the number of levels included in the study. Hence, only price and the three physical characteristics that are perceived as most important are studied; four levels are tested for each attribute. For instance, the four prices $288, $367, $446 and $525 will be tested.

Relative importance of price and physical characteristics. The chart depicted in Figure 39 – Conjoint Analysis – Relative importance of attributes

shows the relative importance of price and the three physical characteristics that are perceived as most important in the market. Note that importance ratings for a given segment sum to 100%.

Utility charts. The charts depicted in Figure 40 show the partial utilities attached to four levels in each dimension included in the study. Partial utilities are measured on a scale from 0% (very low utility) to 100% (very high utility): the higher the partial utility, the higher the consumer's preference for the corresponding level of this characteristic. The four levels have been chosen in the feasible range for the dimension (e.g.: from 5 to 100 for Proc. Power) to test varying levels of interest. Results are broken down by consumer segment.

It Is important to note that the level with the highest utility is **not** necessarily the **ideal** level, as given in the semantic scales or MDS studies. For instance, in Figure 40, the ideal price may be anywhere between $288 and $525.

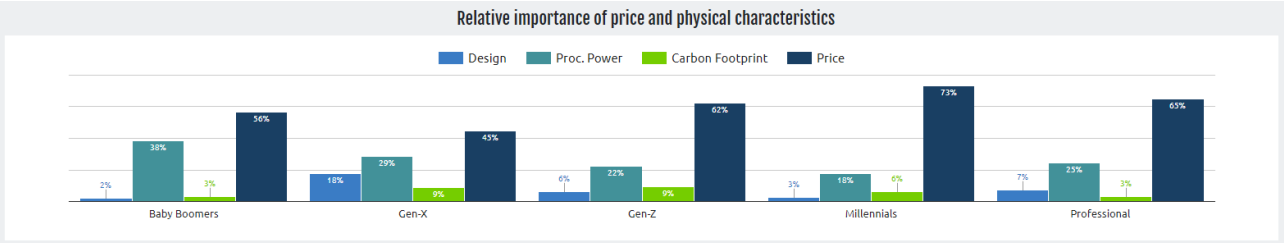


Figure 39 – Conjoint Analysis – Relative importance of attributes

Figure 40 – Conjoint Analysis – Utility charts

M. Semantic Scales versus Multidimensional Scaling versus Conjoint Analysis

The three studies semantic scales, multidimensional scaling and conjoint analysis give information on how to reposition a brand to provide more value to consumers. For the semantic scales and multidimensional scaling studies, your objective should be to get closer to the ideal point of the targeted segment. For the conjoint analysis study, your objective should be to maximize the overall utility of your brand.

In most cases, the three studies will give consistent results. So, the question "which of these three studies should I use?" is frequently asked by participants. You will find below some recommendation about which study to use and when.

- Use the Semantic Scales study to design R&D projects, i.e. to determine the *ideal* level in each physical characteristic. This study is very much appropriate to do this because there is a one-to-one relation between the dimensions of the study and product physical characteristics.

- Use the MDS study to decide on your strategy. The MDS study is great for strategy because it provides a helicopter view of the entire competitive situation. Putting the two perceptual maps next to each other on the same page or screen will help you; find where to reposition your existing brands; where to launch new ones; and, last but not least, anticipate the moves of your competitors.
- Use the MDS study also for communication. The reason is twofold: (1) you will communicate on the dimensions that really matter to your customers: Economy, Performance, Convenience, …; (2) You can reposition a brand along more physical characteristics by using MDS than by using Semantic Scales.
- Use Conjoint Analysis to validate or invalidate the findings made with the other two studies. Will the new characteristics or price of my product maximize total utility? But be cautious: this study may be misleading because only four levels are tested along four dimensions. The optimal level for a given dimension is usually in between two of the four tested values, but you do not know where exactly.

4. Tools

This menu will usually be available as of Period 3.

The Tools section provides you with a charting tool as well as with other decision-support tools that may become available at a later stage depending on your instructor.

The charting tool is depicted on Figure 41. It provides you with a multitude of graphs and with a scorecard. It is pretty easy to use. The menu at the top lists all the available graphs and charts. Select one of them in the list to display it in the main window.

Depending on the chart that you have selected, additional drop-down choice boxes will show up below the menu, as shown on Figure 41. These choice boxes will let you zoom in a particular market, segment, channel, period or firm. They may also be used to view the data in units (e.g.: volume sold) or in value (e.g.: retail sales). The Next and Previous buttons let you navigate across all graphs without using the menu.

All charts may be copied and pasted in PowerPoint; printed or saved in a file. Click on the chart and right-click your mouse to show a menu that will let you choose what you want to do with the picture.

A. Graphs

Over 50 graphs can be plotted. They are organized in 5 categories.

- **Market**. Evolution of selected market data: market sizes and growth rates; segment sizes; number of marketed brands; prices, market average and by consumer segment.
- **Performanc**e. Evolution of key performance indicators at firm level: retail sales; sales and shares by market, segment and channel; contribution (profit) per period and cumulative; return on investment; share price index.
- **Benchmarking (M$ and %Revenues**). Evolution of profit and loss data at firm level: retail sales; revenues; production costs; marketing costs; R&D costs; profit; etc. Benchmarking charts are available in million dollars as well as in percentage of revenues to allow an easier comparison across firms of varying sizes.
- **Brand chart**s. Evolution of key performance indicators at brand level: retail sales; market shares; contribution. Brand charts are available in varying format, for instance top 5 brands across all marketed brands, or only the brands of a selected firm.

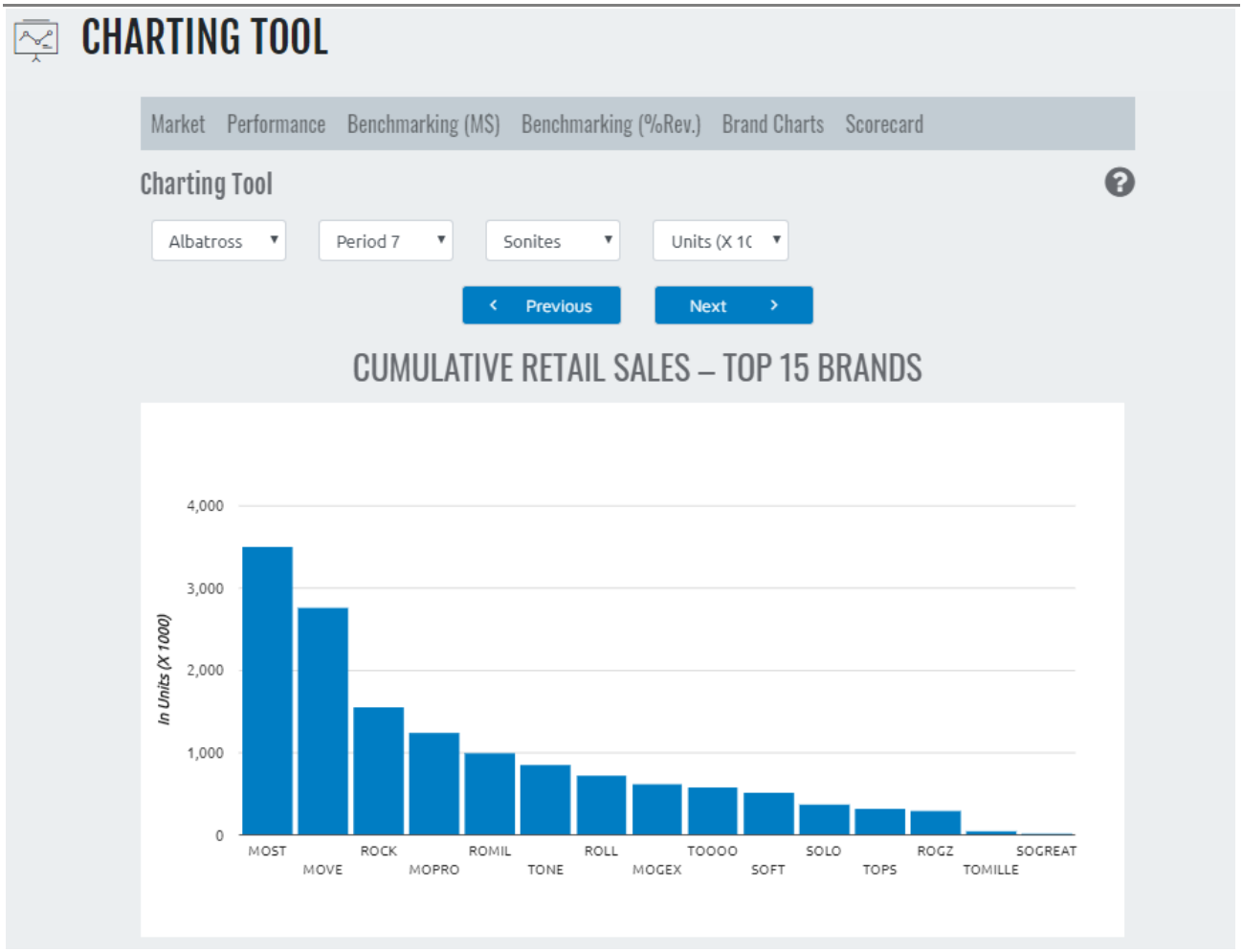


Figure 41 – Tools – Charting tool

B. Scorecard

The Company Scorecard shows the evolution of key performance indicators of your company in Finance, Marketing, Production, Distribution and R&D. It allows you to monitor these KPIs over time and check if you are going in the right direction. See example in Figure 42.

- **Financial KPIs**. Total revenues; revenues in each market; revenues from new brands (other than your two initial brands); Total contribution after marketing (CAM); CAM generated by each market; CAM generated by new brands; net contribution, in million dollars and in percentage of revenues.
- **Marketing KPI**s. Total market share, in volume and value; market share in each market; number of marketed brands, in total and in each market; number of brands leading in a segment.
- **Distribution KPI**s. Overall distribution coverage; distribution costs, in million dollars and in percentage of revenues; estimates of lost sales due to insufficient commercial efforts.
- **Production KPI**s. Volume sold; volume produced; units in inventory; inventory costs; estimates of lost sales due to production shortage.
- **R&D KPI**s. R&D expenses, in total and in each market; number of completed R&D projects, in total and in each market.

CHARTING TOOL

	Period 0	Period 1	Period 2	Period 3	Period 4	Period 5
Revenues	41	44	51	54	50	76
Revenues - Sonites	41	44	51	54	50	76
Revenues - Sonites	0	0	0	0	0	0
Revenues - New brands				2	6	7
CAM	14	12	11	17	16	19
CAM - Sonites	14	12	11	17	16	19
CAM - Sonites	0	0	0	0	0	0
CAM - New brands				-2	-1	-4
Net contribution	14	11	6	15	-3	16
Net Contrib. (%Rev)	33	24	11	27	-7	22

All numbers are given in million dollars. CAM: Contribution After Marketing.

MARKETING KPIs

	Period 0	Period 1	Period 2	Period 3	Period 4	Period 5
Market shares - %U	19	15	18	17	13	15
Market shares - %$	24	19	20	18	15	19
Market shares - Sonites - %$	24	19	20	18	15	19
Market shares - Sonites - %$	24	19	20	18	15	19
# Brands	2	2	2	3	3	3
# Brands - Sonites	2	2	2	3	3	3
# Brands - Sonites	0	0	0	0	0	0
# Leading brands	0	0	1	2	0	1

: number of.

Figure 42 – Tools – Company Scorecard (excerpt)

V. USER'S GUIDE TO THE SOFTWARE

Circular Markstrat is an easy-to-use web-based platform which needs no prior computer skills or expertise. There is no software to install on your computer; all you need in a web browser such as Internet Explorer, Safari, Firefox or Chrome.

The use of Circular Markstrat is strictly reserved to participants who have a valid *Participant Activation Key* (PAK) and who have registered on www.stratxsimulations.com. If you have not yet obtained a PAK or have not yet registered, we advise you to do so now. Please visit www.stratxsimulations.com for an explanation of how to obtain a PAK and register.

1. Organizing working sessions

Within each Decision Round, you and your teammates may choose to organize several working sessions to complete your decisions in due time. You can for instance make a detailed analysis of your results on day 1, make product upgrade and production plan decisions on day 2, make marketing budget and segmentation strategy decisions on day 3 and finalize everything on day 4.

It is a good idea to analyze your results on your own at your own pace. However, you will have to meet with your teammates at some point to exchange your findings, elaborate or refine your strategy and agree on a course of action for the period to come.

There are two ways to input your decisions into Circular Markstrat. You may work all together in the same room, make your decisions collectively, and have one of you logged in Circular Markstrat key in the decisions. You may also split the responsibilities across all teammates and have each of you enter his/her decisions into Circular Markstrat from different computers, in parallel or at different points in time. Both options will work fine because all members of the same team share the same results and the same decisions and because Circular Markstrat include a built-in mechanism to lock a specific decision form while it is used by one member.

Please note that the history of modifications made to decisions is not recorded. Hence, your current decisions will be deleted each time you submit a new set.

2. Starting a working session (log in)

To log in to Circular Markstrat, you will need five pieces of information, provided by your instructor (except the PAK):

PAK: e.g. BNP-4GSV2
Course ID: e.g. B07528
Industry name: e.g. ANANAS
Team name: e.g. T
Team password: e.g. 9751

To log in, go to www.stratxsimulations.com and follow the instructions below:

- Click the SIGN IN link at the top-right corner of the page and select "A Participant"
- Enter your PAK and click the "Submit" button.
- Click the "Access Circular Markstrat" logo to access Circular Markstrat's login page shown on Figure 43 and enter your team password.

At this stage, you may either do the preparation activities, described in the section "Getting prepared", or choose your industry and team in the drop-down choice boxes to finalize the login process and access your team data.

