Dynamic Cycles of Strategy, Marketing and Sales
A Framework for Capital Goods Industries

By

Tadeu Rezende de Azevedo

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Abstract

This thesis proposes a framework to help managers facing growth challenges or commoditization problems in business to business, particularly with capital goods. The framework is based on the proposition that strategy, marketing and sales are cycles that happen with different durations. Strategy defines perspective, plans, position and patterns. It encompasses several marketing cycles where offerings are defined; pricing policies are declared; channels are chosen and promotions are deployed. Several cycles of sales will happen within a marketing cycle with respect to the timing of deals in the specific industry in which the firm operates. The framework proposes the use of strategy-based analysis to identify whether problems and the need for change or adjustment are in the strategy, marketing or sales dimension. Various aspects of strategy, marketing and sales that are relevant for capital goods are presented, drawing on parallels from practical examples based on companies or evidence from the literature. Specific propositions of strategy related to platforms, services and integrated services are presented. Four companies (ABB, GE, Voith Hydro and Rockwell) have been studied to illustrate the thesis. A collection of practices for the implementation and adaptation of changes in the organization are discussed. The thesis concludes that there is no right or wrong approach, and that it is important that managers ensure consistency within these dimensions and with other areas of the firm. Finally, some ideas for the next steps are discussed.
Acknowledgements

The decision to leave Brazil and come to the U.S. to work and study could only be possible with the unconditional support, love and help from my wife Renata, who understands me more than anybody else. My daughter Fernanda was always kind and happy, wanting everyday nothing but play and love. Studying at MIT falls like drinking from a fire hose. When I was really tired, they gave me energy and incentive to keep going.

To take a year to reflect and study at the middle of a busy career is a privilege and I am most grateful to Voith Hydro for the opportunity.

Several people supported me on this journey, not only at MIT but also in my life up to here. To them I am most grateful:

Osvaldo San Martin for the insightful exchange of ideas, intellectual challenges and for setting an example of what a senior executive should be.

Kevin Frank for the opportunity to come to the U.S., work challenges, candid feedback and support.

My parents Rubens and Veronica, who provided my siblings and me with an environment with full access to education and practical experimentation and taught us to praise intellectual virtue.

My siblings Tarik, Tasso, Tamara and Talita, each one in a different area of knowledge, making every family encounter a profound discussion about a different issue.

My friend Daniel who introduced me to the art of sales.

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My professors who made me see a whole new set of ideas and concepts in the fields of marketing, management, economy and human behavior.

My advisor, Michael Cusumano. It would have been easier for him to give me answers, but, instead, every time we talked he posed me insightful questions that made me think for several days and search for more information, expanding my thinking to dimensions I never envisioned before.
Prologue

The content of this thesis could be summarized by the following insight: In companies that deal with capital goods for the power generation industry, strategy, marketing and sales cycles are dynamic, interconnected and have different time horizons. Once we think about this it sounds obvious, but it is surprising how many people do not realize this while working in companies. The misperception might not be present inside boardrooms. However, it causes lots of arguments among teams operating in the marketplace as competitive, contextual challenges, as well as price disputes arise among other obstacles. The reality is that associates, managers and senior managers act, but quite often not on the origin of the problem or challenge. Some blame strategy when the problem is on marketing, expecting results on the sales timeframe and so on and so forth. Thinking about a combination of this confusion, one can probably find a company that fits the description. I have been through these questions many times and had endless arguments with my peers in Brazil, the U.S., Spain, Italy, Germany and India, trying to improve our company. Discussing with people from other organizations, I could see that this was not an exclusivity of the organization I work for.

I read many books on strategy and organization, and my experience on the job gave me insightful ideas for running the business. Nevertheless, I always had the fundamental question in my mind: "Are we making the best choices?"

Coming to Cambridge and investing a year at MIT in the Sloan Fellows Program was a privilege and a unique opportunity to take the time to think about the questions I had in my mind on how to increase the odds of success of organizations. The motivation to write a thesis was my fundamental need to organize what I knew, what I learned and what I realized in conversations I had with classmates, professors and professionals I interviewed into structured reasoning to help not only me, but other people who face similar questions.
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1 Introduction

I had the experience of managing sales teams for six years in two different market moments. First the market was in a boom pre-2008 crisis. It was not the case to have more demand than supply but it could be said that it was a balanced situation where all suppliers had backlog and yet space in their pipelines for more projects. A second situation came after 2009 when backlogs had been consumed and new orders became scarcer. Although the price level in both situations was different, there was always a common theme in our daily work: pressure from customers for price reductions. Customer’s consultants interact aiming to produce a specification for purchase that allows them to have comparable proposals with offerings of comparable performance in such a way that there is no differentiation but price. In this ideal situation, they can then use several techniques with the sole objective of obtaining the lowest acceptable price from all the suppliers and ultimately buy from the cheapest (or less expensive) of those compliant with the technical specification. Yet the market is not perfect and there is room for price premiums. There is a lot of discussion whether a company can generate differentiation to be preferred everything else being equal or even being preferred under a certain premium of price. In an industry where net margins are tight (one digit) having a premium of one to three percent can represent great gains in ROCE (Return On Capital Employed) and consequentially on the performance of these companies. How to run away from pure price comparison and get access to the premiums that command superior performance and enhance odds of a long life for the firm?

There is a fundamental dichotomy in the market that is not taught in business schools and negotiation books. On the one hand, companies search desperately for differentiation following the concepts of Porter (1980 and 1985) on competitive strategy and competitive advantage or customer’s lock-in as described by Hax (2010) in its delta model. On the other hand, customers and consultants are doing all the efforts to produce equals to be able to choose. In this case is it not possible to find common interests that could be shared as described by Fisher et. Al (2011) in his best seller “Getting to Yes” from the Harvard Negotiation Project.

When customers succeed on their strategy, they are able to buy with the lowest possible price. According to Pindick and Rubinfeld (2012), the supplier’s price will be equal to the marginal cost of productions leaving no room for profits, or in microeconomic terms, no surplus will be captured. Sometimes the deal is even crueler with booked losses for the seller.

Pure price comparison is the fundamental manifestation of commoditization. Options to escape from it are of the essence for a company to maintain its capacity of capturing
surplus from the market or customers and therefore generate the economic value that is essential to its existence.

When companies realize that such phenomena is occurring there is lots of arguing on what to do. Proposal engineers will blame sales people who "do not know how to sell", sales people will blame product developers who "do not develop the right products" and marketing specialists who come up with "unrealistic numbers", and marketing specialists blame the company strategy that "is not aligned to the market". Probably the problem in fact lies in one or more of these subjects but how to understand and solve it? First there has got to be either consensus or a common understanding of the problem and them commitment around what to do to solve it.

![Diagram of Business Cycles]

**Picture 01:** The cycles of a company to maintain value generation and capturing.

The objective of this thesis is to propose a framework to help managers understand where there is a potential or an effective problem and provide indication of common practices in the industry when managing these issues. In this sense the analysis of the actions was divided in three portions: strategy, marketing and sales. The division is made because first, although the three activities are linked, they are very different; second, they happen in different scales of time.

The strategy cycle is the longer-term perspective of the business that usually relates to the tenure of a CEO or a Board. It is about the bold decisions of the company of where to focus its efforts and limited tangible and intangible assets to optimize the use of the strategic resources to succeed in the market space. Fundamentally, combined with the culture of the organization a good strategy will tell the team what the company does and what it does not do. The strategy cycle is

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1 The first reference of this division was made by Azevedo et. Al. (2012) on a paper prepared to the discipline 15.903 (Managing Modern Organizations).
related to the changes on the strategy, not necessarily to the tenure of a CEO or a Board. Intel for example left the memory business and decided to focus on processors and call itself a microcomputer company in 1985 and Gordon Moore continued to be CEO and Andrew Grove its chairman of the board. Actually they were the ones who took the decision.

The marketing cycle refers to decisions and actions a company takes to have the offerings it needs to have to be able to sell according to its strategic directives. A marketing cycle happens several times over the course of a strategic cycle. The offerings are usually thought of on the basis of products (or services), price, place (channels) and promotion. In B2B, especially in capital goods, it is common to associate price, place and promotion to sales, but this is not the case. These three are fundamental decisions that should be taken prior to the effective sales effort to optimize the results of the sales teams. In this thesis, the product (or service) portion of marketing related to the innovation process and how it is developed to foster differentiation is also studied. On the one hand, price, place and promotion can only make sense if there is a good offering for the customers; therefore the innovation and development of offerings have a fundamental role on avoiding commoditization. On the other hand it is important to understand the role of disruption as described by Christensen (1997) or strategic inflection points as described by Grove (1999) because when they occur, they command most commonly changes on strategy not on marketing.

The sales cycle is the shortest and relates to effective effort to get deals with the customers and feed the company with precious jobs that ultimately will be the source of cash flows. The sales cycle can vary from days to months depending on the industry and segment. On the sales effort there is little if nothing to be done in terms of offerings, channels, and promotion. Pricing is usually subjected to adjustments to secure orders, but if value has not been understood before, it is a good way to destroy the value. The sales is about finding the leads, and identifying problems and needs that have to be fulfilled and providing the best offer to do so. The process can be passive or proactive. Relationship plays a big role. Even though this is where the action happens with the customers, the odds of success will be directly correlated to the quality of the strategy and marketing performed by the organization before. Yet, without the right tactics for sales, few deals are possible and therefore it is important to study sales on the context of strategy and marketing.

How to identify which course of action to take when facing commoditization? There is not such a thing as countless actions being required at the same time. By definition the resources of a
company are limited and the manager has to make tough choices to be able to focus the effort of the organization and increase the odds of success. In this thesis, an analytical framework is proposed:

1. Identify endogenous and exogenous factors for your business and build extreme scenarios for the exogenous factors and choose the scenarios for which you want to be prepared.
2. Check the fit of your strategy to the scenarios.
3. Check the consistency of your strategy, marketing and sales.
4. Check the details of sales, marketing and strategy execution.

Within the strategy analysis, it is fundamental to understand the context of the firm to be able to both understand the environment and identify what are the endogenous and what are the exogenous factors. These are the levels of contextual analysis.

- World, regional and national
- Industry context
- Competition context
- Customer context, problems or needs

While doing the contextual analysis, the manager might identify actions on Strategy, marketing and sales where it is appropriate.
Operations and product development deserve special attention although they are not the focus of this thesis. While on a day to day basis the interaction between operations and sales is tactical, touching capacity utilization and availability as well as delivery times and impeccability, there are fundamental implications between the operational capabilities and philosophical choices of companies and the resources the company will develop. These resources will actually limit the products and services the company can develop and, as a consequence, also influence the strategic decisions. The company might decide to develop a certain resource, but it has to be clear that it takes time to develop a resource or to integrate a resource that has been acquired.

Picture 3 shows a graphical interpretation of the interaction between operations, product development, marketing and sales. Operations and sales have compatible cycle dynamics in terms of clock speed while the same applies to product development and marketing. However, product development and operations belong to the same context to ensure consistency among them. Interestingly the usual interaction between sales and operations is weak, being limited to workload plans and checks prior to commitment to customers and, in some cases, checks for feasibility of a special solution. Between product development and marketing the integration is stronger since one has clear implications on the other and vice versa.

Picture 03: Marketing, product development, sales and operations

The broader view of the aspects of operations derived from the three perspectives is:
• **Strategy:** The decisions of allocation of investments on production capacity and allocation of human resources to core functions and the understanding of the strategic resources, capabilities and skills of the organization. On an emerging view, what can the company strategically choose based on its operational capabilities?

• **Marketing:** Which products, systems and services will be provided and what are the necessary adjustments that have to be made on the operation to cope with the necessary changes. What products does the company have the operational capacity to do? How aggressive can the company be on deciding to change its operations to fit a new product?

• **Sales:** Sales sells and operations delivers. On the one hand sales has to know how much can operations deliver but, on the other hand, operations has to know from marketing and sales the forecast of sales volume in order to adjust and prepare to be able to deliver.

Apart from the insight of the cycles themselves, this thesis does not intend to be an innovation, but rather a meaningful collection of knowledge produced on strategy, marketing and sales, also touching innovation and organizational behavior to help managers who are concerned about commoditization of their offerings. That being said, the thesis is structured on the chapters described below:

- Chapter 1 serves as introduction to the ideas, vocabulary and method used to prepare the thesis.
- Chapter 2 describes the commoditization, a common phenomenon faced by companies that is a usual trigger for changes in strategy, marketing and/or sales.
- Chapters 3 to 5 revise the state of the art of strategy, marketing and sales on the context of capital goods. On the portion of strategy, the analysis of world, regional, national, industrial, and competition contexts as well as customer needs and problems will be made to support the reader on identifying where are the potential problems and in which area (strategy, marketing or sales) should actions be focused to attack the problem or risk. There is also a reflection of where to act on the context of strategy. The chapters dedicated to marketing and sales are progressively directed towards the action. The context, problems and needs of the customer permeate all chapters. Practical examples that could be mapped during the execution of this thesis are presented whenever applicable.
• Chapter 6 describes in more detail the companies that are used as main examples to illustrate this thesis.
• Chapter 7 addresses the issue of producing effective action on the organization to successfully implement the strategy as well as marketing and sales actions.
• Chapter 8 concludes with an overall wrap up of the work done.
• Chapters 9 and 10 are dedicated to index of exhibits, references and attachments that contribute to the thesis but that did not fit into the core text.
1.1 Definitions

In Business literature, words are used freely and can have different meanings and nuances. In this chapter some words and expressions will have their meaning defined in the context that they are used in this thesis.

**Business to Business**: Business whose purpose is not to serve end-consumers. They exist to serve other business. Often abbreviated as B2B.

**Business to Customer**: Business whose purpose is to serve end-consumers. Often abbreviated as B2C.

**Capital Goods**: Capital Goods are goods that are used to produce other goods or services. A computer in a law firm, a five axes milling machine at an equipment manufacturer, an electric panel at a factory, an automation system for a hydropower plant are all examples of capital goods.

**Deals**: Deals are the fundamental commitment between a supplier and customer for the first to provide goods and/or services and the second to pay for these. In different organizations different milestones have to be accomplished for a deal to be recognized. In simpler transactions, the customer pays upon receipt of the goods and services, whereas in more complex ones, a contract is needed and a down payment is made for the deal to be considered completed. For the sake of this thesis, the deal is actually considered to be the moment when the customer and supplier come to an agreement and have a mutual understanding and moral commitment that one bought and the other sold regardless of the paper work involved. The implications and details are further discussed on chapter 5.