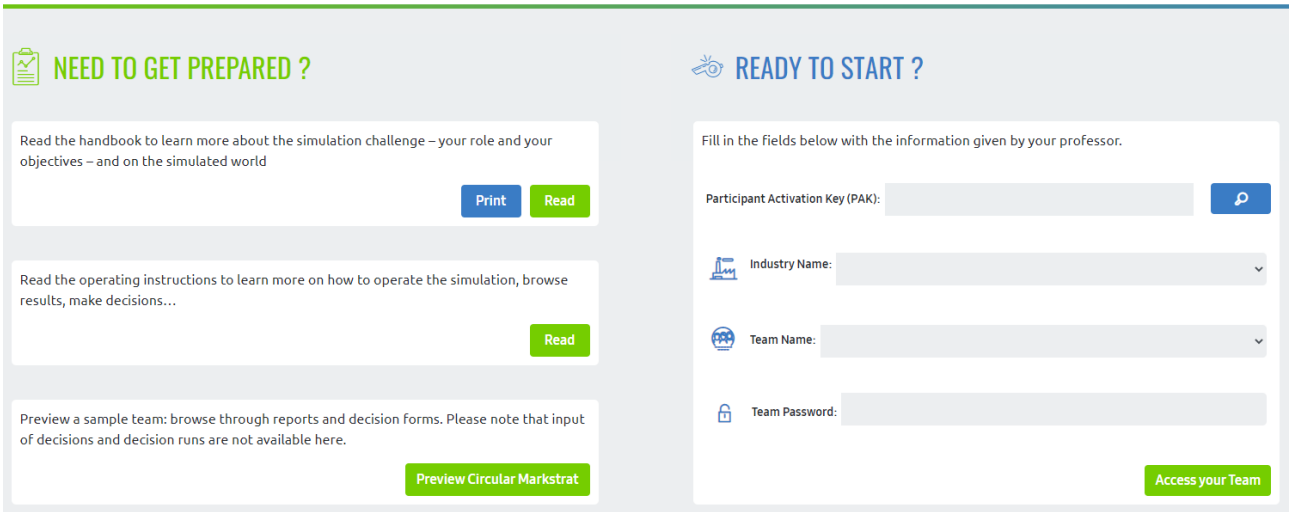


Figure 43 – Starting a working session

3. Closing a working session (log out)

If you have started a working session and wish to stop it, you must close the Circular Markstrat application by clicking the *Logout* button in the left bar.

Do not close your browser without logging out, especially while you are making decisions. If you do this, the decision form that you were using when you closed your browser will be locked for about 20 minutes, until you are timed out by the Circular Markstrat application. Your teammates will not be able to access this decision form during this time.

4. Circular Markstrat Layout & Navigation

The Circular Markstrat screen (Figure 44) is divided into three main parts:

- the left-hand bar provides access to all analysis and decision screens as well as to documentation, export to excel, past decision etc;
- the top Menu bar includes budget recap, error & warnings, team information;
- The Main Window is where reports and decision forms are displayed. =

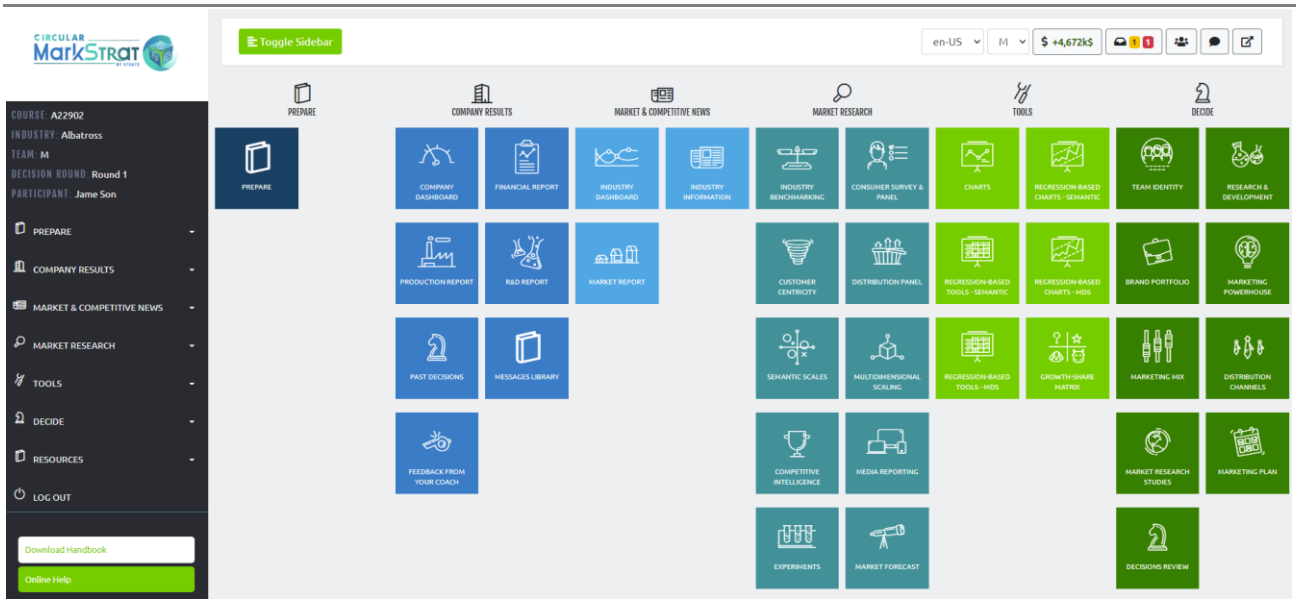


Figure 44 – Circular Markstrat home

5. Team Identity Decision

Initially, the competing companies are identified by a unique letter such as L, M, N, R, S or T. Your first task will be to name your company, starting with this letter and reflecting the spirit of your team.

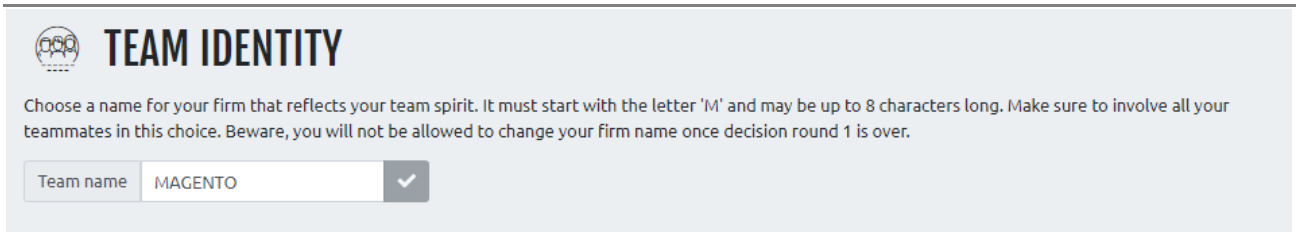


Figure 45 – Team Identity decision

6. Making Brand Portfolio Decisions

This section focuses on how to use decision forms to withdraw, upgrade or introduce brands. Read sections III.2 and VI.4 to learn more about situations when brand portfolio decisions are required.

The brand portfolio series of decision forms will guide you through these decisions. The form shown in Figure 46 appears when you choose the brand portfolio icon on the decision home. It gives an overview of your current brand portfolio. A brand may be:

- ***Maintained***. No brand portfolio operation has been conducted on this brand. Hence, you will market the same product as in the previous period.
- ***Modifie***d. This brand will be based on a new R&D project as of the decision period. It means that a different product, e.g. one more powerful or with a longer battery life, will be marketed under this brand name.
- ***Launche***d. This brand is a new one that will be marketed for the first time next period.
- ***Withdraw***n. This brand will no longer be marketed as of the beginning of the decision period.

From this form, you may modify or withdraw one of your existing brands or launch a new one. You may also undo any of your previous decisions.

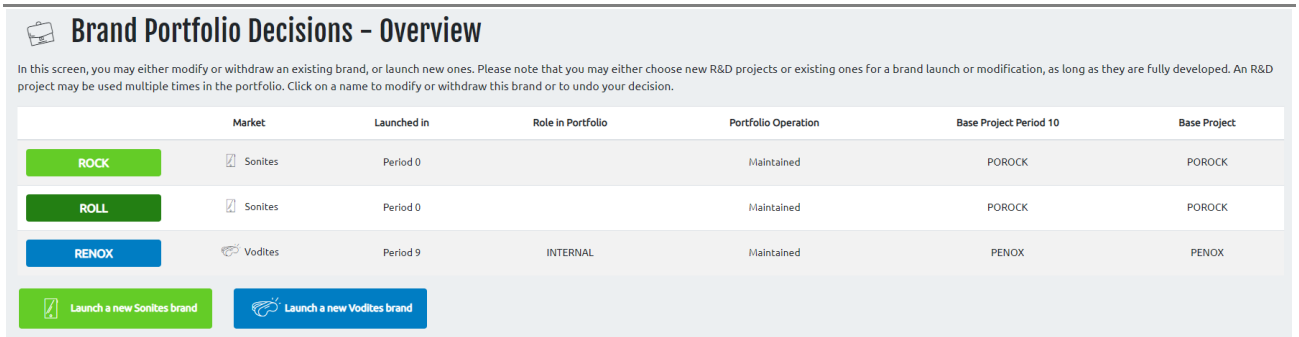


Figure 46 – Brand portfolio decisions – Home

A. Introducing a new brand

Choose the ***Launch a new brand*** button corresponding to the market in which you want to introduce the new brand. The form shown in Figure 47 will appear and guide you through the process of launching a brand. The name of the new brand must be entered using the naming conventions discussed in section II.2. The role of this new brand in your portfolio should be entered as well; although it has no impact on brand performance, it has proven to be quite useful. Finally, you must indicate the base R&D project of the brand, i.e. the brand's technical specifications. It must be selected from the list of available R&D projects included in the form.

Once you have launched a new brand, you need to make marketing mix decisions for that brand, and you must allocate commercial people to it, in the channels where you want to distribute the brand.

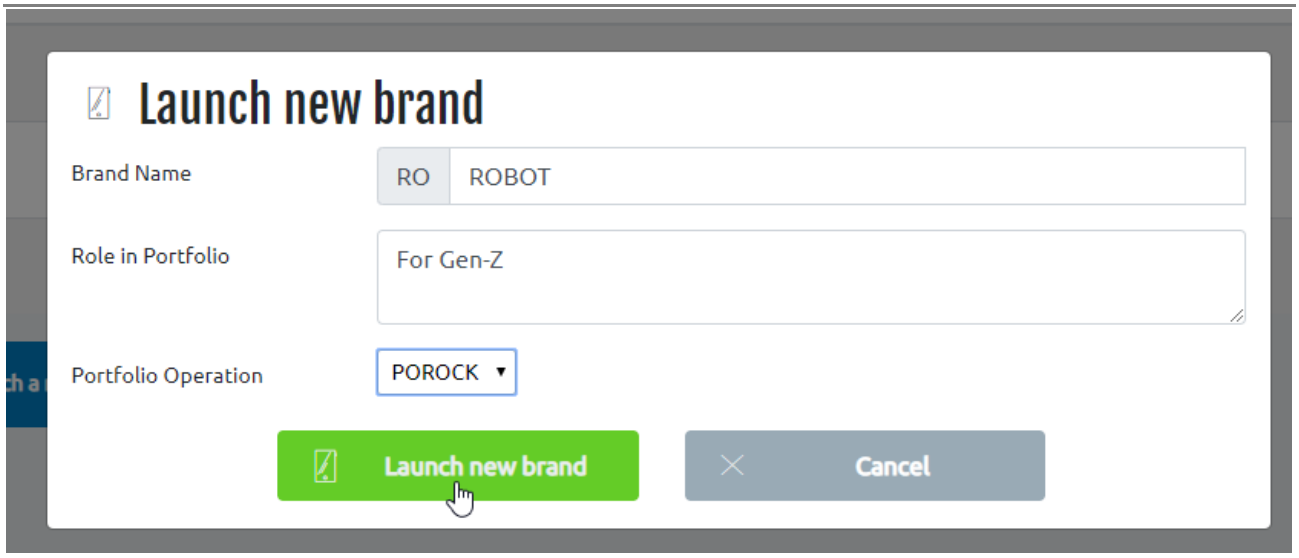


Figure 47 – Brand portfolio decisions – New brand launch

B. Modifying or withdrawing an existing brand

To modify or withdraw an existing brand, click on its name in the summary form shown in Figure 46. A new form shows up, as depicted in Figure 48. Select the ***Withdraw*** or ***Modify*** option depending on what you want to do.

In the case of a brand modification, you must indicate the new base R&D project of the brand. It must be selected from the list of available R&D projects included in the form. You may want to adjust the ***role*** of the brand, but its name should not change.

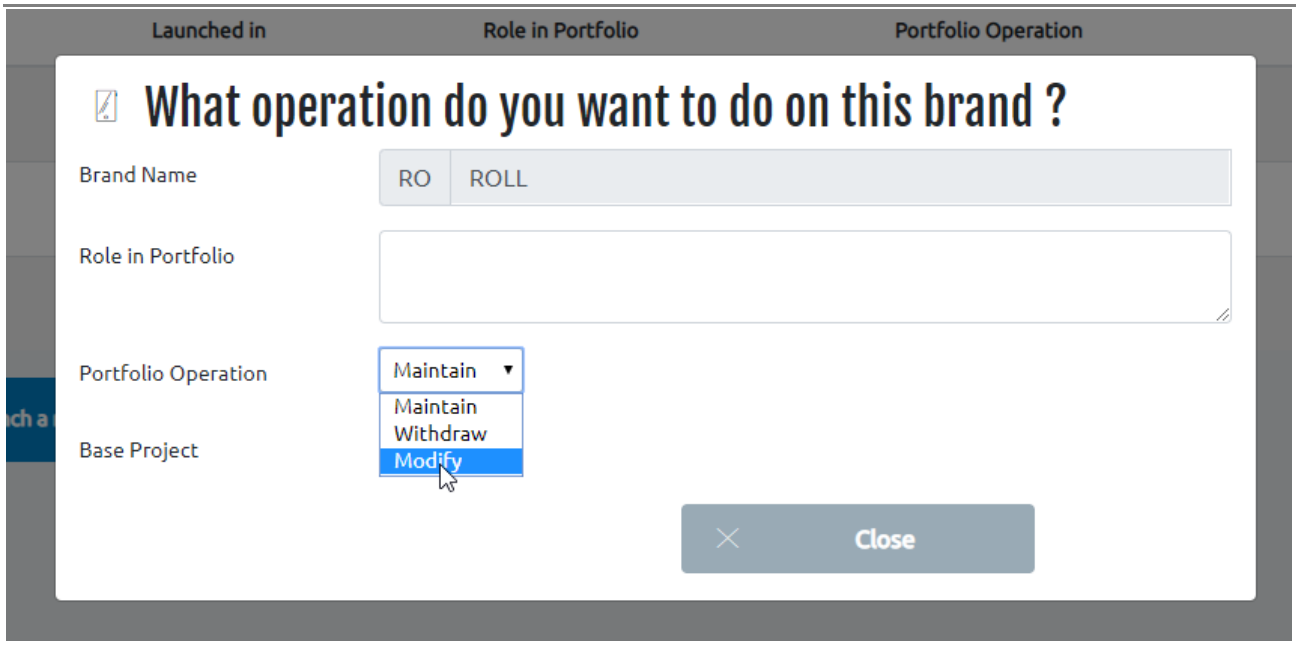


Figure 48 – Brand portfolio decisions – Brand modification or withdrawal

C. Undoing a brand portfolio operation

You may undo any of the brand portfolio operations that you have initiated. To do so, simply click on the name of the brand involved. A form will show up, reminding you of the chosen operation: launch, modification or withdrawal. Click the ***Undo*** button to clear this operation from your decisions.

Launched brands will simply disappear from your portfolio and all related decisions such as marketing mix and allocation of commercial people will be deleted. Withdrawn or modified brands will return to their original state, i.e. the decisions of the previous period will be duplicated for the current decision period.

7. Making Marketing Powerhouse Decisions

This section focuses on launching Marketing, Digital and/or Circular Initiatives to reinforce your overall marketing efforts. In the "marketing powerhouse" menu, you have to click on an initiative for a complete description and then click on "implement" if you want to. Some initiatives will be available later in the course of the simulation, and some events will have a specific seasonality. For instance, an event taking place every 4 years will take place in years 1, 5, 9 etc. You can implement up to three initiatives per year.

8. Making Marketing Mix Decisions

This section focuses on how to use decision forms to make marketing mix decisions. Visit the sections Production, Pricing, Advertising and Repositioning strategies to learn more about the purpose of these decisions.

Figure 49 shows the marketing mix decision form. Click on a brand name at the top of this page to display the detailed marketing mix decisions of this particular brand.

Production

The production plan must be entered in units. To help you make this decision, the form indicates how many units were sold in the previous period and how many units are held in inventory at the beginning of the period. Note that if you had modified the base project of the brand, these units will not be available.

Price

The price entered in this form is the *recommended retail price* or *list price*, i.e. the price paid by customers, except for consumers shopping in channels which practice a discount. The price must be given in dollars. The form indicates the price that was set in the previous period.

Advertising

The advertising media and research budgets must be entered in thousands of dollars. The form indicates what the total advertising budget of the brand was in the previous period.

You must also indicate how you want to allocate these budgets across consumer segments. The percentages entered in the cells must sum to 100%, otherwise you will not be allowed to close the form and save your decisions.

Perceptual objectives

Perceptual objectives allow you to reposition the brand, i.e. to change consumers' perceptions of the brand. Read *section VI.5* to learn more on repositioning brands through advertising.

If your intent is just to raise awareness, simply select ***No objectives***. Otherwise, you may specify your objectives in term of ***Semantic Scales*** or ***Multidimensional Scales***. Objectives can be set on one or two dimensions. Select the dimensions on which you want to communicate in the ***Dimension 1*** and ***Dimension 2*** choice boxes. Finally, enter the desired level on each dimension in the ***Objective 1*** and ***Objective 2*** choice boxes. If you wish to focus on a single dimension, pick ***None*** in the ***Dimension 2*** box.

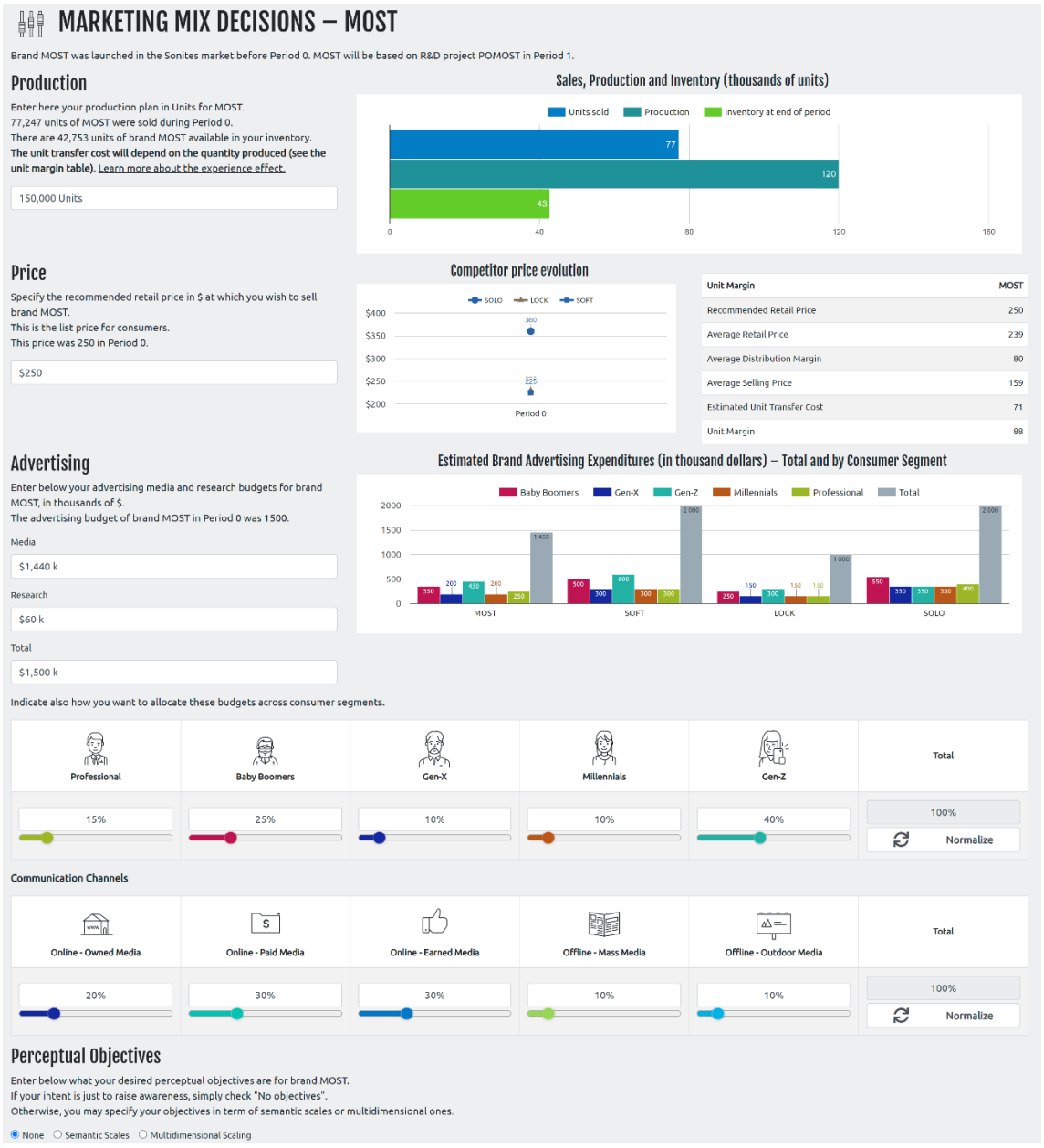


Figure 49 – Marketing mix decision screen

Remember that **when a company uses *advertising* to communicate in an exaggerated way about the circular aspects of its products, it is considered by the market as greenwashing**. If a company frames an advertising message very far from the real position of the brand physical attribute (in case of semantic scales) or of the circular dimension (in case of MDS), then communication will fail and there will be no repositioning. If greenwashing is really exaggerated, there could even be a *greenwashing backlash*, i.e. a regression of the current position further away from the ideal point that was entered *(see section II.7. on "Eco-score, Government actions and Greenwashing").*

9. Making Digital Marketing Decisions

This section focuses on how to use decision forms to split your advertising effort between the different media categories (Traditional X Digital). Visit sections II.5 to learn more about media categories studies.

The percentages entered in the cells must sum to 100%.

- If the sum is higher than 100%, it will be normalized to 100% by the simulation model.
- If the sum is under 100%, you will lose part of your advertising budget.

10. Making Distribution Channels Decisions

This section focuses on how to use decision forms to make your distribution channels decisions (sales force and commercial budget). Visit section on Distribution Channels (section III.7) to learn more on how your budget is organized and what decisions you have to make.

The Distribution Channels decision form is displayed in Figure 50. The form includes one column per distribution channel and one row per marketed brand. Enter the number of commercial people that you wish to assign to each brand and each traditional distribution channel (Specialty Stores and Mass Merchandisers) ; enter the budget (in K$) that you wish to assign to each brand and each digital distribution channel (eStore and Pure Online Players). You can modify the allocation across distribution channels and the brands at no cost.

The form calculates total budget by brand, by channel and in total each time you enter new numbers.

The ***Distribution Channels Budget*** button takes you to a form showing your expenditures in distribution channels (sales force and commercial budget), broken down by channel, and a comparison with the previous period. The ***Distribution Channels budget Allocation*** button shows how your budget is allocated across markets, across channels and across brands. You may thus check that the numbers you have entered are in line with your overall market, channel and brand strategies.

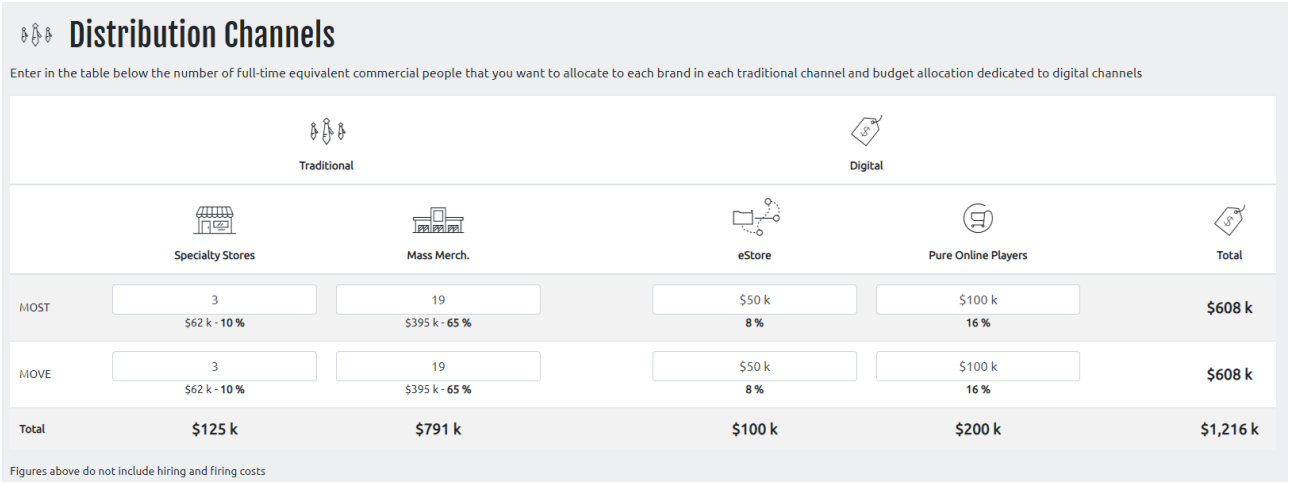


Figure 50 – Distribution Channels decision screen

11. Ordering Market Research Studies

This section focuses on how to use decision forms to order market research studies. Visit sections -o and IV.3 to learn more about the purpose and content of market research studies.

The market research studies decision form is displayed in Figure 51. All available studies are listed together with their costs. To purchase market studies, simply check the boxes that correspond to the studies you would like to buy.

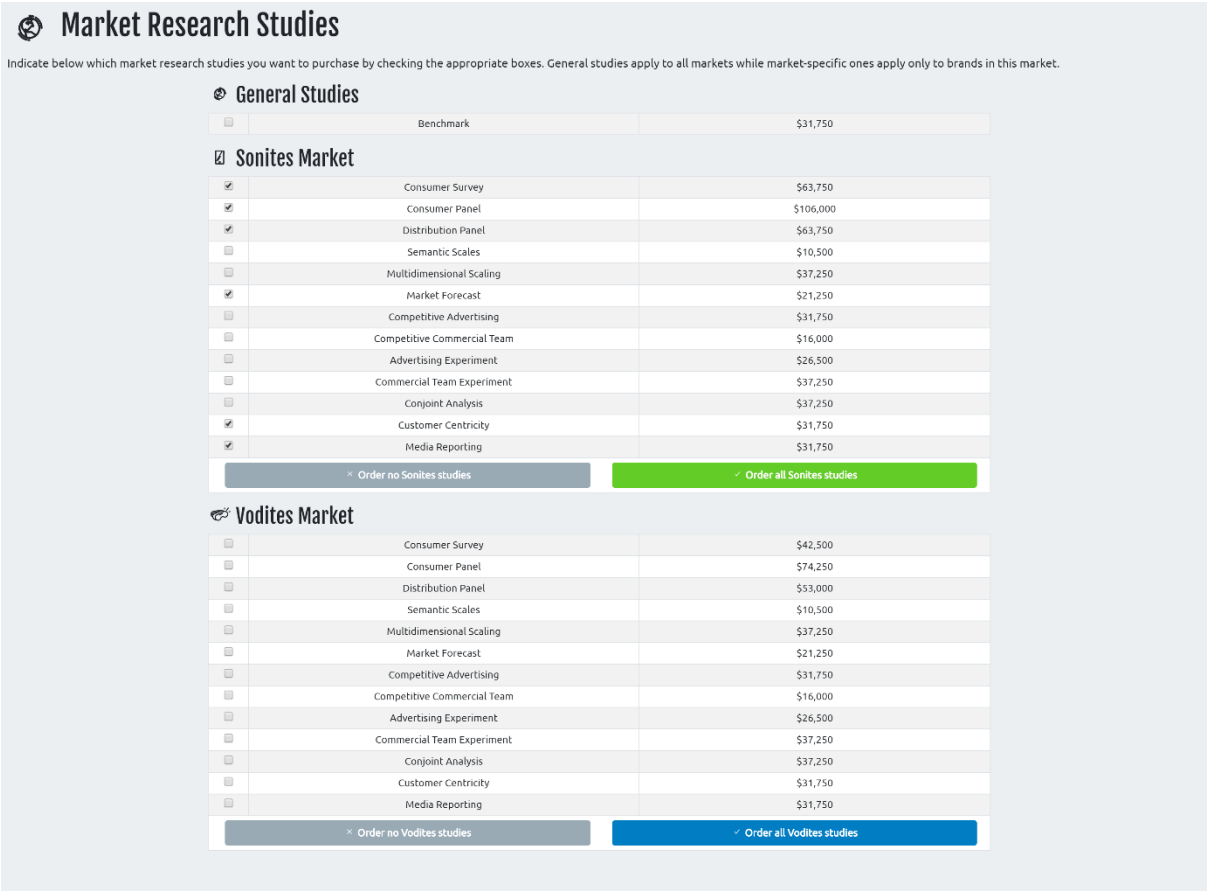


Figure 51 – Market research study decision form

12. Making Research & Development Decisions

This section focuses on how to use decision forms to make R&D decisions. Read sections II.1 and II.2. to learn more about product attributes; sections 0 to understand the interface between Marketing and R&D; and section VI.5.B and VI.6 to review situations where R&D will be necessary to reposition your brands.