**Marketing**: Once a company decides on a Strategic Level what kind of jobs it wants to do, it has to decide what products and services it will offer to its customers to perform the job. It has also typically to divide products for the same kind of job into categories according to its complexity. An economist could call it price discrimination which in some sense it is true but typically in a Business to Business environment it is actually related to fulfilling needs or solving problems of the customer that are more complex or simpler. Since the evolution of knowledge and innovation is cyclical and continuous this activity has to be done repeatedly in the context of a strategy cycle. For instance after Rockwell decided strategically to be on the business of AC Drives, it had several cycles of identification of customer needs and problems and definition of new products, systems and
services related to drives to perform the job of feeding an AC motor with electric power and controlling its speed.

**Producer:** Also known as the sales person or salesman. The name producer has been adopted in the U.S. to refer to sales person so it was incorporated in the thesis to reflect the market dialect.

**Sales:** Sales is the process through which a deal is achieved and secured. In this thesis, Sales will also be used to refer to the work of a producer or sales person.

**SPEC:** (Or SPECs) Technical specification. This is a document prepared by a customer or by an engineering consulting firm that describes the use, features and/or scope of a certain product, service or system so that prospective suppliers can make their offers based on common ground and proposals can be evaluated for completeness, compliance with the SPECs and compared amongst them to be able to choose a winner.

**Staying Power:** Term used by Cusumano (2010) to define the ability of an organization to remain relevant and profitable year after year on a long term basis. Remaining relevant does not mean remaining in the exact same business and that was the case of IBM and Nokia among others.

**Strategy:** The decisions an organization or a company, in the context of this thesis, make to perform or not a job through its offerings. For example: Voith decided 20 years ago to quit the ventilation and eolic business and sold its manufacturing and knowledge assets that were specific for this business. Likewise, Siemens decided thirteen years ago to strengthen its position on the industrial automation business including the mechanical portion of the automation in its portfolio and acquired the related business of Mannesmann when the latest was bought by Vatech who was interested solely on the metallurgy related part of Mannesmann’s business. If the company were a sports team, the strategy would be the decisions taken to win the championship. It is the decision that affects and influences all the decisions on the organization, in the long, medium and short term.

**Strike:** The moment the Sales person understands that the customer is ready to buy and makes the final approach to get a deal.

**Tactics:** The decisions a company takes to perform or not a job on a specific offering. The tactics also comprise the process that is used to come to this decision. For most customer-centric
organizations, the decision is even shared with the customer. For example, a customer of ABB wants to have an automation system and ABB can perform the job with two different product lines, the most basic and the most advanced. If ABB sales people can identify specific needs of the customer that can only be fulfilled by the most complex, they will check whether the competition can also fulfill only with their complex product or, even better, if they cannot fulfill the requirement at all. In this case they will decide on the most complex and seek for customer acceptance. Nevertheless, if the competition can do the same job with the simple product, they will most probably try to influence the customer to reduce the requirements to be able to do the job with their simple system too. If the company were a sports team, the Tactics are the decisions taken to win one or a series of games, the decisions taken in the short term. Tactics are made on the context of the deals the company wants to make.
1.2 Method

This thesis has been based on 4 sources of information:

- **Bibliography**: An extensive review on management bibliography has been made to find the most relevant authors and publications on the subject of this thesis. Even though the research was extensive, it does not intend to be comprehensive due to time limitations inherent of the process of producing a master thesis within a year.

- **Interviews with companies**: Since the time of a master thesis does not allow making an experiment to test hypothesis, interviews with selected companies were used to illustrate the concepts explored on the thesis. The facts and information presented in this thesis do not represent the official opinion of these companies. They are my interpretations according to the information I had access to. The criteria of selection was:
  - They are leading companies in their industries.
  - They are present cross-border.
  - They were accessible.
  - My knowledge and network.

- **Conversations**: Interactions with professors and peers (Sloan Fellows, regular and executive MBAs and PhD students) at MIT and Harvard.

- **My tacit knowledge**: I came to MIT from a thirteen year career in which I had consistent experience in project management, sales and general management, being ultimately the head of sales for Latin America within Voith Hydro a German multinational company that provides solutions for Hydropower generation.
2 On Commoditization

In business literature there are several definitions for commoditization. In this thesis I will start off from Rushkoff (2005). Commoditization is the process that makes goods that have economic value and are distinguishable in terms of attributes (features, quality, brand or others) become simple commodities in the eyes of the market or consumers. When it happens there is no longer distinction and therefore there is no more room for price differentiation and market transit from monopolistic to perfect competition where the price of the good is defined by the marginal cost of production of the least efficient supplier. Suppliers capture just the surplus related to their efficiency of production, and there is no value perceived on the attributes of the product.

One should not confuse commoditization with commodification. The latest is a term derived from the Marxist theory to describe the phenomena through which something that has no economic value gets economic value for being produced and consumed in a market, being monetary or on an exchange basis. For example, walking dogs is a leisure activity. The moment one start to charge to walk somebody else's dog and there is somebody willing to pay or give something in exchange of having their dog taken for a walk, the leisure activity is commodified.

In general is easier to see commoditization happening in consumer goods. Take bottled water for example. Even though there are still a few people willing to pay more to consume the brand of premium water like Perrier, the largest majority of the population does not differentiate between different suppliers of mineral water and ends up choosing solely on price for the same quantity of water.

In business to business, especially in capital goods, this process had been ignored since companies had been able to maintain differentiation in one or more dimensions. Recently this scenario has changed. As companies seek to expand their portfolios in an attempt to capture more value, different companies start to overlap their portfolios of products and services and the final effect is increased competition. At the same time, in the information and dynamic employment era, specific know how is no longer a sustainable differentiation and competitors who have the economical means learn relatively rapidly how to perform. This way the gaps of performance between competitors close faster. Aware of that, customers make generic specifications, creating criteria as generic as possible to describe the job that has to be performed by the product, system or service in an attempt to produce comparable options so that they can choose based solely on price. Competition, lack of differentiation and price competition become the perfect ingredients for a rapid process of commoditization to happen. On the electrical panels segment in Brazil for example
this is practically a consolidated processes that destroyed price levels on the dispute among the six largest competitors: ABB, Siemens, Rockwell, Schneider, Alstom and WEG. There is always a victim of the round who will either miscalculate its marginal costs or delivery time or even be with lower backlog and drop prices and win a particular project.

On the words of Kourdi (2009), “When a product becomes easily interchangeable with other products of the same type, it is said to become a commodity. The process of a previously differentiated and specialized product becoming interchangeable is known as commoditization. While it is believed to increase overall economic efficiency, it can be difficult for individual companies to handle. Economic value and profits come from scarcity, whereas commoditization can curtail the potential for profit”. This means that the actions to prevent commoditization lie in the effort to generate some kind of scarcity that allows the generation of economic value.

In the past, companies used alternative schemes such as described by Porter and Ghemawat (1984) when GE and Westinghouse published price catalogs. The deals were never made based on the catalog’s price, yet the price reference was established in the market. Another action also used in the past was to create externalities on the process to drive decision makers’ decisions. Today, all these practices are not accepted and some of them even illegal. More than ever, competition is seen as a fundamental piece of the economic system we live in and also what brings balance to the forces acting on the market, where the customer is the referee of the game deciding from whom he wants to buy what, rewarding the best with his orders and payments. Scarcity can no longer be achieved by termination of competition. The option compliant to the markets and laws of the majority of countries is to generate differentiation for your company: products and services to make customers more willing to buy your offering than your competitor’s and therefore allowing your organization to capture economic value. In markets where there is a player that is large enough to influence the market, the option is that this player reduces capacity to trigger scarcity. The last option (available for all players equally) is cost reduction as a means to reduce the marginal cost of production below other competitors and create space for economic profit.

According to D’Aveni (2010) a fundamental part of the job of fighting commoditization is to understand its root causes. He states a model based on three possible sources of commoditization:

- **Deterioration:** Low-end firms enter with low-cost/low benefit offerings that attract the mass market. Prices go down and so do benefits for the customer.
- **Proliferation:** Companies develop new combinations of price paired with several unique benefits that attack part of an incumbent’s market. Prices and benefits can go up and down.
• Escalation: Players offer more benefits for the same or lower price, squeezing everyone’s margins. Price goes down and benefits go up.

D’Aveni (2010) also proposes a checklist to identify commoditization traps and a set of strategies designed to avoid it. Table 1 presents types of commodity trap proposed by D’Aveni (2010).

<table>
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<td>Deterioration</td>
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<td>• Has a dominant low cost competitor emerged in your market disrupting the status quo?</td>
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<td>• Do economies of scale make it impossible for you to compete with some rivals on price?</td>
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<tr>
<td>• Are customers less and less willing to pay for additional benefits such as service and industry expertise?</td>
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<td>• Are your margins falling, and are you losing market share despite the fact that you are lowering prices to match the competition?</td>
</tr>
</tbody>
</table>

Table 01: The commodity trap checklist by Richard D’Aveni.

This is an interesting approach but it is not guaranteed to be complete and if one looks closely, one could see several of the questions answered yes even in different categories, which would lead one to think that there is more than one type of commoditization happening simultaneously. The description of deterioration is very similar to the concept of disruptive innovation introduced by Christensen 1997). Nevertheless, D’Aveni (2010) has the merit of trying to tell apart different root causes of the commoditization since it will be key to defining corrective or preventive actions.

Slywotzky and Morison (1997) do not focus on commoditization of hyper-competition; instead they focus on profitability and advocate that managers should focus on profits instead of market share. They define the “no-profit zones” that are ultimately the result of commoditization. On their own words: “No-profit zones are the black holes of the business universe. In a physical black hole, light waves go in, but never come back out. In an economic black hole, investment
dollars go in, but the profit dollars never come out.” According to them the search for market share is the fundamental paradox of commoditization since it is exactly this search that usually results in no-profit zones in the economy. If you add the projections of market share of all competitors in a particular market, they will add up to much more than one hundred percent. And they will work to make their targets, forcing increased competition that ultimately ends up in a price war being triggered by the loser of the moment or by the company that eventually used price-cutting as its growth strategy. The underlying concept is not to undermine growth but actually to understand how to achieve healthy growth. They define the three curses of growth:

- **Growth with bad business design:** A company was just not made to produce all the output that it is producing. Output loses quality and the company either pays penalties or has to reduce prices to overcome the damages to reputation they are self-imposing.

- **High growth in high risk industries:** A company is enjoying the growth and is so concerned about coping with the demands that ignores risks it is being exposed. Everything goes well until a risk that was neither priced nor accrued happens and the profits are all destroyed.

- **Growth with offering mismatch:** A company facing high growth opportunities but that does not have the right offerings starts to cut its prices to compensate for the differences of the product or service with price benefits.

Slywotzky and Morison (1997) define a need for renovation in businesses in five year cycles (or sooner). Their definition is rooted on two fundamental facts of the markets: competition moves and they are thinking every day about ways to capture the profits of the other incumbents (or all of them if it is a new entrant). Customer preferences change. These two effects combined actually move the profit zone to a different area. According to Slywotzky (2002) there are 23 different profit zones that are explained in chapter 3 with comments making cross relationships with other authors. What is interesting with the concept of profit zones is that it is a remarkably useful tool for practitioners to understand the source of profits from its operations. It also helps to see trends in the market and to envision the future profit zones that the firm can occupy. Having this vision the firm can define the actions to achieve that future. A key portion of this is how to understand what the customer wants. The details will be reviewed in chapter 4 of this thesis.

As we saw, commoditization is an ongoing force that affects the business, it is a force driven by the most basic concepts of microeconomics. It is about customers wishing to have the best products for the lowest prices. There is space to create different profit zones, but these zones are
not static and therefore the firm has to move in order to avoid commoditization. The underlying questions are: Where to move? Where to act?

In my experience as a general manager of a business division and as head of sales for Latin America in a multi-national company, I witnessed endless discussions of where the problem was when we faced severe competition and commoditization of our offerings. Engineers would blame sales people for not explaining to the customers why our products and systems were so much better. Sales would blame commercial managers and risk analysts for not allowing them to take risks, or R&D for not providing the machines with the best efficiencies. Commercial people would blame the corporation for unclear guidance of what could and what could not be done. In fact (and I found it repeated in several parts of the literature that has been reviewed for this thesis), commoditization from the point of view of incumbents is an effect and not a cause. The root cause has to be found. Ideally it is not even about the root cause, it is about the potential root causes. Companies that excel in avoiding commoditization master the art of identifying potential sources of problems and acting as fast as possible before margins are completely destroyed and while there are still cash flows that can sustain the investment for the necessary changes.

The focus of this thesis is on three fundamental parts of a firm’s existence and organization: Strategy, marketing and sales. When understanding the process of commoditization that the company is going through or that it risks going through, the problem, challenge or opportunity can be found in one of these three arenas (strategy, marketing or sales). The understating of them helps to understand were the problems might be and how to address them.
3 On Strategy

There is a tale of a car race. A team reaches a wall and spends hours discussing how to overcome it when a second team comes and just crashes into it. Some say the second had its car destroyed some say they continued the race with minor damages to the car. What nobody saw was the 3rd car, which actually came first and built the wall.²

In business life and academia, a lot has been said about competitive forces, strategic inflection points, disruptive innovation, customer lock-in and other expressions that relate to the concept of a strategy for a company to differentiate itself from its competitors in such a way that there will actually no longer be competition. Under strategic planning or actions we are always looking for the magic recipe of a wall that really separates our market space from that of our competitors. The tough reality is that it is really hard to build this wall. It is not impossible but it is hard. In most of the real life competition, there is no clear boundary and sales teams have to be trained to tell and to sell this difference in the market: What does make its offerings unique that command a premium or not even accept competition? The approach to strategy in this thesis is not to search for the recipe for this wall. The approach is to use the strategy frameworks to identify the sources of problems, risks and opportunities and, if needed, where to produce change in the organization.