The R&D series of decision forms will guide you through these decisions. The form depicted in Figure 52 shows up when you choose the R&D icon on the decision home. It gives an overview of your current R&D projects.

Knowing the R&D terminology is necessary to fully understanding this section.

- ***Completed project***. A project is *completed* if it was created in a past period and sufficient budget was allocated to it. Completed projects may be used for brand portfolio operations, as explained in section V.5. Completed projects do not show up in R&D decisions.
- ***Uncompleted projects***. A project is *uncompleted* if it was created in a past period and the R&D department could not complete it because the allocated budget was not sufficient. Uncompleted projects may be *continued* or *shelved*.
- ***Continued projects***. An uncompleted project is *continued* if you allocate a budget to it in the current decision period. A continued project may be shelved in a later period.

- ***Shelved projects***. An uncompleted project is *shelved* if you have stopped allocating budget to it. A shelved project may be continued in a later period.
- ***New projects***. A project is *new* if it has been created in the current decision period. A new project can be deleted if you change your mind.

From this form you may create new projects or manage uncompleted ones, i.e. continue or shelve them.

Figure 52 – R&D decisions – Home

A. Creating a project

Choose the ***Launch a new project*** button corresponding to the market in which you want to create the new project. A new form will appear and show a series of inputs like project name, objective, physical characteristics, base cost and allocated budget. This form is shown in Figure 55.

When the process is completed, the project home page will be displayed. This page provides you with a recap of your project decisions.

B. Continuing or shelving a project

Past projects that could not be completed in the previous period are automatically continued at the beginning of the decision period. Hence, all your uncompleted projects will appear in the R&D home form shown in Figure 52. Click on a project name to zoom on the project and show its recap form, as shown in Figure 53.

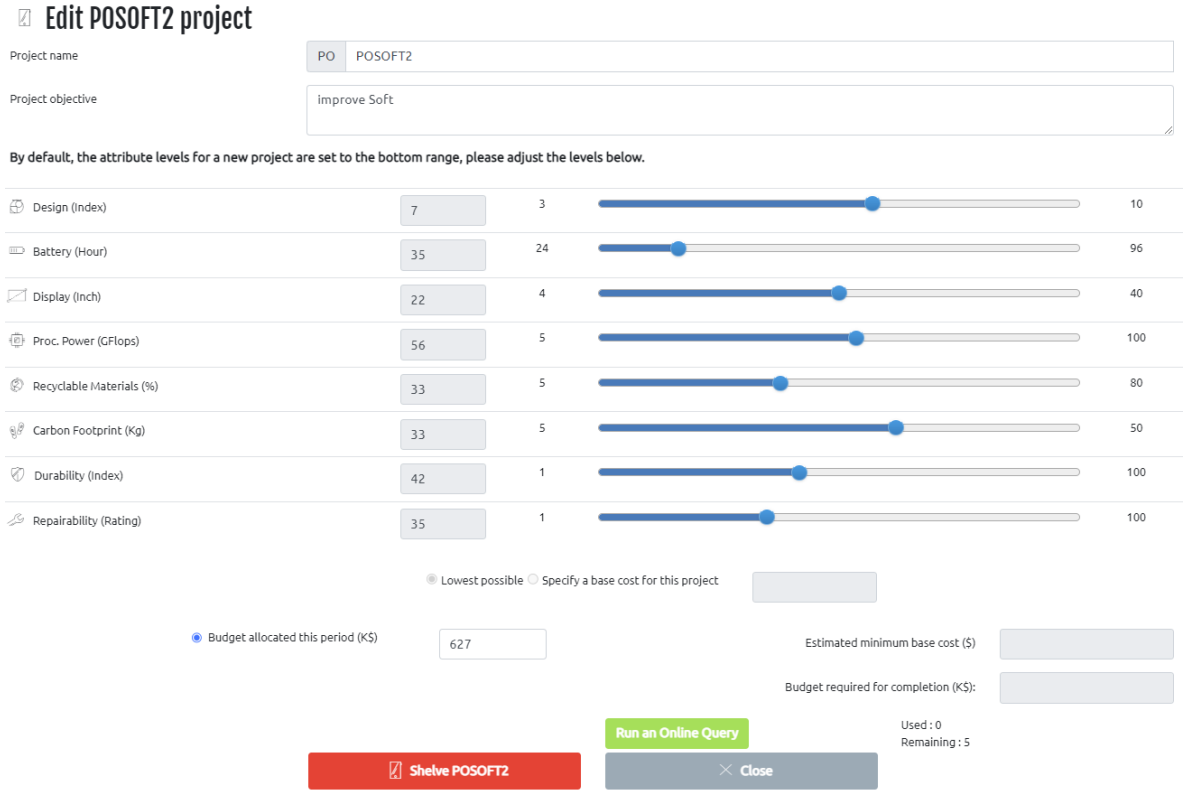


Figure 53 – R&D decisions – Shelve Project

To continue a project, you simply need to allocate a budget to it, as explained in sections V.12.F and Figure 53. Because a continued project is a past project, the recap form tells you exactly what budget is required to complete it. The other decisions – name, description, characteristics and base cost – cannot be modified.

To shelve a project, simply click the ***Shelve*** button at the bottom of the form. The project will be removed from your current R&D decisions and will no longer appear on the form in Figure 52. Shelved projects may be continued at any time, as explained in section V.12.C.

C. Unshelving a project

Choose the ***Shelved Projects*** button to continue a past project. If this button does not appear on your R&D home form, then it means that you do not have any shelved projects that can be continued.

The list of past shelved projects is displayed. Click on a project name to zoom on the project and show its recap form, as shown on Figure 54. Make sure that this is the project that you want to continue and, if yes, click the ***Unshelve*** button.

You will then have to allocate a budget to the project. Because this is a past project, the recap form tells you exactly what budget is required to complete the project. The other decisions – name, description, characteristics and base cost – cannot be modified.

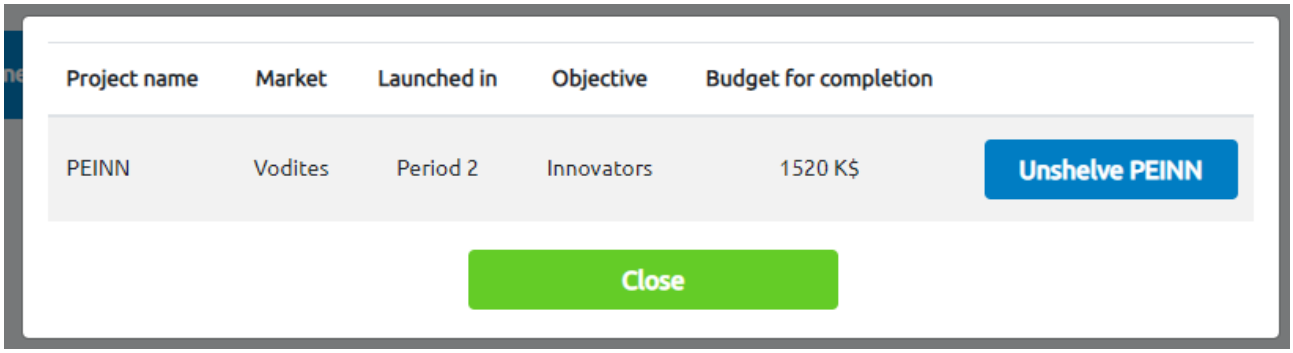


Figure 54 – R&D decisions – Unshelve Project

D. Project name and objective

The name of a project must be entered using the naming conventions discussed in section III.8.A. The objective of the new project should be entered as well. Note that names of continued projects cannot be changed.

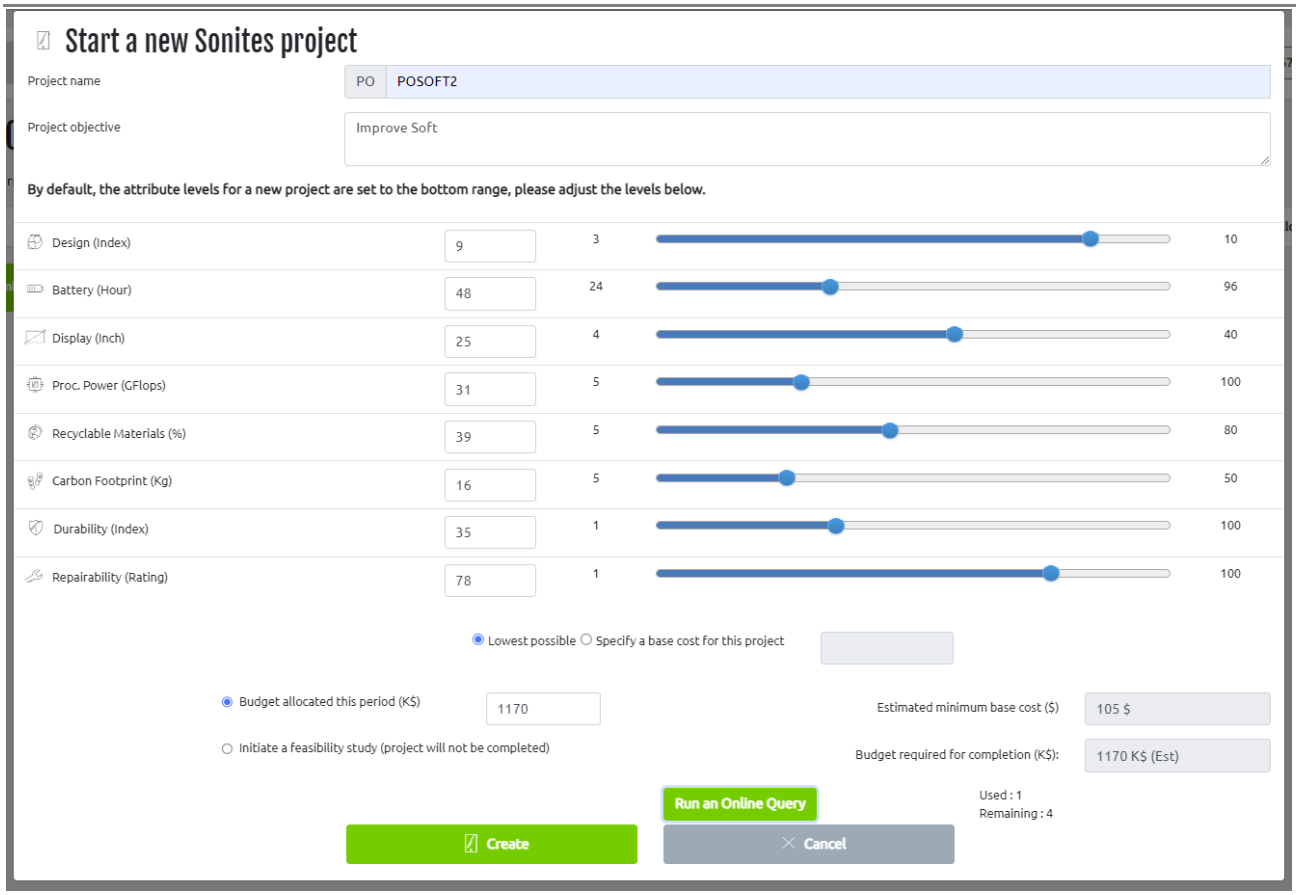


Figure 55 – R&D decisions – Launch a new R&D project

E. Project characteristics and base cost

The form depicted in Figure 55 allows you to enter the ***Project Characteristics*** for the desired future product. The range of technically feasible characteristics for each attribute is indicated above, for instance from 24 to 96 hours of battery life.

The meaning of ***Project Base Cost*** is explained in detail in section III.8.C. You can ask the R&D department to seek the minimum base cost technically possible by checking the option ***Develop this project at the lowest possible base cost***. Otherwise, check the option ***Develop this project at the base cost specified below*** and enter the desired cost for this project.

Note that the characteristics and base cost of continued projects cannot be changed.

F. Project allocated budget and online query

The form depicted in Figure 55 allows you to enter the budget which you want to allocate to the project.

In the case of a continued project, the form tells you how much money is required to complete the project. Allocating this amount will guarantee project completion by the end of the current decision period.

In the case of a new project, you have two options:

- The first option is to do a feasibility study, as explained in section III.8.E; the cost will be $100k.
- The second option is to allocate a budget to the project. To help you decide which budget to allocate, you may run an online query, as explained in section III.8.F. Upon completion of the query, an estimate of the budget required to complete the project will be given. Allocating this amount will guarantee project completion at the end of the current decision period. The form tells you how many queries you have done so far. Remember that the number of online queries authorized in a period is limited to 5 (but this limit may have been adjusted by your instructor).

  If you change the physical characteristics of your project or the requested base cost after you have run the online query, the estimate provided by the query will not show up on the form as it is no longer valid.

In this case, you should run a new query to adjust the estimate according to the new project specifications.

If you do not have sufficient funds, you may allocate a budget lower than the full amount indicated by the query. In this case, you have no guarantee that the project will be completed by the end of the decision period.

13. Initial decisions

When you start a new round, most decision pages are pre-filled with a copy of the decisions that you made in the previous period. In Period 1, decision pages are pre-filled with the decisions made by the previous management team.

Initial decisions are used by the model in case you do not submit new decisions in due time. Because the competitive situation changes each period, using the same decisions as in the previous period is usually not optimal. Hence, you are strongly encouraged to submit new decisions.

You will find below more details on how initial decisions are calculated.

- **Team Identity** – In Period 1, your company name is initially equal to your initial letter: M, R, S, T, L or N.
- **R&D** – All projects that have been *partially* developed in the previous period will be completed. This means that the budget required for completion is automatically allocated. If you wish to stop the development of a project, you need to *shelve* this project in the R&D decision page.
- **Brand Portfolio** – All brands marketed in the previous period will be marketed automatically in the new period. Brands will *not* be launched, withdrawn or modified automatically.
- **Marketing Mix** – The following decisions are copied from the previous period: production plan, price, advertising media, advertising research and segmentation strategy. Perceptual objectives are reset to *No Objectives*.
- **Distribution Channels** – The budget allocated to distribution channels is not changed. Similarly, the allocation over channels and brands is the same as in the previous period.
- **Market Research Studies** – The same studies as in the previous period are ordered.

Do not be surprised if a share of your marketing budget is already allocated when you start the decision round. This is due to the expenses corresponding to the initial decisions: completed R&D projects, advertising, distribution channels and market studies. When you change your decisions, these expenses will be changed accordingly.

14. Checking your decisions

We highly recommend checking regularly to make sure that Circular Markstrat has not discovered any mistakes with your decisions. Two tools will help you verify your decisions: *Budget* and *Errors & Warnings*.

A. Budget tool

Click on the budget overview in the left-hand side bar to access this tool.

The budget overview in Figure 56 provides details on how you have decided to spend your marketing budget in the upcoming period. The chart shows whether you have received a loan or budget increase from your instructor. It also calculates your expenditures in the four main cost categories: advertising, distribution channels, research & development and market research. Finally, it shows your *Deviation from budget*, which should always be positive or equal to 0, unless you have been authorized by your instructor to exceed your budget. An error message will appear if the budget has been exceeded. This message should not be ignored; otherwise, the simulation will arbitrarily cut your expenditures (starting with advertising).

Another chart provides you with the breakdown of advertising and distribution channels budgets by brand. All numbers are given in thousands of dollars.

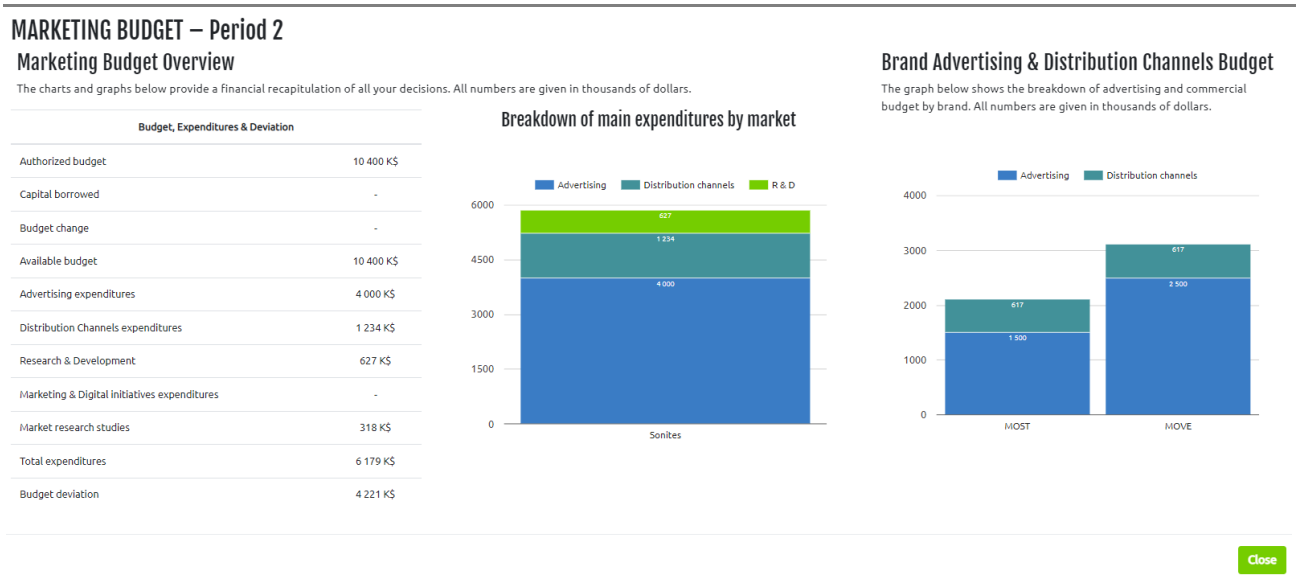


Figure 56 – Decision tools – Budget overview

B. Errors & warnings tool

Click on the errors & warnings icon in the left-hand side bar to access this tool. It shows a list of errors and warnings generated by the simulation upon analysis of your decisions. Errors indicate corrections that should be made because of inconsistent decisions while warnings draw attention to possible problems. In these instances, you should check your decisions carefully to make sure that all entries are correct.

Typical errors include negative deviation from budget or missing marketing mix or distribution channels decisions for newly launched brands. Typical warnings include drastic changes in your decisions or completed R&D projects that have not been used to upgrade a brand.

See Figure 57 for a sample Errors & Warning form.

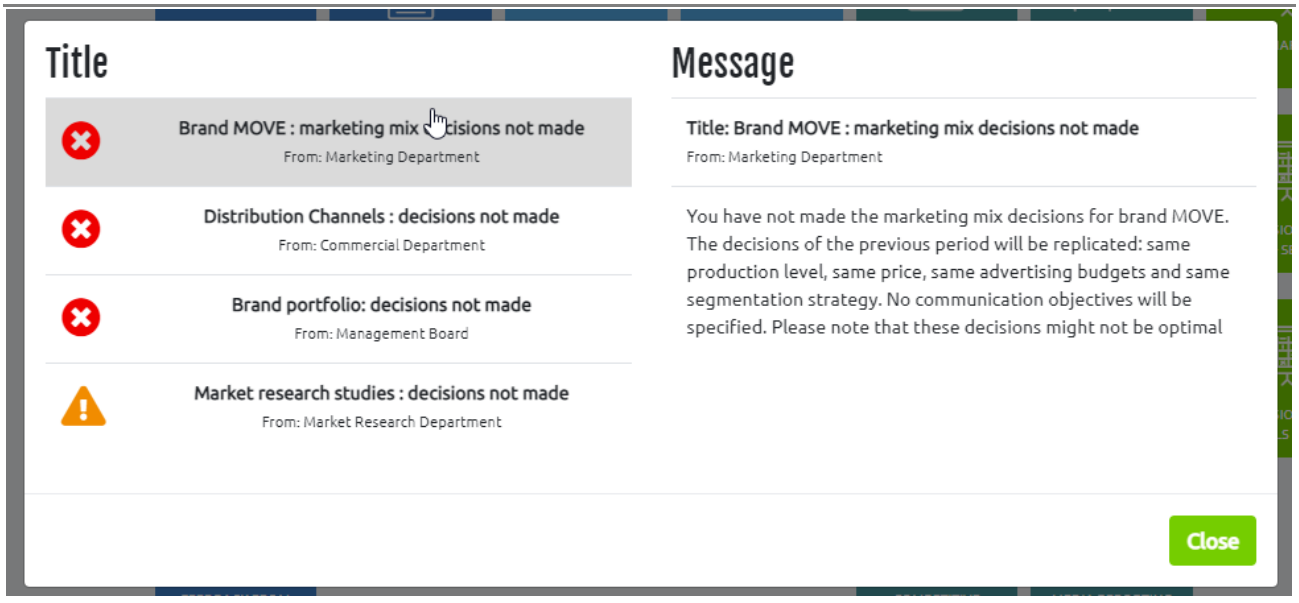


Figure 57 – Decisions – Errors & Warnings

VI. POSITIONING AND RESEARCH & DEVELOPMENT

As you may expect, the market environment will change during the course of the simulation. The size and growth rate of consumer segments will evolve over time. Some segments will grow and thus become more attractive while others will shrink. More importantly, the needs of customers will probably change over time. For example, some segments may want more powerful brands while others may expect prices to decrease.

To respond to these changes, companies will have to introduce new Sonite brands and reposition or withdraw existing ones. As marketing resources are limited, it is extremely important to adopt optimal segmentation and positioning strategies, especially because a Circular Markstrat company cannot market more than five brands in a given period in each market. Your department will be faced with the following strategic issues on market segmentation and product positioning:

- Which segments to target
- How to design products satisfying the needs of these segments
- How to position new brands effectively
- How to reposition existing brands to better fit customers' needs

Neither segmentation nor competitive strategies are addressed in this manual. Your professor may deliver conceptual sessions on these subjects during the course. You may also find useful information on these topics in your marketing textbook. In this chapter, we will assume that you have identified the consumer segment(s) that you want to target for a specific brand, and we will describe the various approaches that can be used in Circular Markstrat to address product design and brand positioning.

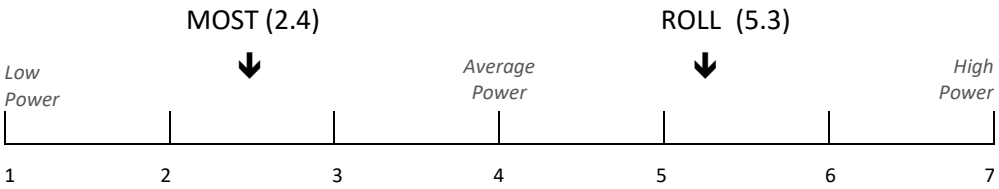
1. Assessing Perceptions and Preferences

Technical experts can easily classify marketed brands based on objective data such as technical attributes and prices. However, consumers who are about to make a purchase are influenced by their perceptions of the brands available on the market rather than by the actual features and properties of these brands.

Perceptions are by definition subjective and can therefore be distorted from reality. The Circular Markstrat simulation provides two market research studies to assess consumers' needs and estimate how brands are perceived: the *Semantic scales* study and the *Multidimensional scaling* study.

A. Semantic scales

This study *(presented in detail in Section IV.3.F)* describes how consumers perceive the marketed brands. Respondents are asked to rate the physical characteristics of each brand on a scale from 1 to 7. In the example below, consumers have rated the brand MOST at 2.4 on the Power scale because they perceive it as being less *powerful* than brand ROLL, rated at 5.3.



The study also provides the *ideal* rating for each characteristic and each segment.

B. Multidimensional scaling of brands similarities and preferences

This study also describes how consumers perceive the marketed brands. Its content is presented in detail in *section IV.3.G*. It shows a four-dimensional map exposing the similarities and differences between marketed brands. This map is a graphical representation of the respondents' ratings, i.e. the distance between two

brands is small for similar brands and large for dissimilar brands. A sample perceptual map is depicted in Figure 32.

The four dimensions Economy, Performance, Convenience and Circularity can be related to the actual physical characteristics as shown in Figure 33. Finally, respondents are asked to indicate their ideal position on the map.

2. Prediction of Ideal Points

Ideal points, also called preferences, represent the needs of consumers in a given segment. They are calculated by averaging the individual responses of all respondents. As explained in the chapter introduction, consumer needs are likely to evolve over time. This may be due to changes in the environment, to new trends, or to new ways to use Sonite products. Consumer needs are also influenced by the actions of competitors (for instance new products introductions and large-scale advertising campaigns).

None of these reasons will create the conditions for drastic changes in consumer needs. On the opposite, the tracking of the position of ideal points on the map shows that this evolution is fairly gradual and regular. Two charts are available to help you predict where ideal points will be in future periods.

- The table depicted in Figure 58 is included in the Multidimensional Scaling study as of Period 2. A similar table is also included in the Semantic Scales study. Positions are tracked over only three periods, but you may use the graphs described in the next paragraph to obtain a longer tracking.
- The graph depicted in Figure 59 is included in the additional graphs available both in the Semantic Scales and Multidimensional Scaling studies. It shows the evolution of ideal points since the beginning of the simulation. The latest data point is the one with the strongest color. All dimensions can be plotted by using the choice boxes on the left-hand side.

Ideal Value Evolution

This study monitors the evolution of consumer needs over time. The preferred values on each perceptual map dimension over the past (3 years maximum) are recorded in the table below, for each consumer segment.

Segment	Period	Economy	Performance	Convenience	Circularity
Baby Boomers	Period 0	4.0	15.3	-6.1	-3.7
Baby Boomers	Period 1	3.2	14.9	-5.9	-2.7
Gen-X	Period 0	-10.3	4.9	9.0	-2.2
Gen-X	Period 1	-10.0	3.9	8.2	-1.5
Gen-Z	Period 0	12.4	-11.3	-4.8	11.0
Gen-Z	Period 1	12.5	-10.9	-4.7	11.5
Millennials	Period 0	5.3	-1.1	3.8	6.4
Millennials	Period 1	6.1	0.7	3.7	6.7
Professional	Period 0	-5.3	7.4	10.2	-5.8
Professional	Period 1	-6.7	8.2	9.6	-4.2

Figure 58 – MDS Study – Ideal value evolution – Table

Using these charts, you can interpolate where ideal points will be located in few periods time. This is an important step in your positioning strategy. Indeed, you want to choose a position for your brand that will be close to the needs of consumers for several periods. In addition, you should consider the time it will take to reach this position, especially if a research project is necessary. Hence, you probably need to look 2 or 3 periods ahead of time, if not more.

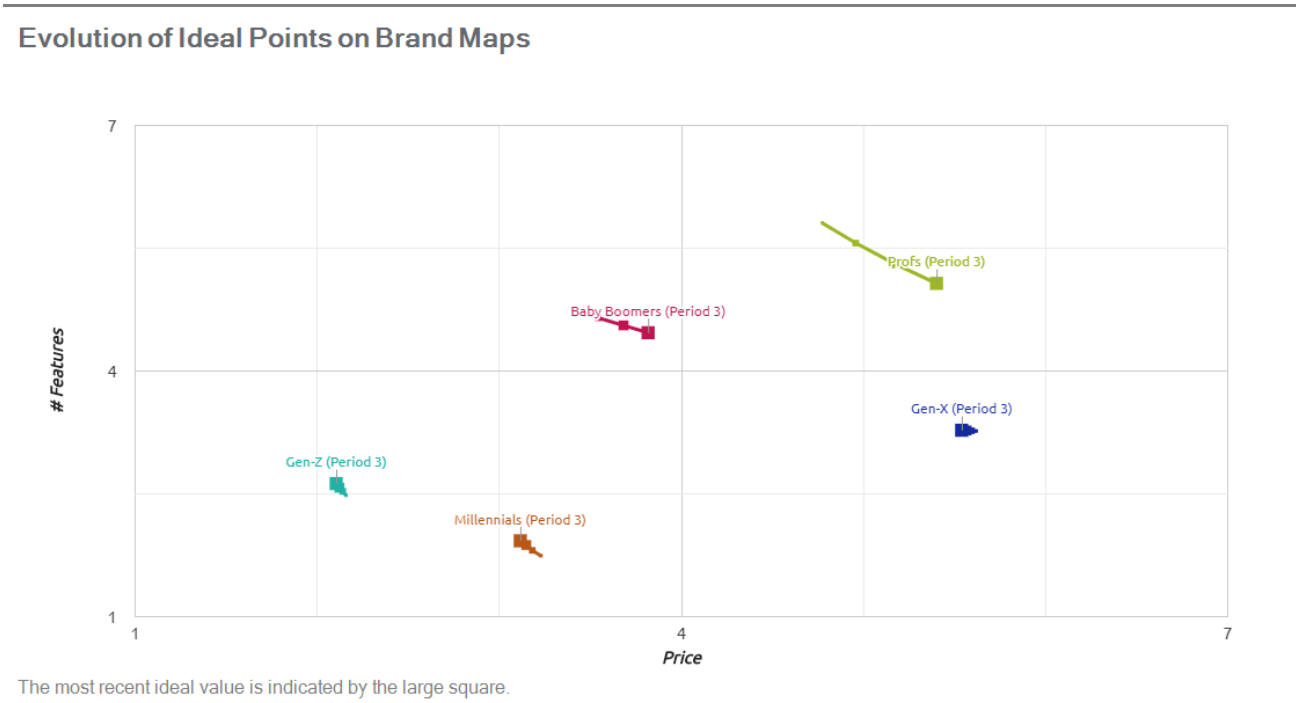


Figure 59 – Semantic Scales Study – Ideal value evolution – Graph

3. Matching product attributes with position

We now assume that the coordinates where the product should be positioned are known. The next step is to find the physical characteristics that correspond to the desired position on the map. Several solutions are available.