According to Kiechel III (2010), strategy as we know it today has its roots in the thoughts of Bruce Henderson and Boston Consulting Group (BCG) regarding the study of cost curves to derive the ideas of experience curve and gains of scale. BCG proposed the idea of “growing market share first and profits will follow”. Later BCG engaged on profitability analysis, proposing the segmentation of companies business according to growth and market share to define the businesses that are stars, cash cows, dogs or question marks. These names were actually meant to help executives decide on resource allocation. Stars needed and deserved investments, cash cows should provide cash flows for the shareholders and stars, and dogs were most probably closed.

Bain, founded by Bill Bain, an ex BCG, applied exclusivity within an industry and effectively worked on the implementation of its recommendations, accepting payments connected to the results. Later, other consulting companies entered the market. McKinsey, Booz & Allen and others brought contributions such as complete profile of profitability of a certain industry and definition of the idea of horizontal focus on an industry, breaking away from the concept of vertical production.

² This tale has been told to the author by one of the executives he interviewed for this thesis.
The mentioned approach was purely experimental until Porter (1980, 1985 and 1990), defined the use of the specific term “strategy”. Porter organized a lot of existing knowledge from economics theory into academic knowledge applicable to firms and made concepts such as the five forces, value chain and clusters of competence among others available to practitioners.

Nevertheless, the work on strategy was a lot focused on cost analysis and economic theory.

Yoffie and Cusumano (1999) starting from a deep analysis of the competition inside the software industry that extended into the understanding of similar dynamics in other environments coined the term “judo strategy” to describe companies that beat larger competitors using the competitor’s strengths against them. Likewise, they defined the term “sumo strategy” to describe large companies striking back threat from smaller competitors by using their economic power. Their work was not focused on cost but instead on how the companies play the game regarding the relationship with customers, competitors and partners. Now it was possible to have a strategy that was not based on cost, differentiation or focus.

Many other authors joined and contributed to the field of strategy. Hax (2010) proposed the delta model: instead of focusing on competition, focus on the customer needs and problems pursuing total customer solutions and, ultimately, system lock-in. Hax’s theory is that companies should pursue a situation of lock-in that effectively creates a space in the market where customers cannot leave the relationship. In some sense, Hax also recalls in several writings the concept of network externalities produced by Robert Pindyck. The concepts from Hax are extremely interesting in the context of capital goods, relatively simple to understand, definitely applicable but extremely hard to implement. Implementation of strategy concepts is a recurring theme among scholars and firms.

Most companies start discussion in strategy based on brainstorming sessions. A brainstorm, or a collection of ideas (depending on the time horizon the activity is node) is one of the most popular analysis activities for management practitioners. SWOT analysis (strengths, weaknesses, opportunities and threats), created by Alfred S. Humprey is one of the most popular tools used to organize the outcomes of such brainstorm. Companies come up with extensive lists of weaknesses and threats and immediately start defining actions to address them. Defining and executing actions is a good situation since some managers do not come this far. Nevertheless, jumping into actions when it comes to complex problems in general runs into the risk of addressing the wrong problems or challenges. D’Aveni (2010) proposes a set of solutions for the commodity trap based on the root-analysis framework. One has to search for the real causes or, at least, understand in what realm will be most appropriate to discuss actions.
3.1 Scenarios – Should Strategy Change?

Grove (1999) explains the concept of “strategic inflection points”. His proposition is that strategic inflection points are characterized by an imbalance of the market equilibrium caused by a force that is in one order of magnitude higher than the normal forces that usually rule the market. According to his statement following Porter (1980) competitive forces, these changes can come in the different forms:

- **Competition:** you are a retailer and Wal-Mart comes to town.
- **Technology:** you sell buggies and the car industry is created.
- **Customer:** you sell muscle cars and your customer base starts looking for more fuel efficient vehicles.
- **Supplier:** you do automation using a certain type of hardware and your sole supplier goes bankrupt.
- **Complementors:** you are Intel and Microsoft decides to halt the production of software for your platform.
- **Regulators:** the government issues a new directive that affects your costs but not your competition that is in another country.

According to Grove, when a large change like this happens, the organization must be ready to change and adapt to be able to survive. He asserts that middle management usually envisions the future change before top management and therefore they should be heard. The other aspect Grove asserts as a general rule is that when management decides to change they wish they had taken the decision earlier.

A manager can neither be sure about the future nor have all the information at hand but it is worth reflecting about whether it is strategy that has to change. The question whether this is a strategic issue is extremely important since strategic changes usually consume large amounts of resources from an organization. A change in strategy implies in changes of products, systems, services, promotions, pricing and most importantly of the mind set. The behavioral changes are the most costly in an organization. First, there is the intrinsic cost of training and/or personnel turnover; second, there is the behavioral chasm that happens when people are in the process of changing.

A company is exposed to factors that influence its existence and performance. Endogenous factors are those that the company controls and/or influences, for example: human resources, manufacturing assets and location. Exogenous are the factors that the company does not control but that can cause major changes in the industry and firm, for example, climate change and
exchange rate. The endogenous factors are usually easier to identify, but the exogenous have the potential to be limitless. Within consulting environment the drivers that are commonly explored when assessing the environment in which a firm is immersed are changes in:

- Society: demographics, social trends and others
- Technology
- Economics (macro) institutions
- Politics
- Environment
- Legislation / legal
- Ethics

It is up to the managers to identify which of these drivers changes can have major influences on the business. The difference between endogenous and exogenous can vary from industry to industry and from firm to firm. One example is policy. A particular firm might be in a country where it can hire a lobbyist to influence policy making to have a more favorable law. Some hydropower providers in Brazil for example organize themselves under the Brazilian Association of Industrial Equipment Manufactures (ABDIB) and exert pressure on the government for policies to incentivize and equalize the incentives among all renewables (hydro, wind, solar and biomass).

When the exogenous factors are identified, the common practice from consultants\(^3\) is to establish two scenarios for each factor one extremely positive and one extremely negative. The factors are grouped two by two and a matrix (2x2) with scenarios can be built. The exercise is made to look at these scenarios and to define if the firm can and wants to be prepared to avoid the risks of the downside and to capture the benefits of the upside.

### 3.2 Strategic Context Analysis

On this thesis, segmentation inspired on Michael Porter's famous books “Competitive Strategy” (1980), "Competitive Advantage" (1985) and “Competitive Advantage of Nations” (1990) will be used but on the reverse order of their publishing. An addition has been made inspired by Slywotzky and Morison (1997), D’Aveni (2010) and Hax (2010). The four contexts will be “world, regional and national”, “industry”, “competition” and “customer problems and needs”. The first three of them reserve some remarks to Porter’s approach since it does not give extensive focus to the role of customers and/or consumers preferences and problems. To Porter, as a good economist,

\(^3\) An example of scenarios application can be seen at Global Business Network – GBN – www.gbn.com.
the customer is almost an entity or several entities that have an aggregate behavior derived from the economics and social science theory. Truth is and especially when it comes to capital goods when firms can talk directly to its customers, they are indeed in a whole new context: The "customer context", also called "customer problems and needs". The key questions are:

- How is the world changing?
- How is the industry changing?
- How is the competition changing?
- How is the customer changing?

### 3.2.1 World, Regional and National Context

Porter (1990) explored how nations and clusters influence the competitiveness of entire industries. In this respect, Porter defined 4 areas of focus also known as the Porter diamond:

- Firm strategy, structure and rivalry.
- Demand conditions.
- Factor conditions.
- Related and supporting industries.

Factor conditions and related supporting industries conditions affect the performance of the company and not the market price levels. Should factor conditions move on the wrong direction for the firm, its costs will go up and its profitability will be damaged but this damage will not be created by commoditization. The same applies for related and supporting industries.

**Demand:** There is a certain desired balance between supply and demand for the rules of value perception and consequent profit. If supply is way beyond demand, prices collapse and there is no possible legal action to prevent this price reduction. If demand is way beyond supply, prices will skyrocket and then no differentiation or strategy is needed. Consumers will have no choice. It is the world of scarcity. This might be the dream of some firms but, in general it is not a desirable reality since, (i) it creates a distortion and (ii) it leads to complacency, one of the most poisoning behaviors of an organization. However, in general, if a firm is concerned about commoditization related to demand, it is most probably a problem of lack of demand, which commands strategic, marketing or sales responses, depending on the cause of the mismatch:

- **Few independent buyers:** This should not generate commoditization de facto unless there is no sensible differentiation. On the top of that, having few customers does not mean having lack of demand but can mean customer collusion to
pressure suppliers. This problem commands sales force solution to exhibit the advantages of the offerings and of the firm.

- **Rate of growth of demand:** If the demand grows slower than the offer, or if there is saturation, a marketing response is needed to improve the attractiveness of the offerings of the firm, realignment of sales forecasts and search for alternative places (or markets) were the firm offerings can be sold.

- **Demand shrinkage:** This is the case when the strategic response is needed, either shifting market focus (marketing response) or moving on and focusing the company in some other activity that fits its strategic resources – Wernerfelt (1984) – depending on the expected duration of the lack of demand. If the shrinkage is a short-term phenomenon, then marketing response is needed as well as related managerial actions on the operations, typically a temporary reduction of workload.

Having clear the scenarios of demand, the strategy, structure and rivalry have to be evaluated in relation to Goals:

- **The company goals:** If the company goals are not compatible with the reality in which the company is immersed, there is not much that can be done to avoid commoditization. With a non-realistic order intake goal for example, the organization might engage in actions that will lead to price deterioration to generate a certain attractiveness that is neither needed nor effective. The actions have to be both strategic and focused on marketing. The company shall revisit its objectives, its forecasts, and eventually its growth strategy. The point is that the goals of companies can trigger hyper-competition that leads to commoditization.

- **Goals of individuals:** The same applies for individuals, should goals be overwhelming, sales people will tend to gravitate towards price reductions. The common joke on sales is that it is easy to sell for free... Interestingly, this effect can be triggered even when there is no average goal problem but distortion among different producers. The problem is that once one producer starts to make price reductions, the word spreads on the market creating pressure for all other producers. In this case a Marketing and Sales response is needed to revisit goals and adjust them to what is reasonable and can be accomplished.
3.2.2 Industry Context

Porter's five forces framework is a good starting point:

- **Competition among incumbents:** Competitors is a category by itself or a context that we call competition and will be analyzed in topic 3.2.3 below.

- **Bargaining power of suppliers:** When a key supplier of something that is of the essence of the value perceived of the service or good the firm is providing is common for all the suppliers, this becomes a source of commoditization. Two examples: (a) In hydropower business in Brazil, most competitors will buy steel from Usiminas (a local steel mill that is part of the multinational conglomerate Niponsteel). (ii) WEG is a local supplier of generators for the small hydro market in Brazil. Customers usually buy the generators integrated with the turbines and the turbine manufacturers are the ones who do the deal with the end customer. WEG would deliberately bypass the turbine suppliers and send its price to the end customers to make it clear what its price was and squeeze any margin from the turbine manufacturer. Even when WEG did not bypass, the customers knew that WEG as the supplier of most of the competitors and they would play the game of simple price comparison. Those cases command either a strategic or a marketing and sales response. The strategic response means the development of a partnership with an alternate supplier to set the firm free from the common supplier. Marketing response means a deeper understanding of the product. Even if the supplier is the same, quality might yet be different. It is necessary to check whether customers can see value on the difference. For example, on the case of the steel for turbines, even buying from the same supplier, different firms have different quality criteria for the material. The more demanding one can evaluate whether they can leverage this difference of technical requirements of the steel and create a promotion call for the customers to support a pricing point that is higher than the competition.

- **Threat of new entrants:** New entrants can be new companies doing the same as the current competitor does and therefore they are evaluated to be in the same category as their competitors. However, when a new entrant is offering something different that serves the same purpose, or does the same job according to Christensen (2012) but with a different approach, then attention is needed because it is very likely to demand the firm to produce a strategic response. A competitor that destroys price level doing something new and different might most likely be bringing a disruptive
technology or process. Under such a condition, there is no sense in acting on marketing and product development because it is probably too late. The firm must rather react and choose where to allocate its best resources under the new scenario that is posed by the new entrant. However, if the difference is yet in the same arena of competition (a cheaper turbine for example) it is worth checking whether a product development and a punctual pricing point effort will not make the necessary effect of increasing the odds of preserving the price levels.

- **Threat of substitute products and services:** When price deterioration is triggered by lack of demand derived from a migration to a substitute technology, it is worth spending the time to ask why. If the change is intrinsic to the product or service offerings and the substitute is better, the approach is very similar to the one applied on the entrants. One has to re-evaluate its position and trigger the necessary changes in products. However, if the change is for an alternative technology (wind x hydropower for example), most probably the factors are not internal from your industry but related to external factors such as legal regulations restrictions (wind environmental license might be easier to be obtained than hydro) or even to the geographical limitations (there are no more sites economically feasible for hydro available). If this is the case, then a strategic response is mandatory to find the next source of value generation and profit zone that the firm will pursue to continue to be alive and healthy.

- **Bargaining power of buyers:** When there are no issues with competitors, suppliers, new entrants and substitutes, but yet consumers are putting an enormous pressure for price reduction, using pure price comparison and ignoring differentiation, a sales response is needed. The sales response can serve two purposes: (i) If there is a differentiation that has value for the customer, the sales team has to be skilled enough to understand and valuate this difference to know how much can be captured as a price that is greater than the competition. (ii) If the differentiation has no tangible value, meaning it cannot be calculated in monetary terms, the sales effort is of the essence to guarantee preference under comparable prices. This concept will be further developed in chapter 5.
3.2.3 Competition Context

Within rivalry of competitors (or competition among incumbents) the responses to commoditization can vary a lot according to the issue evaluated.

- Excess of supply commands a strategic answer to define what is the size of the market a firm wants to have and even if the firm wants to stay in that particular market at all.

- Diverse number of competitors (or fragmentation, greater number of players) should be addressed with marketing actions to clarify differentiation of the offerings or experience but also on the channels to ensure that target customers will be addressed. Sales orientation is also needed to ensure messages are being addressed properly and that competition moves are also measured.

- Numerous equally balanced competitors and lack of differentiation or switching costs demand marketing actions to go back to differentiation and stand out from the crowd or the competitive environment.

- Capacity augmented in large increments, high strategic stakes and high exit barriers demand sales responses. There is no reason to blame your strategy if the stakes of exiting are too high or capacity will grow in large increments. The firm sales force has to understand the reality and do the effort to bundle these offerings in its sales effort. They will know that this will not be an easy sell but will be prepared to do the job.