The easiest solution is to find a brand that is located at a position close to the desired one, and to look at its characteristics in the chart in Figure 11. If such a brand exists, then you may decide to copy the level of this brand along the desired attributes. This analysis may be done attribute by attribute, looking at different brands. You may copy the processing power of brand A because it is very well positioned on the map along the Power axis, and copy the Battery Life of brand B.

If no such brands exist, then you will have to interpolate, using the best positioned brands on the market. The interpolation may be done using the semantic scales data or the multidimensional scaling ones.

A. Using semantic scales

Let's suppose that you want to determine the processing power (in gigaflops) that corresponds to the coordinate 5 on the 1 to 7 scale.

A graph such as the one depicted in Figure 60 will facilitate the interpolation process. This graph is available in the additional graphs, accessible through a link at the top of the study. It is obtained for each characteristic by plotting the actual characteristics of all marketed brands on the horizontal axis and the corresponding perceptions on the vertical axis. Each marketed brand corresponds to a data point on the graph. There is one such graph for each characteristic: processing power, display size, etc. The segment ideal values are indicated on the vertical axis.

Doing the estimation is straightforward with this chart. Simply plot the desired coordinate on the vertical axis, 5 in our example. Follow a horizontal line until you intersect the green curve, and then follow a vertical line starting at the point of intersection. You can now read the physical characteristic (in gigaflops) corresponding to the desired position 5. This is 69 in our example. Note that you can find in "additional charts" the estimated straight line obtained with linear regression, which can help you translate ideal values into actual characteristics.

The curve on our example is almost a straight line. This is not always the case, especially when several brands have been positioned or repositioned on the market using perceptual objectives.

Repeat the process above for each dimension for which you need to find the physical characteristic corresponding to a desired coordinate.

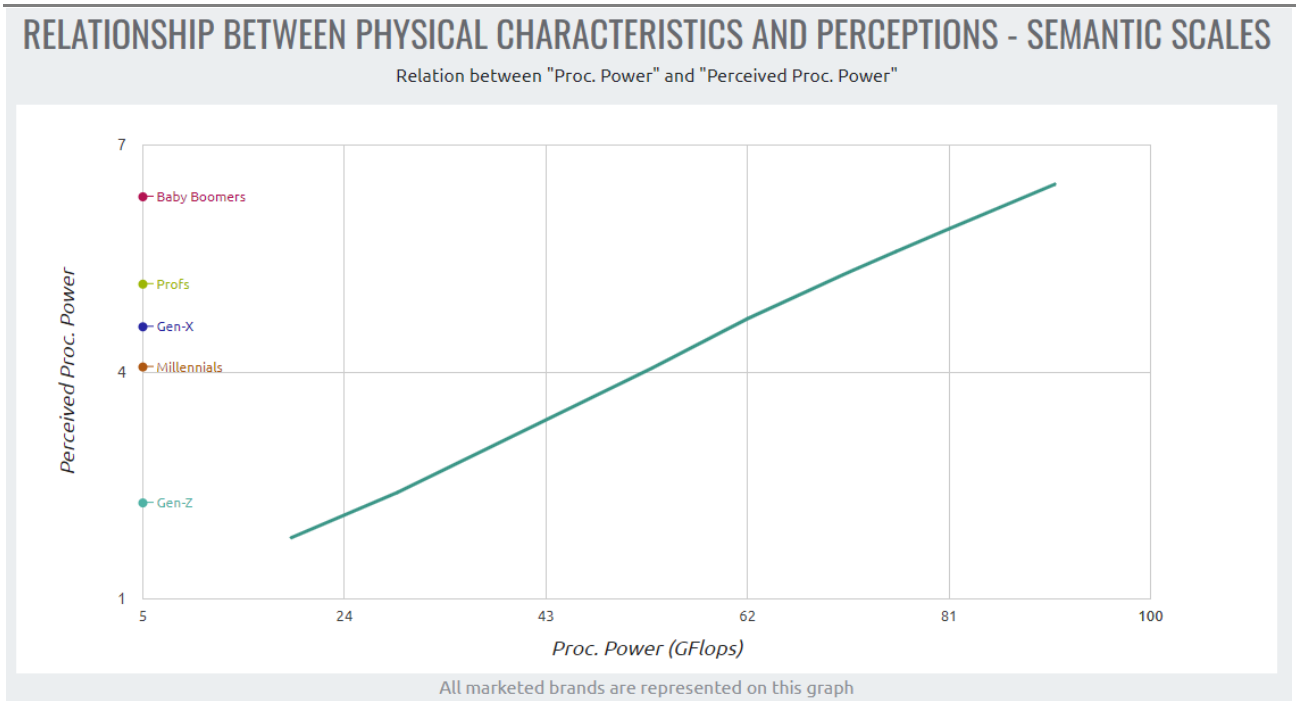


Figure 60 – Relationship between attributes and perceptions – Semantic scales study

B. Using multidimensional scaling

Let's suppose that you want to determine the processing power (in gigaflops) that corresponds to a performance of 10 on the scale -20 to +20.

A methodology similar to the one applied to semantic scales can be used with multidimensional scaling data. The main difference is that there is not a one-to-one relationship between MDS dimensions and physical characteristics. Instead, each dimension is related with two or more physical attributes. For instance, performance is strongly linked with processing power and display size. Hence, the desired coordinate in performance will be used in two interpolations, one to determine the matching processing power and one to determine the display size.

A graph such as the one depicted in Figure 61 will facilitate the interpolation process. This graph is available in the additional graphs, accessible through a link at the top of the study. It is obtained by plotting the actual characteristics of all marketed brands on the horizontal axis and the corresponding perceptions on the vertical axis. Each marketed brand corresponds to a data point on the graph. There are 18 such graphs, one for each couple "physical characteristic × MDS dimension"; for instance, Processing Power × Performance, Display Size × Performance, etc. The segment ideal values are indicated on the vertical axis. Note that you can find in "additional charts" the estimated straight line obtained with linear regression, which can help you translate ideal values into actual characteristics. Some of these charts are meaningless. For instance, the graph Design × Performance is unlikely to provide useful information as Design is not related to Performance. Obviously, you should not use performance to determine a level in Design or Battery Life because these dimensions are not related to one another.

Doing the interpolation is straightforward with the appropriate graph. Simply plot the desired coordinate on the vertical axis, 10 in our example. Follow a horizontal line until you intersect the green curve, and then follow a vertical line starting at the point of intersection. You can now read the physical characteristic (in gigaflops) corresponding to the desired position 10. This is 82 in our example.

The curve on our example is not exactly a straight line. This is the case when several brands have been positioned or repositioned through advertising and perceptual objectives. Some readings are more difficult to do; for instance, a desired coordinate of 5 gives a characteristic comprised between 60 and 68 gigaflops.

In such a case, you will have to use your judgment. This is also true in case the Semantic Scales study and the MDS one give two different readings.

Repeat the process above for each dimension where you need to find the physical characteristic corresponding to a desired coordinate.

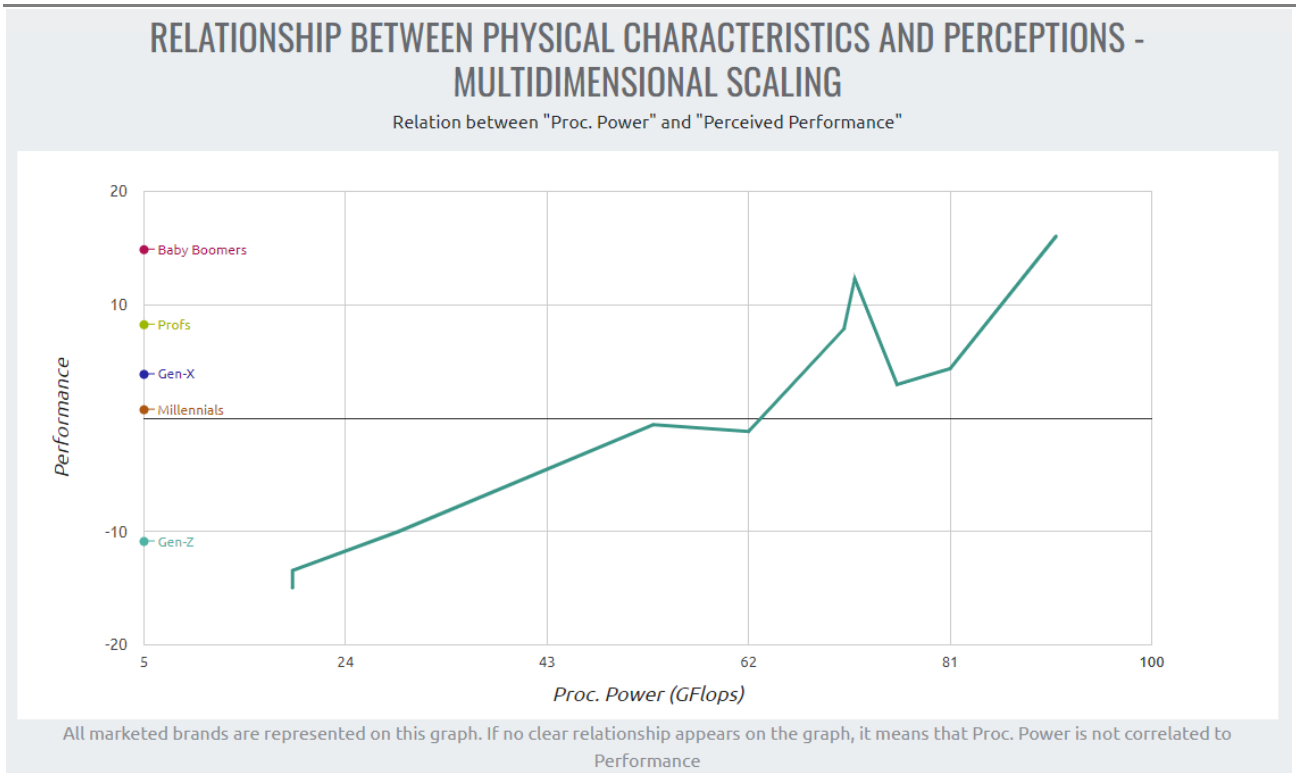


Figure 61 – Relationship between attributes and perceptions – MDS study

4. Situations where repositioning is required

Ideal points on the perceptual map or on the semantic scales' chart, reflects the needs of consumers, or the price that they are ready to pay to get a product that fits their needs. *For a given brand and a given segment, the optimal position on the map is as close as possible to the ideal point of that segment.* Indeed, we have explained in section II.1 why offering a level higher than the ideal one is not necessarily better.

However, there are several reasons why brands are not always ideally positioned:

A. Changing segment needs

We have already mentioned several times that segment needs evolve over time, due to changes in the environment or in consumers' values and behaviors. Consequently, a brand which was well positioned when it was introduced to the market may be perceived as *low-performance* or as *having a high carbon footprint* a few periods later. Period after period, the distance on the map between the brand and the ideal point becomes greater and greater.

B. Price pressure

This situation is similar to the previous one. As price is the most important dimension in the Sonite market, manufacturers should expect pressure from consumers to lower prices, especially in the low-end segments. Again, if brand prices are not adjusted accordingly, the distance between the brand and the ideal point along the price or economy axis is likely to increase.

C. New target segments

For a new market in its early stages, a good strategy may be to serve several segments with a single brand. This situation may occur if the needs of two segments are fairly similar or if one segment is too small to allow

the necessary economies of scale. Then, as these needs change, or as the segment size increases, it may become necessary to position one brand closer to each ideal point.

D. Competitor entry

In the absence of competition, one firm may successfully serve consumers with a product that is not exactly adapted to their needs. Then, if a competitor introduces a new brand that fits these needs better, it may become necessary to reposition the old brand closer to the ideal point.

In all the above situations, brands must be repositioned to adapt to new environmental conditions; however, a brand does not always need to be repositioned on all dimensions. For instance, a two or three-year-old brand may be perceived as low-performance, but as having the right convenience level. In this case, there is no reason to change the perception along the convenience dimension. Repositioning can be achieved by changing the brand's price, through advertising or via R&D.

5. Repositioning strategies

Repositioning can be achieved by advertising or by research & development. Although consumers' perceptions are linked to the brand's physical characteristics, they can be slightly influenced by communication. But the repositioning effect is limited; this is especially true when the brand awareness level is high, because a brand with which consumers are extremely familiar is more difficult to reposition. Beyond a certain level, brand repositioning can no longer be done by advertising alone. At this point one must complete an R&D project with physical characteristics matching consumers' needs, and then to upgrade the brand. R&D projects will take at least one period to complete, while repositioning through advertising has an immediate effect.