- Slow industry growth was addressed in the region context under demand analysis and high fixed or storage costs influences costs but not prices, therefore are not relevant to commoditization.

Porter (1980) goes on and lists all the aspects of the evaluation of competition and its moves. These factors will not be listed here since in practical terms, when competition is happening and managers are working hard to manage its business they have a hard time to understand all these factors for its own company, what to say about competition. In real life, information regarding details of the competition is limited. What is abundant is indirect information on the effects of competition action such as price levels and product features. When competition is small, there are no figures published. When competitors are large enough to be listed on the stock exchange and have to publish numbers periodically, usually the businesses areas of interest have its numbers hidden in the big picture of the balance sheet of the larger organizations. The manager has only small pieces of information available and a puzzle that has be to put together on a vision. In this sense, the customer
focus proposed by Slywotzky and Morison (1997), Hax (2010) and Bosworth, Holland and Visgatis (2010) comes in very handy since customers are interested in letting one know what they want and eventually will also give you information about the moves of the competition.

3.2.4 Customer Context, Problems and Needs

The understanding of the customer context is fundamental to the firms capacity of value generation for customers and, as a consequence to its shareholders. Slywotzky and Morison (1997) and Hax (2010) as well as Bosworth, Holland and Visgatis (2010) emphasize the importance of focusing on the customer and not on the competition or on the internal factors of the company. They all base their analysis on the concept of a customer-centric organization. The customer-centric organization understands: “How is the customer changing?” If a firm understands the needs and concerns of the customers, then it will be able to understand which is the best course of action to take. Depending on the direction of the change, the manager will have to act on different areas. In this case it is worth analyzing some reasons why customers could provoke commoditization:

- If buyers pose a credible threat of backward integration, it is imperative to re-evaluate the strategy because the customer is planning its future excluding the firm.
- When the buyer has full information, it is necessary to have marketing and a sales analysis. Sometimes the buyer does not have all the information and it is necessary that sales does its job of bringing additional information to the table. In large projects, for example, it is typical that consultants hired to specify products and systems claim to have all the information and to have specified neutral equipment, but in reality new developments had already been done that were not being incorporated on SPCS. If this is the case a late change will not be welcome but an early warning might actually generate differentiation of perception of the customer. In some cases, the full information is true and therefore, a marketing action is welcome to either innovate on the offering or to provide more information on branding and other intangible aspects to influence the customer choice.
- The products it purchases from the industry represent a non-significant fraction of the buyers costs or purchases, if the product it purchases from the industry are standard or undifferentiated or if the industry’s product quality is unimportant to the quality of the buyers products or services, there is demand for marketing response to either incorporate the product into something more representative or to actually advertise to the customer to guarantee the understanding of the
relevance of the product on the choice process. Tigre, a local piping systems manufacturer in Brazil issued a campaign using the low relevance as a differentiation. Their claim was: “Piping represents less than 2% of the installation, why should you save on an item that, if defective, can cause great damage?”

• If the customer faces low switching costs or if he earns low profits out of the firm’s offering, then a sales response is needed. Sales team has to be aware of the situation and margins should be addressed. It is assumed that in this context the company is choosing to stay in the particular business due to strategic choices. However, it has to be clear to the sales team.

3.3 Identity

Once the firm understands the context in which it is involved including the endogenous and exogenous drivers, and whether or not there are strategic issues to be addressed, it is important to revisit the identity of the firm. For example: If Voith assesses that hydropower technology will no longer be used or that the market no longer values technical excellence, Voith will have to decide whether to stay in the hydropower market since Voith Hydro exists solely in the hydropower market and is currently focused on high technology, quality and engineered reliability, a strategic focus that implies higher costs than a pure cost based competitor. The identity is what defines an organization and allows people who work for this organization to self identify and donate part of their existence in exchange for compensation. Simons (2013) addresses 2 very important questions:

• Who is the primary customer of the organization? Customers, shareholders or employees? According to Simons (2013) having clarity on the priorities of the organization will allow the best allocation of resources around the priorities and also make the strategy consistent with the desired outcome. The objective is not the strategy per se. The strategy exists to reach a goal. McDonald’s focused for several years on the real state owners, Southwest puts employees on the top of their list of priorities and Pfizer manages the company through the balance sheet focusing on maximizing shareholder value. There is no right or wrong choice. Each one represents a different theory of value creation. Stewart (1991) and Trotta (2003) support the Shareholder value theory. Gulati (2009), Slywotzky and Morison (1997) and Hax (2010) as well as Bosworth, Holland and Visgatis (2010) support the
Customer based value and Heskett, Sasser and Schlesinger (2003) advocate for the employee-centered organization.

- How do the core values of the organization prioritize shareholders, employees and customers? The core values are the counterpart of primary customers on defining standards of behavior guidance for decisions when managing a company. If Voith did not state its value of “never letting a customer down” it would be hard to explain to an employee why to proceed with a project when customer defaulted a payment close to commissioning date due to a delay on a multilateral fund disbursement. Voith understands that by supporting the customer, it will be the first in line on customers list to be paid as soon as the plant generates cash, and also the effect of reputation in a market highly driven by word-of-mouth. Some customers take advantage of the value but yet it is important to have it to ensure that employees devote all their efforts to solve the customers’ problems when it is needed.

3.4 Profit and Value Generation

Being sure that the identity fits the market scenarios and that the organization will be able to adapt itself, it is time to revisit or to define the profit for the firm. There are several authors that discuss value generation but in this thesis the approach developed by Slywotzky and Morison (1997), detailed by Slywotzky (2002) and developed and organized by Slywotzky et. Al. (1999) has been chosen. They analyzed into further detail the twenty-three types of profit zones that can be occupied by a firm. The profit zones are also called many times strategies for value generation. The understanding of the source of profit is extremely important to guarantee that strategy, marketing and sales are aligned to allow the value generation and capture. Sometimes, companies fighting commoditization might not choose a strategy that is aligned with the current profit pattern or is grounded on a new pattern. The company ends up on a void were actually profit is just impossible.

The Profit patterns (or zones) are:

1. **Customer solution profit**: A company invests time and resources on learning how the customer works and what the real problems are, concerns and priorities and adjusts its offerings to these needs. This is a typical worse before better profit zone, where the first period of time is a loss for the supplier who is learning about the customer, but them becomes a nice profit zone because it starts to use its expertise to become more efficient and to reduce the costs of performing to the same customer. On top of that it is a great source of differentiation.
2. **Pyramid profit**: Follows the microeconomic concept of price discrimination when you sell basically the same product or something very similar for different prices for different customers who have different price sensitiveness and demands. For example, when Black and Decker sells two Electric Screw Drivers for two different prices and the difference between them is solely the life-span of the battery (thirty minutes versus one hour) they are not actually charging for the additional lithium in the batteries, they are just defining two price points so that they can capture the most of the surplus from the customers. Panasonic and Leica do something even trickier. They sell exactly the same camera except for the brand. The Leica one is four to five times more expensive.

3. **Multi-component profit**: Again price discrimination, but here instead of targeting different customers, you target the same customer on different situations. For example, when the customer buys a certain spare part with the original machine, spares are cheap, usually given away as part of the negotiation process. If the customer wants to buy it after the equipment is delivered, assembled and commissioned but just for stock, it is more expensive. However, if the customer needs the parts urgently, the parts can cost much more just due to the urgency factor and customers will not complain as long as the price increase follows the concept of fairness explained in chapter 4 of this thesis.

4. **Switchboard profit**: When you have multiple sellers and multiple buyers in a market and a company positions itself to bundle needs to become a "One Stop Shop". This is typical on piping systems or electrical installation materials when it is hard for a specialty systems provider to keep up to date with prices and variety of products, they define the system, a bill of material and usually have a sub supplier to get that list and do the shopping around of all the "bolts and nuts" needed for that particular system. The sub-supplier is making a Switchboard Profit. This is the profit of the integrator.

5. **Time profit**: This is the profit of the innovators. They move faster than the competition and create products that enjoy, for a limited amount of time differentiation that creates perception of scarcity and commands a premium price. When competition is caching up, they release a new product with new innovations (breakthrough or just bells and whistles) to preserve their space of profit. A typical case is the microprocessor market where Intel commands the premium price
following the law created by its own CEO Gordon Moore. Double the number of transistors every two years (and therefore processing capacity). When AMD is caching up, Intel releases a new processor to maintain the leap.

6. **Blockbuster profit:** When the development cost of product is high and the marginal cost of manufacturing after it is developed is low. If you combine this with any type of protection (or legal monopoly on might say) such as a patent or copyright protection and high demand for the product, you have a blockbuster. The classical examples are pharmaceuticals where each leader company has no more than eight molecules that command seventy to eighty percent of the revenues of companies that achieve several billions of dollars in this markets. This is also the case of software industry for the leaders who can enjoy some kind of customer lock-in as described by Hax (2010).

7. **Profit multiplier model:** This is the repetition of a formula again and again. Disney and Lucas Films were masters in this by transforming successful movies into brands attached to various products such as toys, clothes, school material, bed sheets and all kinds of consumption goods. When Armani decides to invest in car interiors as described by D'Aveni (2010), it is an attempt to enter this profit zone, exploring its brand into other products and services.

8. **Entrepreneurial profit:** A company in its first years has usually lower indirect costs due to the frugality of the founders who wonder around and disseminate the culture of efficiency, no perks and low costs. The company that can be bigger and sustain the frugal lifestyle can enjoy this profit zone. In the Mid 1990's ABB managed to go towards this direction by splitting all it operations into five thousand-plus profit centers and having each manager be accountable and reward them for the result of each profit center.

9. **Specialization profit:** A company that is a specialist in one area can be extremely profitable but the risk of exposure to a single business is too high. As we have seen in chapter 2, moving to an adjacent area where the company is not specialized can be a profit destroyer. It will most probably have to discount on price to overcome the lack of experience and or offerings that do not fit the need for specific product or service. What companies such as ABB learned is to move to one adjacent business at a time and to learn as much as possible about that business before moving to the next one. In the case of ABB it was even more powerful since they had enough
diversity and spread presence that they could move into different directions but making sure that the teams doing a specific move were focused on that.

10. **Installed base profit:** This is the profit coming from the supply of consumables or services that are specific or fundamental to firm’s product. The classical example is the market of home printers. Devices are sold with all kinds of accounting tricks to hide losses that would be illegal (dumping) to secure the highly profitable market of ink cartridges. Some say that the origin of this profit comes from British traders distributing street oil-powered lights in Asia to charge for the fuel to light them up. In a larger and more recent setting, this also exists in Central America with the Venezuelan government supplying diesel generators for countries to maintain the market for its oil.

11. **De facto standard profit:** This is the profit that is obtained when a particular companies’ proprietary standard becomes the standard in the industry. In this case the whole industry has to come through that particular company to access the market. Siemens and its Profibus network for the industrial applications is an example. All the other automation companies have to follow the standard commanded by Siemens. This is actually one of the components of the platforms described by Cusumano (2010).

12. **Brand profit:** A brand is a clue for the customer when not enough information is available to decide for a product or service. An existing brand can also borrow reputation to a new product. Serving as source of information, the brand is an important resource for the company and can command margins when the brand is strong enough.

13. **Specialty product profit:** The specialty product based profit is based on having a product that is equal to somebody else’s to occupy the market space with low or no profit and a specialty product that is more expensive and appreciated by a segment of the market that accepts to pay more. When airlines sell tickets “economy plus” tickets, the service is the same but the slightly larger space commands a premium that is not proportional to the amount of additional space, is actually higher price, making economy plus seats a more profitable segment for the airline.

14. **Local leadership profit:** Local leadership, also known as the historical profit when a supplier can command a premium for being locally established as the market leader of a particular market even though not being the global market leader. This comes
from the heuristic of consistency explained in chapter 5. For example, Coors might be able to make profit in the US market even though on a global scale it is not a major player on the beer market.

15. **Transaction scale profit:** The companies that make profit based on this pattern focus on the customers who buy the largest volumes on the market and makes everything it can to understand and fulfill their needs and solve their problems. While competitors are spending resources on dealing with fuzzy needs and problems, the firm is focused and using its resources in a more efficient way. By doing so they also managed to be preferred by the larger customers when it is time for purchasing decisions.

16. **Value chain position profit:** this is profit derived from being in a specific position of the market where you can extract the most value of it. Intel does not sell complete computers, instead they focus on the processor market were there are not twenty players but two (Intel and AMD) and some other niche players.

17. **Cycle profit:** In a cyclical industry the company that can operate with the lowest fixed costs will make money even if its marginal costs are equal or a bit higher than the competition. The reason is because when utilization is higher (variable costs are higher), the market price is also higher giving additional oxygen for the company. When the market goes down, having lower fixed costs will allow the firm to make more profits in comparison to its competitors when market price deteriorates.

18. **After-sale profit:** This is the profit commanded by having an installed base that depends on the firm to keep working. OTIS and Voith follow the same strategy. OTIS sells elevators, Voith sells paper machines. Both sell the equipment with relatively low margins, and the business is also complete when the equipment has to be serviced and just the Original Manufacturer of Equipment (OEM) can provide the service or replacement parts. In the elevator business companies do not make profits on the sale of the equipment; instead they focus on making profit on the service contract for the elevators since in most markets law imposes the elevator maintenance.

19. **New product profit:** Novelty commands a price premium. In general, a new product can be sold for higher margins. Apple masters this type of profit launching a new product every six months on the same price point of the old product and reduces the price of the old product to reduce the margins of its competition who are still
catching up to offering products with the functionalities of the old product. It looks like time profit but it is different. On time profit it is the same product functionality increasing performance, here it is different functionalities that effectively change the product experience.

20. Relative market share profit: This is the profit pattern modeled by Bruce Henderson (founder of BCG) in the 1960’s and 1970’s. This advocates the idea that gaining market share gives the company a lead to profit from economies of scale and purchasing power. In a market with proper elasticity to absorb goods given a certain price point, a company can reduce prices beforehand to gain market share and harvest the profits from the benefits of having a larger market share. Alstom uses this strategy on the hydropower market, underpricing is projects to ensure a larger volume and later producing profits from the benefits of the learning curve. In the early years of consulting this was a concept largely sold by Bain and other firms. Today it is understood that the profits from the learning curve can only be realized if the learning is properly managed.

21. Experience curve profit: Over time, a company learns how to do better and faster its products, this means gains in productivity that implies in cost reduction and increase of profits. This is the reason why it is so difficult to build a new Amazon today. In addition to the brand, Amazon has an impressive experience in quick logistics that is even better than that of FedEx and UPS to allow same or second day delivery of an enormous amount of goods.

22. Low-cost business design profit: If our firm is able to run the business in a form that is more efficient and less costly than the competition, than you can gain market share by selling for the lowest possible price and make profits from the volume. Note that a low cost strategy is an extremely special position that can only be occupied by one player. Should you choose this strategy and your firm is not the cost leader, the firm will perish just like K-Mart did when it started to undercut Wal-Mart in an attempt to stop the growth of the latter.

23. Digital profit: This is the profit derived from electronic platforms. Today, this market grows so fast that most probably another twenty or even more profit patterns could be created based on information technology based companies such as Google, Amazon, Kayak and others. The main message is that there is room for digital profit even in hardware business. Cisco reduced the cost of its router
operations by creating a platform that allows customers to answer each other's questions. Banks did a massive transfer of work to customers by implementing Internet banking.

3.5 Defining the Strategy

Strategy is one of the most intensively and misused words in management literature. Several authors use it with different meanings. The common pattern is to use it for something that deserves attention from the reader. When a manager wants attention, it is common to call an issue strategic, to try to get people's focus. However, the word Strategy should be used carefully. According to the definition seen in chapter 1 of this thesis, strategy refers to long-term perspective and, consequently, to the organization's identity. This identity can be reflected to many people who interact with the organization, but in this case we will refer to the people working within the organization. In this case, identity is:

- Who we are.
- What we do and what we do not do.
- What is expected from me and what I expect from others.
- How we act.

This approach is very similar to the one used by Mitzmberg (1987) and Simons (2000) to frame strategy. Strategy will be defined in this thesis as the issues related to these four questions and illustrated in Picture 4. When it comes to making decisions, Porter (1980) lists three possible approaches:

- Positioning the firm so that its capabilities provide the best defense against the existing array of competitive forces.
- Influencing the balance of forces through strategic moves, thereby improving the firm's relative position; or
- Anticipating shifts in the factors underlying the forces and responding to them, thereby exploiting change by choosing a strategy appropriate to the new competitive balance before rivals recognize it, or, in other words, the smart use of the scenarios described in chapter 3.

A key aspect to consider is the firm's resources and whether they are strategic. Wernerfelt (1984) proposed the analysis and definition of the firm based on the resources it has. His proposition was extremely important: The decisions of the firm should be based not only on the competition, suppliers, buyers, substitutes and new entrants, but also on its capabilities. It became evident that the firm should evaluate which resources it had and which it could develop. Some
resources could be equivalent across firms, but others could be strategic, allowing the firm to deliver something unique within its value proposition. A resource is strategic when it comes with all of the four conditions:

- It differentiates the firm (uniqueness).
- It pleases the customer.
- The firm owns and controls it.
- It is sustainable.

The resource-based view of the firm made it possible for firms to see their differentiation beyond their products and services. If you have a strategic resource, all firm offerings that are based on that resource can be unique.

![Picture 04: The strategy process]

When a firm has a better understanding of the market dynamics composed of the four contexts explained in the topic 3.2 above, it can relate this dynamic to the firm’s strategic resources and define where it will act, with what offerings and to which customers. The perspective does not change very often, since it relates to the core identity of the people in the organization (who we are). Changes in perspective and values are complex, and can result in a major change in the team and labor force, since people might not adapt to a new perspective.

The life span of the strategic resource will be the reference for the life of the strategy, which should follow the sequence stated below (always keeping in mind that the process could be reversed if the strategy is bottom-up)

1. Corporate strategy, values, perspective and mission.
2. Position, composed of target customers and offerings. In the evaluation process, the manager should look back to the basics to make sure to check the barriers of entry.
(economies of scale, product differentiation, capital requirements, switching costs, access to distribution channels, costs disadvantages independent of scale and government policy). Economies of scale were the academic incorporation of the experience curve proposed by Bruce Henderson. Hax (2010) explored switching costs further by with the idea of customer lock-in proposed in his Delta Model.

3. Plan, composed of the score cards or other system that allows the manager to set goals for the team.

4. Actions, the experimentation and implementation of what was envisioned and planned.

Slywotzky and Morison (1997) explain that companies who can avoid the "No-profit zones" are those who are able to break from the product-centric/market share reasoning and focus on a customer-centric/profit focused approach to reinvent their businesses in cycles of approximately five years to stay relevant to their customers and to move into the profit zones of tomorrow. They also define the dimensions of planning to maintain a firm on the profit zone:

- **Customer Selection** (Choice of Industry and Market): Which customers do I want to serve?
- **Value Capture** (Profit Pattern): How do I make profit?
- **Differentiation/Strategic Control**: How do I protect my profit stream?
- **Scope** (Offerings and Position): Which activities do I perform?

![Diagram](Picture 05: The positioning process)
An important aspect to take into consideration is the dynamics of the strategic process. For a long time, it was believed that strategy would be done top-down, mirroring military organizations: Generals would define the strategy that would be translated and implemented at the lower levels of the organization. However, since last decade, especially after the Honda effect described by Cusumano (2010) and Christiansen (2011), and also taking into consideration the effective history of change that happened in Intel when it made the transition from a memory company to a processor company, the strategic process can be designed bottom-up, starting by the people close to the operation who see problems from a closer perspective.

When Voith Hydro started doing a solution that combined excitation system and speed governor for hydropower units, the solution was created, developed and introduced to the local market by the operating unit in Brazil. Later, the center of technology development in India understood the solution and incorporated it into the portfolio. The development of a product is not typically a strategic issue. However, in this case it was, since it was related to a firm position in the past of not mixing the technologies to preserve the value that was captured in each separate market.

![Diagram: The strategic process: Top-Down x Bottom-Up.](image)

No matter if bottom-up or top-down, a manager should put effort into making a thoughtful strategic decision. When the decision is of bad quality, the effort might be lost. Take Kodak, for example. Kodak invested billions of dollars into digital imaging technology, but it was not able to produce compelling products and services to occupy the market. Ultimately, Kodak was overcome by the new technology that they saw coming. Christensen (1997) would call this a typical example
of disruptive technology; Grove (1999) would call it a strategic inflection point. Both demand strategic response. Kodak did that, but it did not base its response on its resources. Kodak had a large competency in paper and chemicals, but not in photography per se. Photography was a product that resulted from its competencies and allowed it to develop more competencies around it. Should Kodak have tried to enter a new market of printing for example, it would have made better use of its resources and, it might have survived.

3.6 Possible Strategies

Besides the five forces, one of the most famous creations of Porter (1980) is the concept of the three generic competitive strategies listed here along with the risks associated to them:

- **Cost leadership:**
  - Technological change that nullifies past investments or learning.
  - Low-cost learning by industry newcomers or followers, through imitation or through their ability to invest in state-of-the-art facilities.
  - Inability to see required product or marketing change due to the attention placed on cost.
  - Inflation in costs that narrows the firm’s ability to maintain enough of a price differential to offset competitors’ brand images or other approaches to differentiation.

- **Differentiation:**
  - The cost differential between low-cost competitors and the differentiated firm becomes too large for differentiation to hold brand loyalty. Thus, buyers sacrifice some of the features, services, or image offered by the differentiated firm for large cost savings.
  - Buyers need for the differentiated factor falls. This can occur as buyers become more sophisticated.
  - Imitation narrows perceived differentiation, a common occurrence as industries mature.

- **Focus:**
  - The cost differential between broad-range competitors and the focused firm widens, eliminating the cost advantages of serving a narrow target or offsetting the differentiation achieved by focus.
The differences in desired products or services between the strategic target and the market as a whole narrows.

Competitors find submarkets within the strategic target and outfocus the focuser.

Cost leadership is not an option when fighting or preventing commoditization. Being a cost leader might be good to have better profits, but a lower price strategy is fundamentally the acceptance of commoditization and, therefore, should never be pursued as prevention or counter measure. Nevertheless, differentiation and focus must be the basis of any strategic response to commoditization. An important aspect to remember when reflecting about differentiation is the role of technology, and how technological leadership influences competition and, ultimately, the exploration of the idea of first-mover advantage and disadvantage. No matter the industry, a fundamental part of the differentiation challenge is the firm’s capacity to innovate in its technology and successfully deploy products and services in the market generating “novelty based value” as explained by Lepak, Smith and Taylor (2007).

3.6.1 Horizontal or Vertical Integration

Porter (1985) defined a framework on the concept of value chain, and detailed the analysis of competitive advantages of industries as a whole and a deep understanding of vertical and horizontal strategies. In fact, this is one of the most popular approaches in the industry of capital goods to deal with commoditization: Do a vertical or a horizontal expansion. Odebrecht - a major Brazilian construction company - decided to become an investor in infrastructure projects to secure its contracting for construction works. Originally, the Odebrecht’s objective was not to become a power generator, or a manager of utility assets. The strategic intent was to secure contracts, but ultimately, Odebrecht had to create companies to handle the assets on the investor side. Thus, today there is Odebrecht Energia for example, a company that is uniquely positioned in the power generation sector. Engevix and Promon - two Brazilian engineering firms - decided to become suppliers of equipment to expand their scope of supply. ABB maintains its presence in low-voltage distribution panels not because it is profitable, but to ensure that its competitors do not engage in horizontal expansion into jobs in which ABB is actually interested because of the automation portion of the scope of supply.

3.6.2 Platforms

The second important strategy is to develop platforms where the firm establishes a standard and has other companies generating applications that use that specific platform. This strategy usually depends on some level of subsidy from the firm on one side of the platform to
foster its growth. Rockwell Automation provides extensive training for integrators' and end customers' engineers. This not only creates awareness of the product capabilities, but also trains people to use its systems and to think about how to solve automation problems with its systems. The software for programming of automation logic can also be subsidized to stimulate people to program using its software. By doing so, integrators will use more and more Rockwell products to solve their problems. When they do that, they have to buy hardware, and that is when Rockwell extracts value from the relationship. Siemens, ABB and Fanuc also use similar strategies. They create spaces in the market characterized by industries in which a certain manufacturer platform becomes standard. Each of these companies has its own platform of hardware and software based on which integrators will build automation systems. The opportunity here is that a company who is integrating systems as a “raider” of the platform actually develops a “platform into the platform”, thus creating a stable system in which specialists and other companies can build functionalities and add benefits for generating companies. For example, Henk, one of the leaders in bearing technology, could develop a special application to monitor bearing lifecycle to be used on the specific platform of the power plant provider.

What would the risks of this approach be? Building on Eisnmann et al. (2006), the risks are threefold: Pricing, winner takes all and envelopment. Winner takes all is not a probable risk, since the automation market is fairly divided with a good amount of competition. As one cannot expect to have one hundred percent market share for its platform, the same applies for the risk of being squeezed by the winner. On the other hand, envelopment is a true risk and actually hard to control, since GE, Rockwell and Siemens are much larger than any automation integrator. Even if the sub-platform is protected under exclusivity agreements, the original platform provider could change its standard to “sabotage” the sub-platform if it were interested in doing so. Finally, pricing: In principle, the best would be to follow Microsoft’s strategy as described by Eisnmann et al. (2006) and release the platform for sub-suppliers for free to stimulate development and charge end users for the use the sub-platform. In some cases, if the platform is large enough to be stable, and yet there is still significant competition among platforms - like in industrial automation as mentioned in above - customers might identify opportunities for gains of scale and standardization, and choose to self lock-in into an automation platform. In this case, they assume that having competition among integrators is enough to protect them from the bad effects of lock-in related to abusive pricing.
3.6.3 Integrated Services

There are three different ways of thinking about services in the context of capital goods: New scope, associated and integrated products and services.

Cusumano (2010) describes extensively how adding services to the company’s portfolio is an important growing source of value generation for companies. Facing pressures for commoditization of its products, IBM increased the amount of services, focusing on the customization of the solution for the customer, and not on selling the specific product. This is an associated scope. In some cases, IBM even decided to divest the product and to keep only the portion related to services. GE increased its profits in the steam turbine business by offering financing, specification, assembly and maintenance for the turbines. This is a new scope.

When the technology in certain industry matures and there is no sign of disruption, usually the number of players has grown and there is not much effective differentiation. Firms focus on efficiency innovation on the pursuit to reduce costs and capital employed, and incremental innovation. Except for the cases of an effective breakthrough innovation, sooner or later price competition starts, and if no action is taken, commoditization will start. A common strategy in these cases is to incorporate post-sales services (operation and maintenance – O&M) contracts into the deal, thus reducing the upfront capital expenditure for the customer (CAPEX) and extracting margins from operation and maintenance (OPEX). The principle behind this is that being the original equipment manufacturer (OEM), the company should be able to leverage its own knowledge of the product and, therefore, be more competitive on these services while providing a better service to the customer. This strategy has been seen in industries like elevators, where OTIS makes almost all its profits from O&M contracts, and not from the sale of equipment. However, in some industries where customers have a long tradition of performing their own O&M, or are small enough to fell comfortable buying O&M from smaller low-cost providers, the sale of OEM O&M is more difficult. When GE leases a steam turbine to a local paper mill in Canada, the GE Sales person is able to prepare the offer with the O&M proposal.

However, there is an important step forward: Integrated services. In some sense, new and associated services are typically modular. Each of them is one item of the scope. Customers like to have them from the same supplier to reduce the amount of interfaces, but there is no major gain other than communication and/or bundling benefits. In this sense, the proposition of horizontal integration through services is a fragile opportunity. Nevertheless, if one changes the mental model and focuses on the fundamental customer need, instead of focusing on drivers of cost of the items of
the scope provided (services and/or product), it is possible to create effectively integrated products and services and to obtain more than bundling benefits.