A. Positioning with Advertising

Advertising in Circular Markstrat is mainly used to build brand awareness and to inform customers about products' physical characteristics, but it can also be used to reposition a brand. Using advertising to reposition a product is a four-step process:

- Identify your desired position on the perceptual map or on the semantic scales' chart (for example, to reposition a brand closer to the *Shoppers* segment along dimensions *Battery Life* and *Processing Power*, first estimate the future ideal positions of that segment on these two dimensions, as explained in section VI.2).
- Enter the coordinates identified in the previous step in the *perceptual objectives* for the brand when making *Marketing Mix* decisions, as explained in section 0. You can choose to set perceptual objectives based on either semantic scales or MDS dimensions. Select the two chosen dimensions and enter the coordinates of the point that you want to reach. A maximum of two dimensions may be specified to keep the message simple and effective. Actually, there is no reason to communicate on two dimensions if repositioning is required on only one dimension; in such a case, select *None* for the second dimension and your communication message will be even clearer.
- Allocate an advertising media budget for the brand, to buy media space and time, and an advertising research budget. The effect of advertising research is two-fold. First, it makes your advertising campaign more effective, by a better selection of media and a better design of the advertising copy. Second, the repositioning impact will be higher in terms of reaching the perceptual objectives, although there will naturally be a limit as to how far and how fast advertising can change perceptions. It is considered that between 10% and 15% of your total advertising budget should be spend in advertising research for an effective repositioning to take place.
- Indicate how you want to allocate your advertising budget across consumer segments. The targeted segments must be consistent with the perceptual objectives that you have set. Please note that this decision alone is not sufficient to reposition a brand. Indeed, targeting specific segments is mainly done by selecting the most appropriate media to communicate the message, but it has little effect on the *content* of the message.

Finally, you will have to implement the same type of advertising program when you change the physical characteristics of a brand or when you change its price significantly.

B. Positioning through Research & Development

As explained before, a brand must be repositioned through R&D when the distance between the desired position on the perceptual map – or on the semantic scales' chart – and the brand is too large. Research and development must also be used to introduce new brands, since all marketed brands must be based on R&D projects.

Using R&D to reposition a product or to introduce a new one is a four-step process:

- Identify the desired position on the perceptual map or on the semantic scales chart.
- Estimate the physical characteristics that correspond to this desired position (as explained in section VI.3).
- Develop an R&D project with the physical characteristics calculated above. This is done in cooperation with the R&D department as explained in section 0.
- Introduce a new brand or modifying an existing one. Completed R&D projects can be used to reposition existing brands by modifying the physical characteristics that are the basis of consumers' perceptions. They can also be used to introduce new brands. In both cases, a coherent advertising campaign will have to be implemented at the same time to inform consumers about these changes.

Note that this process will take at least one period.

6. Research & Development

This section is a complement to section 0 on the interface between Marketing and Research and Development. More details are given here on how to choose the target base cost of a project, and on the lifecycle of R&D projects, from design to completion.

A. Project base cost

When designing a project, the Marketing department must specify the target manufacturing unit cost of the desired product. Because this cost decreases over time with experience, the Marketing and R&D department have agreed to specify the transfer cost of the first 100,000 units of the new product. This cost is called the *Base cost*.

Base costs have no upper limit. If you indicate a high base cost, the R&D department will have more flexibility in finding the appropriate materials and manufacturing processes. Consequently, the project is easier to develop, and is less expensive in terms of the total development budget.

The lower limit of the base cost for a given project depends on its technical specifications: the more sophisticated a product is, the higher the minimum base cost will be. The higher the level of each attribute (Processing Power, Display Size, etc.), the higher the minimum unit cost. There is one exception to this rule: unit cost will increase if you try to reduce the carbon footprint of your product.

One strategy for choosing a base cost is to request that the R&D department develop the project at the minimum cost. This solution is highly attractive in terms of margins, but may be more expensive overall since its development budget is likely to be much higher than alternatives.

Another solution is to calculate the highest base cost economically achievable. You start from the *desired* or *ideal* price of the targeted consumers, i.e. the price that consumers are willing to pay for a product fitting their needs. The base cost is then obtained by subtracting the average distributor's margin plus the margin that will make the future product economically attractive for you to market (including advertising and distribution channels costs). A base cost calculated this way will be higher than the minimum one in many cases.

Finally, you may order a feasibility study to obtain an estimate of the minimum base cost and of the required development budget. Feasibility studies cost $100,000 and take one period to complete.

B. Budget required for completion

An R&D project includes the research work necessary to develop a prototype of the desired product and the development work necessary to find potential suppliers and set up manufacturing processes. Your

department must allocate a budget to each project to cover these R&D expenses. When the project is completed, the production department is ready to produce the first units of the product at the transfer cost specified in the R&D report, assuming a first production batch of 100,000 units.

The budget required for the completion of a project is a function of several parameters. The budget depends on the requested physical characteristics: the more sophisticated the future product, the higher the budget. It also depends on the experience of the firm with comparable products, i.e. on the number of projects completed in the past with similar characteristics. Finally, the development budget depends on the base cost requested, as explained in the previous section. Note that the R&D department is managed as a profit center, and will not reimburse you if you allocate exceedingly high budgets.

The budget required to complete a project may be estimated through an online query, as explained in section III.8.F. It may also be obtained with a feasibility study.

C. Responses from the R&D department

All the R&D projects which the firm has worked on in the previous periods are listed in the R&D section of the Company Results. The report details completed and uncompleted projects, including the two projects which existed at the beginning of the simulation. A typical report is shown in Figure 18.

Let's use the following example to illustrate the possible responses from the R&D department after one period of development. The table in Figure 62 summarizes the responses for a new project with identical physical characteristics but with four different requested levels of base cost and allocated budget.

The figure in the middle, *Normal budget for completion*, is calculated by R&D at an early stage of the project. This figure is internal to the R&D department and is not disclosed to Marketing. It is the same in case A and B, or in cases C and D, because it depends on the technical specifications and on the requested base cost. The project will be completed only if the allocated budget is greater than or equal to the normal budget. This is what happens in cases A and C. Note that the extra budget ($200k in case A and $450k in case B) is not given back to Marketing.

The project is completed in case A despite the fact that the base cost specified ($80) was below the minimum base cost ($110); it was automatically adjusted, and the project is successfully developed at the minimum base cost.

Note that the *Minimum base cost* is the same in all cases because it only depends on the technical specifications. For case C, the Marketing department could decide to immediately launch a cost reduction project, so as to complete a new project with the same physical characteristics and a base cost of $110.

Uncompleted R&D projects may be continued the following period or may be suspended (*shelved*) for one or several periods. If you choose to never continue the project, the budget allocated so far is lost. The technical characteristics of a continued project may not be changed from their original values.

		Case A	Case B	Case C	Case D
Project specifications	Number of Features (Kg)	17	17	17	17
	Design (Index)	6	6	6	6
	Battery Life (Hour)	85	85	85	85
	Display Size (“)	35	35	35	35
	Processing Power (Gflops)	70	70	70	70
	Requested base cost	$80	$80	$130	$130
	Allocated budget	$1 000k	$300k	$1 000k	$300k
R&D Internal Data	*Normal budget for completion*	*$800k*	*$800k*	*$550k*	*$550k*
	Minimum Base Cost	$110	$110	$110	$110
	Project successfully completed	**Yes**	**No**	**Yes**	**No**

Response from R&D at end of period	Current base cost	$110	$110	$130	$130
	Minimum base cost	$110	$110	$110	$110
	Additional budget for completion	-	**500k**	-	**250k**

Figure 62 – Interface with R&D department

D. Brand introduction, modification or withdrawal

R&D projects may be used as soon as they are completed to launch new brands or to modify existing ones. They may also be shelved for future use. Brand portfolio decisions are summarized below and are detailed in section V.5.

A new brand is introduced on the market by entering a brand name which has not been used in the past. This brand name is completely independent of the code used for the R&D project. An existing brand is modified by keeping its current name and using the physical characteristics corresponding to a new completed project. Using a new brand name will facilitate the product's positioning, but its brand awareness will have to be completely built from scratch. Using an existing brand name makes its repositioning more difficult, since consumers are familiar with the brand at its previous position. However, as the awareness level is maintained, the brand's purchase intentions are likely to be higher than with a new brand.

The same product can be marketed under different names. The presence of multiple brands targeted at the same segment is a good strategy to build barriers to entry of new brands by competitors. A company may also market multiple brands based on the same project to different segments which are willing to pay different prices while having similar technical needs.

When a brand is modified, the Production department will immediately start producing the new version of the product. Lowering the cost of a brand is considered a brand modification. Obsolete inventories are sold by the Production department to a trading company at a fixed percentage of their value, usually 80%. This company will then export the old products outside the Circular Markstrat world. Consequently, a loss of x% (the given percentage) of the inventory value is charged to the marketing department. The same rule applies if inventories remain when a brand is withdrawn from the market.

VII. USERS'S GUIDE TO THE MARKETING PLAN TOOL

The marketing plan section is a useful tool to check the consistency of decisions and to easily anticipate their possible financial consequences. It will help you estimate your revenues, expenditures and contribution for the decision period. The principle is to first estimate the retail unit sales of your brands, and then to use your current decisions – prices, advertising expenditures, distribution channels expenditures, etc. – to calculate all the other figures, from revenues to contribution.

The marketing plan tool is **not** based on a Circular Markstrat mathematical model. It is a sophisticated spreadsheet that uses the information **you** provide to make the calculations. Many facets of the environment may change unexpectedly, including consumer needs or competitive actions. Other aspects directly controlled by the firm may not be properly incorporated, or may be overlooked. As a result, if you input highly optimistic (or pessimistic) brand market shares or segment sizes, then the tool will give you highly optimistic (or pessimistic) results.

The marketing plan built-in assistant will guide you through five steps: (1) estimating consumer segment sizes; (2) estimating the shares of your marketed brands in each of these segments; (3) calculating brand sales; (4) calculating brand revenues and contribution; and (5) calculating firm consolidated revenues and profit.

The actual brand contribution and company performance statements for the next period may be quite different from the pro forma projections obtained from the plan. An important role of the marketing plan is to provide a tangible basis to learn over time. The financial statements in the marketing plan (steps 4 & 5) are in the same format as in your annual report. This makes it easy to compare between the anticipated projections and the actual results when they are obtained. A systematic analysis of the sources of variance between the two documents will help you learn both about the market mechanisms and about the planning process. In the long-term, this learning dimension is probably the most important contribution of the marketing planning process.

1. Step 1 – Segment size estimates

The first estimates you must provide as input to the marketing plan concern the size (in thousands of units) of each consumer segment. There are two tables to fill in, one for each market. They are initially filled in with the sizes of the segments from the previous period. Segment growth rates are calculated as you enter new values in the cells. See Figure 63.

You must enter your own estimates of segment sizes for the next period. Two automated estimation approaches are available. You can click on the *Copy past period data* button to use segment sizes from the previous period or click on the *Copy market forecast data* button to use the segment size projections from market research. The second alternative is available only if the corresponding study has been purchased.

These two automated approaches provide a basis on which individual adjustments can be made based on your experience. Indeed, you will realize that actual market sizes depend on several factors: introduction of powerful brands; price changes; production shortages of preferred brands; budget devoted to distribution channels, etc. You should thus take into account your own moves as well as the anticipated moves of your competitors.

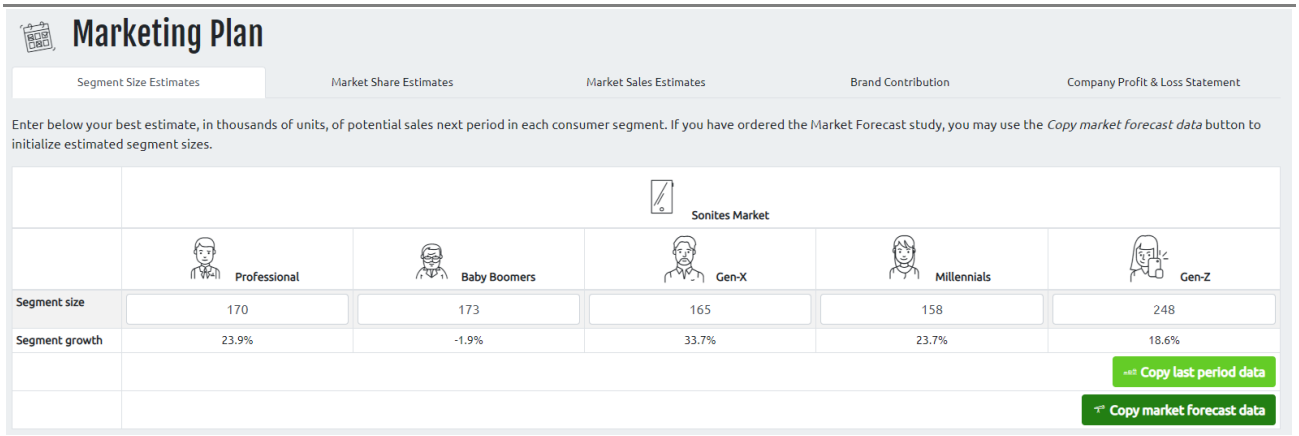


Figure 63 – Marketing Plan – Segment size estimates

2. Step 2 – Market share estimates

One of the most important aspects of marketing planning is the anticipation of the market response to a specific set of decisions or actions. In this form, expected market shares must be entered for each brand in each segment, as shown on Figure 64. There are two tables to fill in, one for each market. They are initially filled in with the market shares from the previous period for existing brands, and with 0 for newly launched brands.

When making these estimates, make sure to take into account your own decisions as well as the most likely ones of your competitors. In particular, your brand introductions or upgrades and the expected ones from competitors should be examined closely to best estimate their effects on your brand market shares.