For example, if Voith Hydro decides to sell power plants in an integrated products and services contract, it can receive access to the powerhouse and promise the customer a predefined power and availability. The customer will focus its attention on the responsibilities and risks that are inherent to its business: Precipitation variation and reservoir management, as well as trading the energy generated. Voith Hydro will manage the risks and responsibilities for which it has the best capabilities: Equipment supply, erection, commissioning, monitoring and maintenance. The point here is that in addition to providing products and services, Voith Hydro will develop a know-how of the tradeoffs between capital expenditures, reliability, durability and cost of maintenance, and will be able to deliver higher availability of the asset.

Take GE, as we will see on chapter 6, the advent of GE Capital business was critical to allow GE to have an integrated solution, rather than a simple scope expansion that could be copied. Take steam turbines for example, GE understood that customers saw the power units as an asset with a certain CAPEX and OPEX, and which they depended on to generate their revenues. Providing financing in lease contracts, GE kept ownership for the duration of the lease, and took over responsibility for making sure that the power units would be available and reliable for the customer. From the perspective of customers, they are buying power generation availability for a certain stream of cash flow during the lifetime of the project, without having to be concerned about technological aspects, spare parts inventory and human resources issues to take care of the equipment.

The other interesting aspect is that it increases the overall efficiency of the industry. In a maintenance contract, the incentive of the seller is to increase maintenance. One could argue that this is evidence that the objectives are aligned, since better maintenance leads to better availability. However, if instead of committing to cost plus maintenance contracts (consumption of spare parts or technician hours and labor), the supplier is committed to and measured on availability, it is encouraged to rationalize and use less resources or to innovate on the approach to increase its profits (for example, by increasing the use of remote supervision), as explained in the "customer based" profit pattern in this chapter. In this sense, the incentives get truly aligned and customers and suppliers work together towards increasing the "pie" of the energy sector. The customer gets higher availability, which increases its revenues, and the supplier gets lower costs, which increase its profits.
3.6.4 Do Correct Strategies Exist?

Sound strategies are fundamental for companies. However, there are no secret recipes for success that can be untapped and generate long-term sustainable profits for a firm. What does exist and is worth searching for are consistent strategies. Managers have to understand the context, the firm, its resources and its capability to acquire new resources and develop a strategy that does make sense. This chapter was dedicated to explaining several aspects of the consistency check. As a final check, the manager could use the seven strategy questions proposed by Simons (2013):

1. Who is your primary customer?
2. How do your core values prioritize shareholders, employees and customers?
3. What critical performance variables are you tracking?
4. What strategic boundaries have you set?
5. How are you generating creative tension?
6. How committed are your employees to helping each other?
7. What strategic uncertainties keep you awake at night?

As one can observe, some questions go beyond strategy itself and relate to how good the company is in creating an environment of execution. This is key for the success of any strategy. It is the capacity of the organization to get things done and/or to acquire the resources to do so. In the next two chapters, marketing and strategy will be touched as they are fundamental areas of execution of the strategy that will fundamentally produce results in terms of order intake to the firm.
4 On Marketing

Common wisdom says that in capital goods "marketing is pretty much sales". In fact many companies name their sales teams as "marketing teams" or even their sales managers as "marketing managers". Some others recognize some difference and name marketing the team that organizes events, prints catalogs and eventually prepares some kind of report to the headquarters basically by combining existing information provided by the sales teams. These companies are losing a great opportunity to increase performance. Because of the fact that strategy is seldom a misused word, sales tends to be seen as being closer to the strategy. People talk about the strategy to win a particular project. These organizations create a void (marketing) that is the potential source of frustration, especially in the capital goods industry.

The classic definition of marketing is composed of 4Ps: Product, Place, Price and Promotion.

- **Product** stands for the definition of products and services to be offered to customers. It goes beyond the position. The position on the strategic statement defines broadly what a company does or does not do. In marketing, the product portfolio has to be defined. Which jobs will be executed by each product? How many different types of products execute similar jobs?

- **Place** stands not only for where to be present. The broad geographical locations are already defined in the strategic statement. Place defines how the firm will be present in each location and details how to act in each space. Will it have an office? Will it have an agent or associates? Will it sell directly or through distributors? How will it interact with integrators? What resources will each location control?

- **Price** is not just a cost-plus calculation and/or mapping of competition pricing. It is about understating customer behavior, value in the specific industry and finding the maximum price the firm can charge for its products and services.

- **Promotion** goes beyond catalogs and events. It is about taking the benefits of your offering to customers and constructing awareness of the brand and understanding of the value offered so that, when the sales cycle happens, your firm is desirable and the price is understood and considered fair.

In addition to these 4Ps, there is the marketing dialog that stands for the way the company relates to its customers to understand their needs and problems, or the jobs that have to be done. Ultimately, there are marketing data management and systems that can be used to combine and compile marketing information for the effective use on product, place, price and promotion decisions.
Modern marketers from publicity agencies in the twenty first century refer to the 4Es of marketing as a natural evolution of the 4Ps. The 4Es are: experience, everywhere, exchange and evangelism.

- **Experience** refers to going beyond the product definition and actually thinking about the experience of the customer when using the product. Think about the tablet market segment. Apple does not offer the tablet with the largest number of features. Instead, it focuses on few but very effective functions, on consistency among functions and on usability. Its products come with no user manual. The user takes them from the box and uses them. This sounds great for consumer goods and far from the reality for capital goods. Rockwell automation has been spending lots of resources on pursuing user interfaces for automation systems that provide the same kind of experience for operators of industrial processes. This is an ongoing effort, therefore the final result is not yet known.

- **Everywhere** refers to ubiquity, the state of being everywhere at once (or seeming to be everywhere at once). In the post-internet world, people who grew up with the normalcy of having access to the Internet find ubiquity a normal state. One can upload and access files in Dropbox from any place. Social network profiles are available everywhere. Users of modern SAP listening to the histories of ABB synchronizing its Abacus system in the 1990s probably thought that looked like the stone age, but the generation who grew up using twenty first century information technology has the same opinion about information locked in corporate networks or about the need to travel to meet face to face periodically when there is video conferencing available. Intuitive Surgical provides real time 3D video systems that can be used by a surgeon located miles away to help the surgeon located on the action perform an intervention on a patient. Why cannot an oil and gas firm do the same with drilling experts to increase the sharing of experiences in extreme situations? Why do not capital goods firms have YouTube channels to explain their products?

- **Exchange** stands for going beyond the commercial relationship of product (or service) per price. Cisco created a website forum where customers can post questions and answers related to equipment operation. By allowing its customers to interact freely with no intervention, the company was able to create a new channel to understand problems and needs, and also to reduce call center costs. Twenty-first
century customers are more and more willing to contribute to the companies with whom they identify. This means that more and more firms have to aim for long-term relationships with its customers.

- **Evangelism** stands for user driven promotion. This is the effect of word-of-mouth. In the contemporary information era, word-of-mouth is called “viral” and is much faster and uncontrollable than promotion. A firm has control over formal promotion, but no control over word-of-mouth. In this sense, to take care of brand and image becomes even more important. The firm has to want to be good, look good and in fact be good.

The 4Es are extremely important and should be taken into consideration. This thesis focuses on the 4Ps referring to the concepts of the 4Es whenever applicable.

### 4.1 Marketing Dialog

To have effective marketing, it is important to have an effective way of communicating with customers. In general, B2B markets have not been the focus of marketing methods, since it has been common wisdom that B2B firms usually talk directly to customers and, therefore, techniques are not needed. In fact, B2B firms have the advantage of having their sales teams typically interacting with their customers and, in fact, they have an incredible amount of good information about their customer. However, sales conversations can be easily biased, since they happen in an environment where the customer is doing information search and comparison and the supplier is trying to sell. It is not very common to have a sales person reporting that a customer classified a price as fair or low.

Since marketing information will set the ground for several sales cycles through the definition of portfolio of offerings, placing and pricing, as much as possible the information should come to the company free of bias.

There are two ways of understanding what the market trends are:

- **Indirect:** This is the method that uses market research, usually divided into two main components: customer voice and marketing measurement. In the customer voice phase, a researcher will perform interviews with open questions for individual customers or groups of customers and collect perceptions about the product, services and business environment. From these interviews, trends will be observed and an ideation process will be made to create the vision of future products, services or even organizations. This vision is then multiplied into options and these options are presented to a larger group of customers in a menu of combined choices to
identify preferences for the alternatives. The answers will trigger the decision on the path to follow. This method is usually applied when the customer base is too diverse and it is hard to get in contact with most of the customers. This is the leading method for consumer goods. It is also important to mention how not to do indirect research. Some companies start off by sending surveys to customers with no prior contact and ideation. This is usually problematic, since the rate of response is lower (customers were neither prepared nor committed to answering) and the quality of the responses is not good due to the lack of briefing. At the same time, since this direct sending is usually also accompanied by poor survey design, information quality also decreases.

- **Direct**: This is directly talking to customers and all other stakeholders involved in a certain industry to detect trends and opinions. An accepted method to do this kind of direct assessment is called customer-centric, when you conduct conversations with stakeholders using indirect questions to answer a fundamental question: “Exactly how is the customer changing?” – see Slywotzky and Morison (1997). However, this is not only about getting the information. There is also insight just like the ideation on the indirect method, which is what produces the vision of future. Customer-centric is also a form of sales approach, as it will be discussed in chapter 5. The questions asked on the direct mode are extremely important, and should be open to allow the customers to explain how they do their job. What is important for them? Which problems and needs do they have?

Under the direct or indirect mode, the objective of the marketing dialog is to understand the job that the customer wants to be done. Christensen (2012) coined the term “job to be done” and this is an excellent way of describing the customer problems and needs in a way that allows generalizations to be made so that products and services can be standardized.

The same conversations can be used to capture information on perception and trends from customers. This is extremely handy not only for understanding macroeconomic and political trends and related impacts on the business, but also for getting indications of disruption or even collecting new ideas from customers to improve the business. It is common practice in Rockwell, GE and Voith for executives to visit to their customers periodically to discuss these issues face-to-face in a setting with no specific project on the table.
4.1.1 Marketing Databases

Salesforce.com and other databases (proprietary or not) can be used to collect and produce reports on marketing information. Some companies use these databases as a mechanism to monitor and control their sales teams, but this is too narrow-minded. Some others turn the database into the marketing effort objective. Instead, the database has to be seen as a tool to make smart marketing decisions. Voith Hydro has a database that is extremely complete in terms of technical details and project historical data, typical for German companies. In American companies, these databases tend to be leaner, asking just for the information that is needed. On the one hand, the German style is time consuming for the user who inputs information and creates a sense of unbalance, since there is a lot of work to input and the outcome is not proportional to the effort. On the other hand, in the American system, if new information is needed, it is not available from past projects. The level of detail of marketing and sales information needed is in the discretion of the marketing manager by design, but, as a rule of thumb for marketing purposes, information older than five years is usually outdated. Another important aspect to be considered is the nature and use of information: technical, marketing and sales. Usually these databases serve these three purposes, and the managers involved have to balance the amount of effort requested to provide information to the outcomes of analysis of information. In some cases, the benefit of having the information is way smaller than the cost of obtaining it.

4.2 Product and Innovation

When talking about innovation, some look for the holy grail of the perfect idea that is unique and will magically be the source of differentiation for a company. Unfortunately, such idea often does not exist. Most commonly a great product or service is the result of many interactions around a product specification. Each interaction adds bits of innovation, and the final outcome is a great product.

The implication is that a great product demands a good specification of: What has to be achieved with that product? What is the job that has to be done? The "how to do" is not mandatory, and can be solved as part of the innovation process.

4.2.1 Sources of Innovation

On the last two decades, innovation has been the source of several studies in business schools and companies. This thesis does not intend to be a comprehensive document on what has been developed on this field, but rather a compilation of relevant inputs for innovation on the context of capital goods industries.
According to Slywotzky (2011), there are classically two sources of innovation that generate demand: the "garage innovators" and the large labs sponsored by governments and/or industries and universities to work with loose budgets and no timeline just to innovate. Examples of the latest are Bell Labs (Bell), DARPA (Us Government), PARC (Xerox), SRI (Stanford), HRI (Honda), and even the Media Lab (MIT). Problem of innovation is that it is fuzzy. There is actually no recipe for generating demand for what is being created. Sometimes, and actually most often, those who create a new technology do not actually understand the extent of its application. You start looking for A, find B and in the process ends up with C being a breakthrough. This means that while the specification is important, there is a high probability that the "how to" will come from a source that is not within the organization who is developing the product. In this sense, it is fundamental that product developers and marketing professionals keep themselves up to date with what is being developed elsewhere, not to necessarily to copy it, but to get inspired. GE Motors does this in annual meetings in its global research centers (GRC), when scientists, engineers and managers meet to exchange ideas on innovation and tendencies with no commitment with a specific product. Likewise, in ABB the global head of instrumentation and his team also go to trade fairs and conferences on subjects related to their markets to get inspiration.

Von Hippel (1998 and 2005) introduced the concept of user driven innovation. The basic concept derives from the "everywhere" and "exchange" discussed earlier in this chapter. In today's world of limitless access to information, there is a high probability that your users have aggregated knowledge about your product and the job it performs larger than what your organization has. In this

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scenario, your users are powerful and effective sources of innovation. The issue is that this source is fuzzy and uncontrollable. In some cases, the most passionate users will represent a super-niche market group and, therefore, designing a product for their needs and according to their needs might result in overshooting, as described below. Von Hippel's recommendation is to know and select key users who represent a balanced sample of your market and welcome their solutions. Yet, the marketing manager has the responsibility and accountability of choosing what should be it the product or service.

### 4.2.2 Types of Innovation

A relevant question is the pace and scale of innovation. In his masterpiece "The innovator's Dilemma", Christensen (1997) differentiates sustaining versus disruptive technologies. Sustaining are new technologies that foster an existing product's performance on the dimensions that the existing base of customers value. These can be continuous or radical in character or incremental in nature. Disruptive are new technologies that result in a product that is worse than the existing product, but the way this disruptive product delivers the job desired by the customers is way cheaper. Being cheaper, the disruptive product can be sold to customers who could not afford the existing technology and do not care to get something worse, since their option would be not to buy. Another interesting finding by Christensen is that technologies usually evolve faster than customer needs or, ultimately, than what they are willing to pay for. Eventually, a disruptive technology - sponsored by its new customers - will receive sustaining innovations and become acceptable to the customers of the original technology. These will also migrate to the new technology that does the job they need, ultimately killing the original product. Picture 8 illustrates the process of innovation for sustaining and disruptive technologies. Sustaining is divided into incremental and breakthrough.

A good example of the effective use of the concept of maturity of market to absorb a technology, as well as understanding sustaining innovation is Apple. Apple consistently chooses to release products that do not have all the features and functionalities they could release. Instead, they release the right amount of functionalities to create enough differentiation from the previous generation of products and, at the same time, be absorbed by the consumer. Apple consistently releases a product and the next one or two releases will be improvements on the same “body” (or incremental). Then the subsequent release is a new body with a higher resolution screen or other features (breakthrough). Another example is GE Motors, but in this case of overshooting. When GE decided to focus on a niche market for high efficiency low voltage motors, they actually overdeveloped in terms of features, quality and efficiency. Later, they had to “downgrade” the
product, since customers were not prepared to buy and, therefore, did not value or wanted to pay for the features and efficiency not used.

Quality
Features

Picture 08: The impact of sustaining and disruptive technological change.

Christensen's findings are summarized in five principles:

1. Companies depend on customers and investors for resources.
2. Small markets do not solve the growth needs of large companies.
3. Markets that do not exist cannot be analyzed.
4. An organization's capabilities define its disabilities.
5. Technology supply may not equal market demand.

One of the most intriguing propositions is embedded as a consequence of the third principle. In Christensen's own words: "In many instances, leadership in sustaining innovations – about which information is known and for which plans can be made – is not competitively important. In such cases, technology followers do about as well as technology leaders. It is in disruptive innovations, where we know least about market, that there are such strong first-mover advantages. This is the innovators' dilemma." The underlying reasoning behind Christensen's assertion is that competition catches up fast with differentiation and, therefore, the differentiation generated by sustaining innovation is in fact not sustainable.
Spears (2009) in his book "High velocity edge" apparently solves the dilemma by proposing that what makes sustaining innovation sustainable is the speed with which the leaders can successfully produce and release innovation to the market. The competition simply cannot reach the leader because the leader has a complete system in its organization that is capable of understanding trends, customer needs and problems and of creating products, systems and services that address those needs. Under this theory, Apple's innovative capacity does not emanate from an "ingenious special mind called Steve Jobs", but rather from a complex system that combines processes and competence to create amazing products. These companies understand the concept of disruption and, from time to time, they kill and replace their own products by new offerings that practically create a new category of products. Apple specifically is extremely skilled in doing so by reducing the price of older version of its products, not only to capture more value through price discrimination, but also to reduce the market value of products from the competition that are catching up with its older versions, thus preserving the high price tier for its innovative products.

4.2.3 Involution and Evolution

One of the forms that innovation is welcome in companies is for the involution of products. Aware of the dilemma between sustaining and disruptive innovation and of the fact that technology evolves faster than market demands, companies can make deliberate involution of their products to shift positions on the technological change curve (Picture 08). Voith for example, aware that its automation system was an overkill for the small hydro market, developed locally in Brazil a simplified solution that maintained the use of Siemens hardware and discarded several functionalities as well as redundancies to come up with a cheaper product that could be marketed in a situation in which a disruptive solution was coming to the market. The strategy was successful and Voith was awarded a series of automation contracts in power plants where Voith was already supplying the main generation equipment (turbine and generators). As an upside, the automation system was sold with all the auxiliary systems for the plant, resulting in an important profit contribution. However, in some cases evolution is also needed. At the same time Voith simplified its automation system, customers started to research remote operation for their plants. Remote operation is usually made with no human supervision on site, allowing great savings in labor and an important reduction in plant OPEX (operational costs). To cope with that, Voith added to the simpler system the necessary components to allow the system to be operated through the Internet. Later, when customers requested this, the system could be activated with a simple upgrade of the software package.
4.2.4 Location of Innovation

Innovation also depends on the location. Voith tries to concentrate its R&D and innovation in Germany, allowing some exceptions for countries with clear relevance in some product lines, like Brazil for generator windings. ABB has the sources spread all over the globe, thanks to its structure of several business units whose heads are also distributed worldwide. Rockwell centralizes product development in Milwaukee (WI), even though it has a very direct system of capturing customer input (spread all over the sales channels) for the product development process. All these companies follow in some sense the concept of innovation from the center to the periphery. GE, even being a company that still has lots of R&D and Product Development in US, started experimenting with a new concept of innovation from the periphery. GE Engineers responsible for medical imaging in India, aware of the impossibility of rural hospitals to buy sophisticated ultrasound devices, developed a portable system based on a notebook interface and a transducer that is orders of magnitude cheaper than the regular GE product. Rural hospitals now have a product that is not as good as the regular ultrasound device, capable of doing 4D and sophisticated Doppler exams, but it is affordable and can take women and other patients through ninety five plus of their examination needs. The secret here was that GE understood that this was an idea that could self-disrupt GE and, instead of fighting it back, they accepted the input and let the periphery engineers in India to self-disrupt the ultrasound market in that country.

Another aspect of the location is the physical environment where people will innovate. Regardless of the culture and country where a firm is, cubicles and walls were not designed to allow communication, and since creativity seldom comes from new suggestions and often from the combination of existing ideas from the same or different industries, the setup of a physical space that is suitable for people to interact or exchange information is of essence.

4.3 Pricing

There are basically 4 principles of pricing:

- **Cost-based pricing:** The firm calculates the cost of the product or service, adds a multiplier and sets the desired price. This is the price usually characterized by a mark-up that multiplies a sum of the variable cost with a portion of the firm’s fixed cost. The problem with this type of pricing are threefold:
  - You have to know the costs.
The sales volume changes the allocation of fixed costs, creating the temptation to reduce prices to achieve a certain volume that dilutes fixed costs and creates economies of scale.

- It confuses cost with value for the customer.

- **Competition-based pricing:** The firm prices to match or beat competitor prices. To simply price as per competition price is the ultimate assumption that your own product, service or solution has no differentiation whatsoever from the competitor. From the signaling point of view, since odds of being equal are low, customers might understand that your offer is actually worse otherwise why would you set the same price?

- **Customer-based pricing:** The firm prices according to a customer informed target price. The problem is that customers do not tell the truth about the maximum price they are willing to pay for. Instead they stress the price to the lower side, creating pressure on the supplier. As we will see on chapter 5, there is a heuristic called "anchoring effect", or the creation of a reference price. In this case, the anchoring acts against the seller after the customer sets an extremely low target price.

- **Economic value to customers:** Economic value is sophistication of the competition-based pricing; the difference is that you add the value of the difference between the present values of your offering minus the present value of the competitor. This price is also called EVC.

The economic value added is a better system to calculate prices since it tries to capture the maximum surplus from the customer given a certain reference price. Nevertheless this is a static view of the pricing practice. When a company sets price there are several factors to be taken into consideration:

1. **Competition response:** The competition response can happen on the form of price, scope or characteristics of the offering. This creates a natural disturbance that changes the EVC for the customer.

2. **Segmentation:** Not all the customers evaluate and understand the value of your offering the same way. The segmentation of customers in different categories is of the essence in trying to capture the maximum surplus from each category. In fact segmentation will also help to choose which customers to serve and which not to serve.

3. **Timing:** Usually the level of economic activity indicated by the level of occupation of industry will change the appetite for sales and therefore change overall price levels. Few industries do not suffer from price deterioration in times of crisis.
In practice, customers developing highly complex projects have a budget. Usually the budget is driven by a combination of cost reduction and risk management. In this sense, provided a certain amount of requirements are fulfilled, the company will try to find the best tradeoff of risk versus the lowest available cost in that particular situation. This means that the budget is adaptive.

4.3.1 Dynamic Pricing

Some years ago, upon losing a multimillion contract in Latin America I did a lessons learned interview with the customer’s CEO. He explained to me that they did not have a budget for the power generation equipment from the beginning. The budget was defined on the go. What they would do is request a first round of estimate proposals, from there define a number that they would input into their valuation model to identify whether the NPV (Net Present Value) was positive. Being positive, they would continue the interactions with the suppliers identifying and calculating the differences of value while they requested successive revisions of the offer and allowed the players to compete and review prices as well as aligned technical solutions. At a certain moment in time prices would start to stabilize. That was when they would define their particular target budget and ask for the competitors for their last and final offer. Based on the EVC, they would call the best supplier and ask for a final discount to close the deal.

![Dynamic Pricing](Image)

Picture 09: Dynamic pricing from customer’s perspective.
What the history above tells us is that the customer does several interactions where customer-based pricing, competitor-based pricing and value pricing are used according to customer convenience on the search for the optimum solution for them.

On the seller side, in most capital goods companies, costs knowledge is not usually a problem. What happens in fact is that the first interactions of the full cost calculation have two particular characteristics related to projects that are done one at a time:

- Costs are “fat”, meaning they have contingencies and safety margins.
- Technical solutions do not have all possible optimizations.

In this sense, two processes will happen simultaneously. The customer is learning about prices and trying to decide with whom to settle a contract, while the supplier, on its side, is working to optimize scope and reduce costs to gain space for negotiations or repositioning.

Note that this is a bid process where the customer is pretty open to interact with the supplier during the process. In the case of tendering, with a qualification followed by a price opening, the evaluation of value must match the informed evaluation criteria by the customer to allow for the best solution.

The most important aspect of this is the understanding that a company will have to decide in what moment to present each price for tactical reasons related to how the market price will change. The other part of this are the concerns related to anchoring and consistency. If a company is known to be the highest price bidder, this is the price that will be recognized as the ceiling and will serve as a reference for the lower prices. Likewise, the price of the lowest qualified bidder will serve as a bottom reference. Picture 09 illustrates the dynamic pricing process. Heuristics refer to non-rational criteria for choices incase EVC results in a tie.

4.3.2 Tracking Prices Behavior

One of the most important tasks related to price definition is the collection of reliable pricing data and, the exercise of discovering not only price drivers (tangible endogenous factors that affect price) but also studying price elasticity and cross price elasticity related to control variables for strategic decisions and or exogenous factors that influence price and ultimately the purchasing decision by the customer. The deep understanding of these dynamics is fundamental for the work of the person or group of people who will decide what prices to present.

4.3.3 Where Prices Are Defined

Regardless of the temporal aspect of the dynamic pricing, the price has to be defined in a certain part of the organization (CEO, the CMO, the VP of marketing or a pricing department). The
most important thing is not to confuse the area of the company that calculates costs with the area that estimates prices.

The first reason is the perspective. Cost focused people see the business from the lenses of the company and find it difficult to understand that cost and price have no correlation other than ideally having price higher than the cost. When they do get the difference they then have difficulty to understand that quite often the price is not deterministic due to the dynamic pricing effect seen above. They do expect to use a very precise EVC, but the fact that the competition price is moving can be disturbing. Likewise, people who estimate prices have difficulties understanding cost conscious people. They care, but they cannot do much do to help. The second reason is semantic, but extremely important. Cost is calculated while price is estimated. It is a verb difference but it makes all the difference. Of course costs can vary, but yet they are deterministic. Price is estimated by definition because one can never know for sure the price level of its competitors. It is the responsibility of an internal referee to balance both sides and decide on the price to be presented.

A lot has been developed in game theory that can be applied into the definition of tactics of competitive pricing. Game theory is worth studding by the reader who is willing to further understand how to develop pricing tactics from the perspective of an economist.

Another relevant aspect is the distance of the pricing decision from the action. GE, ABB and Rockwell have internal price lists and pricing policies that define exactly what is the level of discount each person involved in the sales process can give away in pursuit of the deal. These policies are extremely important to (i) ensure price consistency throughout the market, and (ii) to maintain price levels to preserve the capacity of the firm to capture the value it is generating. A product manager usually does this definition of prices centrally. This is the common strategy for standardized product definition. The more customized the product or service gets, the closer to the action the decision gets.

No matter where the price is determined, the person who does it has to be fully backed by senior management, since most probably sales people will quite often claim the price to be high and proposals people will claim that it is too low.

4.4 Place and Channels

The presence of a firm is an important aspect derived from the crossroads of its strategy and tactics. On the one hand the manager has to understand where are the markets for its offerings

5 This is a role, not a position, and varies from company to company. Can be anybody form a CMO, to a Manager depending on the product relevance to the company portfolio.
and what are the correct approaches to address each of these markets. The approaches are known as channels. There are typically six types of channels:

- **Sales force**: Sales people of the firm that deal directly with the customer. They are usually compensated with a base salary plus performance-based bonus.
- **Agents**: Sales people or firms that represent one or more firms. They are usually compensated with a success fee.
- **Distributors**: Companies that are specialized in industries and sell equipment or services from a selected number of suppliers to fit the special needs of the industries they serve.
- **Integrators**: Similar to distributors but they also engineer the solution integrating what their suppliers sell them into a final product, service or solution to the end customer.
- **Retailers**: Retailers have stores that are open and serve any kind of public, being a company or a consumer. This is not a usual channel for capital goods or B2B.
- **Internet**: Online commerce with all its possibilities. The Internet can serve the purposes of the channels listed above but especially the role of the distributor. Internet is also a powerful communication channel, as we discuss in chapter 4, but these are different functions of the specific media just like the sales force is also considered as a communication channel.

Sales force and agents are called direct channels since they communicate the firm directly to the customers. Distributors, integrators and retailers are indirect channels. Internet can be either a direct or an indirect channel, depending on the choice of use.

The choice of which channel to use lies in understanding how close does the organization have to be to the customers to ensure the sale. Some products and services are "self-contained" and therefore can use indirect channels, whereas others demand closer interaction with the customers to explain the product and also to identify needs and problems that can be addressed by the product that is being offered. In those cases, the direct channel shall be preferred. Whenever there is a market potential and the company can afford to have a sales person it should choose to do so because it reduces the frictions and losses/distortions on the path of communication between the firm and its customers. Another aspect to be considered is the set of compensation schemes that can be a source of conflict in the organization when you have different channels coexisting.