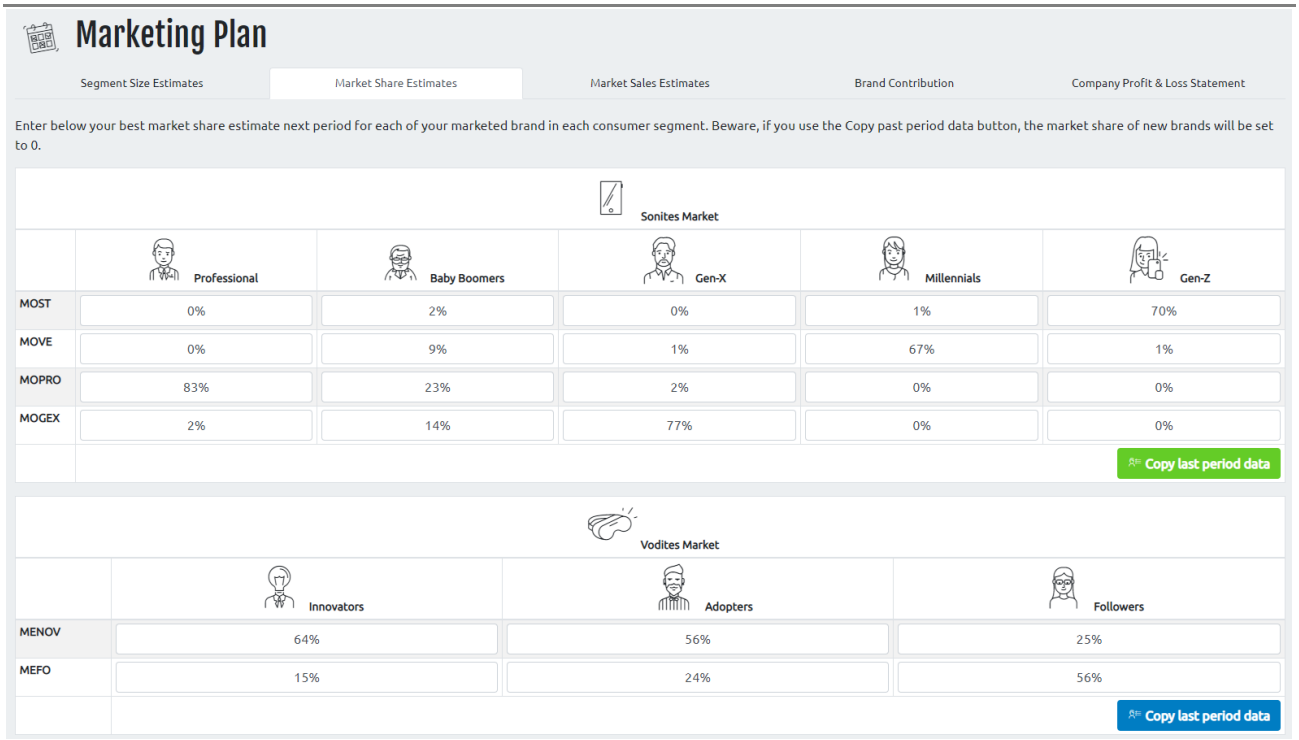
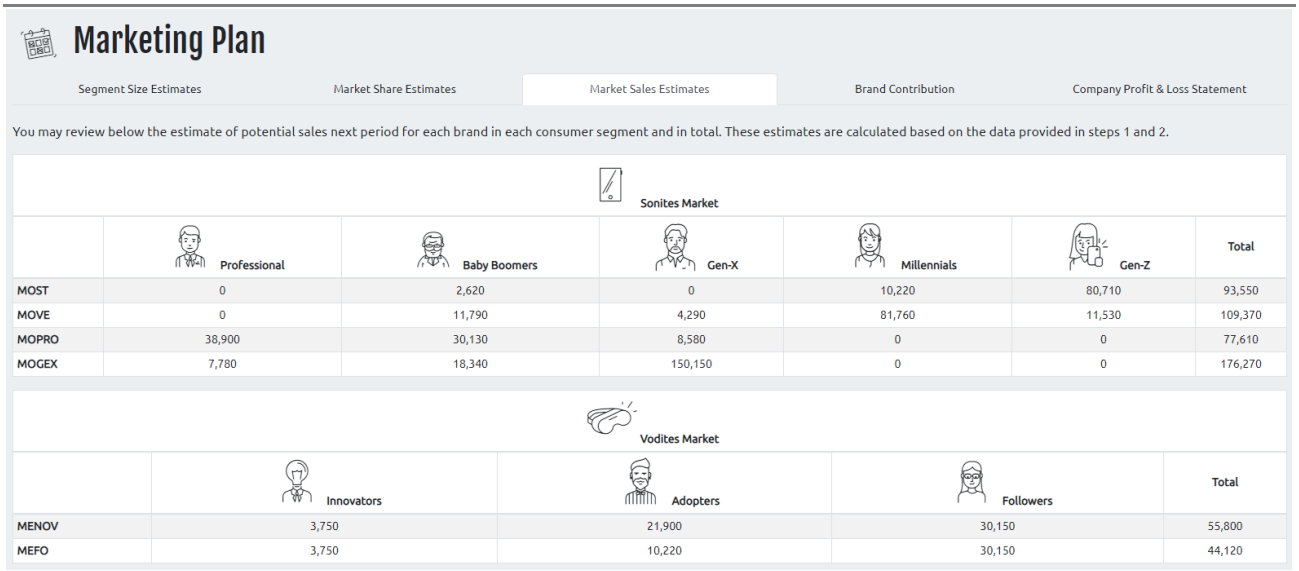


Figure 64 – Marketing Plan – Market shares estimates

3. Step 3 – Brand sales

This form calculates your brand unit sales, by consumer segment and in total. These numbers allow you to check the consistency of the estimates you entered in steps 1 and 2. For instance, if you realize that the sales of a given brand will more than double according to your estimates, you may want to go back to the steps 1 and/or 2 to check where you have been too optimistic.

This form is also useful to check the consistency of your production plan decisions. Indeed, the process suggested in steps 1 and 2 is usually pretty accurate to predict sales. Hence, you may use this process to estimate how many units you need to produce. Make sure to take your existing inventory into account when inputting production plans.



Marketing Plan

Segment Size Estimates | Market Share Estimates | Market Sales Estimates | Brand Contribution | Company Profit & Loss Statement

You may review below the estimate of potential sales next period for each brand in each consumer segment and in total. These estimates are calculated based on the data provided in steps 1 and 2.

Sonites Market

	Professional	Baby Boomers	Gen-X	Millennials	Gen-Z	Total
MOST	0	2,620	0	10,220	80,710	93,550
MOVE	0	11,790	4,290	81,760	11,530	109,370
MOPRO	38,900	30,130	8,580	0	0	77,610
MOGEX	7,780	18,340	150,150	0	0	176,270

Vodites Market

	Innovators	Adopters	Followers	Total
MENOV	3,750	21,900	30,150	55,800
MEFO	3,750	10,220	30,150	44,120

Figure 65 – Marketing Plan – Market sales estimates

4. Step 4 – Brand contribution

Based on your decisions and your estimates for segment sizes and brand shares, the marketing plan tool can make financial projections for the decision period. This form, depicted in Figure 66, shows a pro forma brand contribution statement, similar to the one in your annual report. All calculations are explained below:

(a) **Estimated sales:** The estimated brand sales based on your market shares (input in step 2) regardless of your production plan decisions.

(b) **Beginning inventory**: Inventory at the beginning of the period.

(c) **Production plan**: Your production plan (taken from your decisions).

(d) **Actual production**: The brand production considering the adjusted production (default +/- 20%)

(e) **Ending inventory**: Inventory at the end of the period equal to (b) + (c) - (f). If the value is in orange, it means that you will have an inventory for the next year.

(f) **Final sales**: Brand sales considering your production plan decision and your inventory at the beginning of period. Equal to Minimum between (a) and (d) + (b). If the value is in red, it means that your production and your inventory is not enough to cover all estimated sales.

(g) **Revenues**: Equal to estimated unit sales × (price – distribution margin), where the distribution margin is calculated based on segment shopping habits, if you have purchased the corresponding study, or is calculated as the average margin of all channels otherwise.

(h) **Cost of goods sold**: Equal to estimated unit sales × unit cost, where the unit cost is calculated using the same formula as the one in the Circular Markstrat model; this formula takes the experience effect into account, as explained in the Productivity Gains section.

(i) **Inventory holding cost**: Equal to units in inventory × unit cost × %IHC, where IHC is a factor (usually equal to 8%) that may be customized by your instructor.

(j) **Inventory disposal loss**: Equal to the number of units disposed of × unit cost × %IDL, where IDL is a factor (usually equal to 20%) that may be customized by your instructor. Inventory disposal loss occurs when a brand is upgraded.

(k) **Contribution before marketing**: Equal to (g) – (h) – (i) – (j).

(l) **Advertising media**: Equal to the budget allocated in your decisions.

(m) **Advertising research**: Equal to the budget allocated in your decisions.

(n) **Distribution Channels costs**: Calculated based on your decisions about budget allocated to Distribution Channels (costs of a commercial team person for traditional distribution channels is given in the report entitled *Market & Competitive News)*

(o) **Contribution after marketing**: Equal to (k) – (l) – (m) – (n)

This form allows you to check if your brand will be profitable next year and how much contribution it will generate. It may also help you improve your brand result. Here are a few points to investigate.

How can you improve your top line?

- If the product is not right, should you launch an R&D project to improve your brand characteristics?
- Should you increase price to raise your profitability or should you decrease your price to align on competition and get a bigger market share?
- Should you specify perceptual objectives to improve your positioning?
- Should you increase your marketing efforts (advertising & distribution channels)?
- Should you focus these efforts on a single consumer segment or should you try to reach two or even three segments to target more consumers?
- Etc.

How can you reduce your costs?

- Should you launch a cost-reduction R&D project to reduce your COGS?
- Should you lower your production plan to get rid of your existing inventory?
- Should you, on the opposite, increase your production to benefit from the experience effect? This is usually a good idea for new brand launches in markets or consumer segments with low volume.
- Is your awareness high enough so that you can reduce advertising spending?
- How does your distribution channels budget compare to the ones of your competitors? Do you really need such a large number of people (traditional channels) and of commercial budget (digital channels)?
- Etc.

	MOVE	MOST
	Sonites	Sonites
Production		
Estimated sales	170009	112090
Beginning inventory	0	67464
Production plan (from decisions)	120000	200000
Actual production	144000	160000
Ending inventory	0	115374
Final sales	144000	112090
Revenues	$37,152 k	$18,495 k
Cost of goods sold	$-18,086 k	$-7,451 k
Inventory holding cost	$0 k	$-614 k
Inventory disposal loss	$0 k	$0 k
Contribution before marketing	$19,066 k	$10,431 k
Advertising media	$-2,400 k	$-1,440 k
Advertising research	$-100 k	$-60 k
Distribution channels costs	$-617 k	$-617 k
Contribution after marketing	**$15,949 k**	**$8,314 k**

Figure 66 – Marketing Plan – Brand contribution statement

5. Step 5 – Firm Profit and Loss statement

Based on your decisions and your estimates for segment sizes and brand shares, the marketing plan tool can make financial projections for the decision period. This form, depicted in Figure 67, shows a pro forma firm profit and loss statement, similar to the one in your annual report.

The lines from *Revenues* to *Contribution after marketing* are obtained by summing the columns in the previous form *Brand contribution*. The other lines are explained below:

(j) **Market research studies**: Equal to the total cost of the market studies ordered in your decisions; the cost of each study is given in the *Market studies* decision form.

(k) **Research and development**: Equal to the sum of all budgets allocated to R&D projects in your decisions; the allocated budget is one of the many decisions which you have to make when initiating or continuing a research project.

(l) **Exceptional costs & profits**: Usually equal to 0. You may incur an exceptional cost if you decide to withdraw a brand; in this case, any remaining inventory will have to be disposed of, the cost of which will be calculated as explained previously in the *Inventory disposal loss*.

(m) **Earnings before taxes**: Equal to *Contribution after marketing* – (j) – (k) – (l)

	Period 2	Period 1	Period 0
Revenues	$55,647 k	$53,349 k	$50,342 k
Cost of goods sold	$-25,536 k	$-27,088 k	$-29,015 k
Inventory costs	$-614 k	$-396 k	$-289 k
Contribution before marketing	$29,497 k	$25,865 k	$21,038 k
Advertising expenditures	$-4,000 k	$-4,000 k	$-4,000 k
Distribution channels costs	$-1,234 k	$-1,216 k	$-1,198 k
Contribution after marketing	$24,263 k	$20,649 k	$15,840 k
Market research studies	$-318 k	$-312 k	$-306 k
Research and development	$-627 k	$-500 k	$0 k
Exceptional costs & profits	$0 k	$-81 k	$0 k
Earnings before taxes	**$23,318 k**	**$19,756 k**	**$15,534 k**

Figure 67 – Marketing Plan – Company P&L statement

ABOUT CIRCULAR MARKSTRAT

Markstrat simulation was created more than thirty years ago by Jean-Claude Larréché, Alfred H. Heineken Professor of Marketing at INSEAD, and Hubert Gatignon, The Claude Janssen Chaired Professor of Business Administration and Professor of Marketing at INSEAD, and has been constantly improved since its creation.

Used in combination with traditional training methods such as conceptual sessions or case studies, Markstrat is a highly effective tool for learning strategic marketing concepts, such as brand portfolio, segmentation, and/or positioning strategies, as well as for learning operational marketing. Similar to a flight simulator, this marketing simulation allows students and managers to practice new skills in an intensive time frame and in a risk-free environment before trying them out in a real business environment.

Circular Markstrat was developed over 2021-2022 in collaboration with Professor Caroline Ducarroz (UCLouvain, Louvain School of Management) and launched in 2023. Circular Markstrat gives an environmental perspective to Markstrat simulation and includes environmental concerns in a plausible economic perspective, using principles of Circular Economy.

Also, besides bringing an environmental setting based on *circular economy* considerations, Circular Markstrat is well anchored in another setting that companies have to deal with nowadays: *digitalization* of markets, by introducing digital & traditional media as well as digital initiatives.The mathematical model of Markstrat and of Circular Markstrat is based on solid theoretical foundations, whose underlying formulas have been extensively tested. These simulations have been used to successfully train large number of participants and executives from many universities and organizations.

You and your team will be given a company and product portfolio to manage in a dynamic and interactive environment, facing environmental challenges. No previous computer experience is required but it is important to read this handbook prior to your course. If you do not read it carefully, you will run the risk of putting your team at a competitive disadvantage!

ABOUT STRATX SIMULATIONS

StratX Simulations is a subsidiary of StratX, a unique training and development group founded by INSEAD Marketing Professor, Jean-Claude Larréché. StratX brings together disciplines from leading business schools, management consultants and learning design specialists.

StratX Simulations' mission is to develop and market business games to the Academic Community. We develop high-tech, sophisticated simulations and tools, in partnership with academic stars such as Jean-Claude Larréché, Huber Gatignon, Chan Kim and Renée Mauborgne, all professors at INSEAD.

StratX Simulations is active in three disciplines: Marketing, Strategy, and Management. Our methodology is based on our belief that new skills must be learned through action and experience in addition to books and lectures.

Over the past thirty years, StratX Simulations has designed and developed a portfolio of world-class business simulations, including Circular Markstrat, BrandPRO, MixPRO, Digital MediaPRO and Blue Ocean Strategy Simulation, used in over 500 business schools in 60+ countries.