Different markets have different customers and sometimes will demand different channels to serve each customer segment. Voith Hydro chooses to use a sales force as much as possible and
agents in two situations: when there is no business volume to justify a full time sales person or when building local relationships takes too much time. However, Voith Hydro does sell through integrators, not by design but as a result of selling equipment to an engineering or civil construction company that is performing an EPC contract to an end-customer. Rockwell uses all channels and has a complex but "lubricated" system to manage the interaction and frictions between channels. Its sales force is focused on performing technical sales and support for distributors. It is in charge of generating the need for the products, whereas the distributors and integrators sell the bulk of the volume. However, from time to time the company will choose to do large projects directly and its sales force will sell those. The criteria they usually use to decide to self-perform complex engineered projects is to ensure the success of the solution that is being implemented. ABB also uses all channels except for agents. However, ABB divides the market for projects between distributors and its own sales force and execution according to technological segmentation. ABB has a basic and a complex system of hardware to be used in automation solutions. Automation systems built using a "basic technology" will be made by integrators, while complex ones will be made by ABB. This is also a good way of focusing the company's resources on the most important projects.

The other aspect to be considered is how the company will deliver what it is selling. This defines an important connection between the marketing and the operations cycles as described in chapter 1 of this thesis.

Once a market shrinks and the demand shifts to a different market the company has to assess how long and permanent these changes will be and decide on a marketing response. Insisting on having a presence in a market that is not producing leads, sales and profits is not a good use of the company resources. Ultimately, it might be a contribution from the company to the commoditization on a particular market because sales force might start pushing for price reductions on an attempt to become more attractive to customers. However, this is not to be confused with inconsistency in serving the market. At this point the deep understanding of the particular industry the firm is in is fundamental. Capital goods are cyclical by design because they usually follow the macroeconomic cyclicality of countries and world economy. If there is a recession, there is usually less investment, if there is growth there is more investment. Some markets like the hydro market or large infrastructure projects in general have inertia and will have a reduction in demand and workload with a delay from a crisis on a particular economy. It is common practice to use periods of crisis to plan scenarios and study projects that will be implemented in the next period of growth and if the firm that is selling its products and services
chooses not to be in that market because momentarily sales volumes are low, it will probably not be in position to close deals when the economy recovers and customers decide to proceed with their investments.

4.5 Promotion

In many companies, marketing is understood as promotion or publicity. In capital goods it comes with a certain frustration with the usual budget limitation that individual product lines and even entire brands in some cases have to face when doing promotion campaigns. Promotion in Capital Goods serves a different purpose than promotion in business to customer (B2C) environments. For the purpose of promotion, capital goods are a particular case of business to business (B2B) and therefore we will refer to B2B x B2C for the explanations.

Promotion is often referred to as marketing communications or marcom. In this thesis we will stick to the terms "promotion" or "communication". In the context of this thesis the company listens to the customer to use the outcome to produce action and speaks to the customer with an intended purpose. B2B promotion serves two purposes: to create brand awareness and explain an offering to customers. Because of the nature of B2B itself, B2B promotion is not effective in creating an impulse purchase.

4.5.1 Insights to the Brain

Before going into the details of the use of promotion in B2B, it is important to understand some practical aspects of the human brain for memory, information processing and decision making. In this chapter, authors will not be mentioned one by one but Kahneman (2011), Goleman (2005), Shull (2012), Lehrer (2010) and Ariely (2009) are relevant references for the explanations offered.

Humans have two kinds of memory within the same brain, working memory and long-term memory. When information is captured, it goes to working memory. By rehearsal or elaboration (experimentation), it goes to long-term memory. However, it has to be retrieved to be used again. Although, long-term memory is virtually unlimited, our brain selectively and constantly chooses what to forget based on several criteria but mainly due to use and repetition. People can deal only with seven (plus or minus two) subjects at the same time in their working memory. Migration of information from the long-term memory to the short-term (working) memory requires a mechanism of activation. A brand is one of these activation mechanisms. In everyday life, things like seeing a pet, a familiar smell, an exam question, a song or other sensorial or intellectual experiences can activate memory. Because of the physiology of the brain, activation of one node
activates similar nodes. This means that once a particular theme comes to your working memory, it is easier to retrieve similar themes. This way, in order to be influenced by a certain memory, it has to be available and accessible. There are specific features of the process of archiving memory in the brain that deserve attention within the context of marketing communications. One of the most relevant is the "mere measurement effect: People remember about their experiences at their peak and their end not how they started or evolved. Imagine you had a pleasant relationship with a customer to obtain a sale and at the end you have a good project, product or service performed, but there were unresolved problems during the delivery process that caused stress to the customer. These feelings will influence the customer, not only on their next purchase, but also in the settling of potential claims. This is why customer satisfaction should be measured during the life-time of a project and not only at the end.

We have different systems for processing information:

- **System 1**: It is non-conscious automatic and almost effortless. This is also called intuition.
- **System 2**: Conscious, controlled and effortful. This is also called rational.

For a long period it was believed that intuition would work just as well as a rational process. This common wisdom is reinforced by people who say making the decision is more important than the actual decision, and that we should actually follow our intuition. Today it is actually known that intuition is actually influenced by particular heuristics that make the decision from system 1 different from the decisions from system 2. In other words, people using system 1 will often take decisions that "do not make sense" under a rational perspective ("system 2"). Take for example the pilot of flight AF477 that crashed into the Atlantic Ocean in June 2009. Later analysis showed that the pilot reduced engine throttle and lifted the nose of the aircraft, two actions later perceived as not making sense together, but under stress and consequently system 1 dominating his actions, reducing engine throttle was consistent with the high speed indicated by the planes' defective speed sensor and nose lifting was consistent with the consequent loss of altitude. When utility is uncertain, and or computation of variables exceeds the capacity to process, people will often take shortcuts. This is applicable either for stressful situations or for highly complex decisions like the choice between two complex products for which the utility analysis is not clear. These shortcuts are called "heuristics". The most relevant heuristics to a marketing context are listed below divided into three categories: general influences, multiple options and prospect theory.
General influences

- **Anchoring**: It does not really matter the price, if you set a reference and the customer accepts it, it will serve as anchor for the evaluation. When B2C retailers list the “manufacturer recommended sales price” and a “discounted” price, they are using this method. Anchoring usually does not work in B2B settings because B2B customers make a conscious effort to be rational and usually compare prices with similar products from competitors. Anchoring helps in budgetary proposals to signal quality of the offering but price gaps should not be absurd.

- **Representativeness**: It is the generalization of some fact based on small sample that is not statistically relevant, overestimation of low probability effects and misconception of correlation and causality. Usually it is also related to association. This is used in B2C in advertisings that associate healthy people with smoking or drinking. In B2B it applies for both the customer and the supplier. Customers can make inferences to quality of offerings based on a small number of references like a new player in the market who performs well its first project or a supplier that underestimates a competitor for a bad performance in a particular project and ignores their successes in other projects.

- **Availability**: The more people talk about it, the more people tend to think it is true, regardless whether it is so. This is the psychological principle behind the effect of word-of-mouth and that is why it is a powerful marketing communication tool. The trick here is to provide straightforward positive information and beware of negative information coming from sources other than your company that might be associated to your brand or offerings.

Multiple options

- **Compromise effect**: Given three options, people tend to choose the middle option. This is very useful in B2B markets and works well combined with the attraction heuristics. Apple usually releases three versions of the same product varying just the memory capacity. Ninety five percent or more of the users will not use more than the smaller memory, but yet people are driven to the intermediary option.

- **Attraction effect**: Create a “decoy” that is similar to the option you want to sell and it will attract buyers. Xerox, for example usually offers three models of the same copying machine. There are simple, intermediary and advanced models. The
advanced has not many more features or functionalities than the intermediary, but by having this decoy, people are attracted to the intermediary.

**Prospect theory**

- **Mental accounting:** Money has different value under different instances and the instances not interchangeable. This means if a customer has different budgets for capital expenses and operation and maintenance, a proposal to combine the two for a particular offering has to be carefully prepared and explained, because it will only make sense under a rational evaluation. That is one of the reasons why integrated services might not be offered on the closing of a deal. If it have not been discussed before, the customer is not ready to compute the value from two different mental accounts. Mental accounting is especially important in B2C environments when people literally have different assessments of value in consecutive moments. You go to a restaurant and decide between tipping ten or fifteen dollars without too much effort but get mad if the taxi driver on the way back charges you an additional five dollars.

- **Diminishing sensitivity:** People are more sensitive to the proportion than to the absolute value. In B2B settings, this means that it is better to grant discounts during a negotiation are better offered on specific items. This is reinforced by the mere measurement effect that people will have the feeling of getting a better discount. This will not affect the system 2 (rational) processing but will be effective on the resolution of a complex tie between two proposals solved with high influence of system 1 (intuition).

- **Loss aversion:** People are risk averse towards gains and risk takers for losses. This means people tend to be conservative to secure gains and risk takers to prevent losses. The practical consequence of this is that when handling a relationship with customers, one should partition gains ("do good every day") and integrate losses ("do bad at once"). For example: A customer tells a seller that the budget for a project is insufficient. The best approach is to promote a drastic reduction of scope and reserve a space for additions one by one.

- **Sunk costs:** Even though it does not make sense from a valuation theory perspective (system 2), people do remember about sunk costs and factor them into their decisions. This is valid both for money and time. This means a customer
that has spent time with a supplier will consider this time as an investment and 
not as sunk costs.

- **Status quo:** People tend to stick to their current choices.
- **Endowment effect:** People assign different value for what they have and for what 
  they do not have. This is often seen in free trials offered in retailing but is actually 
  valid for simpler settings such as a camera shop. You are more likely to buy a 
  camera if you can touch than the camera on the display. This can also be applied in 
  B2B settings by providing services with certain equipment and offering the 
  customer the option to keep the equipment after the end of the contract.
- **Framing:** This relates to how a choice is offered. The best way to explain it is through a 
  practical technique called “foot on the door”: a customer makes a request for a small 
  piece of information and then asks for a larger piece that will demand more effort 
  from the supplier. The supplier is now more likely to provide it than it would be if 
  there was no small request before. This is also valid in the reverse mode, when the 
  supplier is trying to obtain information from the client to prepare a proposal.

## 4.5.2 Brands and B2B

Brands are usually a clue to fill gaps of information that are not available to the customer 
during his or her decision process. People do not really know whether Walmart is cheaper but the 
brand has an intense association with low prices. Likewise people do not know whether a 
particular Marmot winter jacket is durable but the brand’s overall association with high quality 
makes the customer’s choices easier.

In B2B, due to the nature of the relationships and the strong influence of system 2 (rational) 
thinking in the choice process, according to Malval (2001) and Minet (2002) a brand can serve to:

- **Encourage customers to try your offering and or to call you to participate on a** 
  process.
- **Signal of quality and reliability that will favor the firm in a tied situation that** 
  demands decision.
- **Help the company to sustain higher prices.**
- **Reduce risk perception by customers through association with a reliable brand.**

Brands are most useful if they are in the memory of the people, and if their recall can be 
triggered through associations. That is a major difference between B2C branding and B2B. In B2C the 
customer will be exposed to the brand at the moment of the decision. In B2B, customers have to recall
the brand to invite a particular company to participate in a process. Because of usual budget constraints for marketing communications and the nature of the B2B purchasing process, especially with capital goods, the most recommended path is to focus on a single brand. Use all the company's resources to reinforce that brand and the associations the company wants to have. It is not only about just showing the brand, but also relating to the clues one can use to trigger a recall of the brand.

By this token, all of Voith's hydro-related advertisements are associated with beautifully taken pictures of turbines, generators and dams, intentionally creating an association with quality but also to have customers fundamentally recall Voith when they think about turbines, generators and dams.

The other aspect that is important is the consistency of actions with the messages associated with the brand. If Voith does not deliver high-quality products or even proposals, this will damage the brand and therefore undermine its influence on the decision process.

4.5.3 Communication

An important and fundamental part of the promotion is the communication and it is extremely important to choose a suitable communication channel and style:

Direction:

• **Unidirectional**: A one-way street. The recipient has no form to respond to the message. Usually done via television, radio, newspapers, magazines, displays and the Internet.

• **Interactive**: Allows the recipient to interact or to respond. Examples include training sessions, conference booths, web sites and sales efforts.

Format:

• **Iconic**: Broad conceptual messages to create an association with a certain concept. The picture of a cowboy depicted on a Marlboro advertising.

• **Instrumental**: Provides detailed information about a product.

Usually, the iconic format works for brand building whereas instrumental is used to build product awareness.

The choice between unidirectional and interactive is discretionary but, in general interactive produces a better effect since the interaction creates the right stimulus for the message to be transmitted from the working to the long-term memory. No wonder Siemens, GE and Rockwell provide subsidized or free-of-charge training for their customers.
Typical communication channels include:

- Personal selling (the sales person talking to customers)
- Tradeshows
- Direct marketing
- Sales promotions
- Advertising
- Public relations

The term direct marketing is used to refer to several mediums (telephone, mail, e-mail) but implies a personalization on the message. In this sense, internet advertising can also be considered as direct marketing as long as it uses technologies to personalize the message explicitly or indirectly to the receiver.

There are many arguments on how to choose communication medium. Malval (2001), Minet (2002) and Ellis (2011) present different theories of how to use them. A detailed of the analysis of pros and cons for each technique is not the focus of this thesis, but some important remarks can be made: fit, consistency and customer centricity.

- **Fit:** If the goal is to reinforce the brand and its associations, choose media that will provide the target customer group with plenty of repetition of the core message. Iconic may work best. If the goal is to promote awareness and the attractiveness of a product or service, focus on instrumental media consumed when customers have time to use system 2 thinking. Do not waste resources on addressing messages to those who are not customers or potential customers.

- **Consistency:** Whatever medium the company chooses, it has to deliver messages that are consistent with the strategy, marketing choices and sales tactics. The teams dealing with customers (sales and execution) must walk the talk; otherwise sending the message just creates confusion.

- **Customer centricity:** If the firm chooses a customer-centric approach, the core communication is done through sales channels and trade shows. Media and collaterals are supporting elements. The focus should be on instrumental communication to promote interaction with customers. Media other than sales, tradeshow and collaterals and iconic messages are important, but they are supporting elements and not the heart of the communication.
The most recommended approach is to have a professional who understands B2B and capital goods industries create a communications and implementation plan that is both consistent with the firm's strategy, marketing and sales choices and optimizes the limited resources available for the campaign as well.
5 On Sales

Sales is one of the most important aspects of the capacity of an organization to capture the value it claims to generate. When a sales person or a team believes that its offering is a commodity and treats the sales process as if it were a commodity, there is no strategy, product development and marketing or operational excellence that can command premium price and profitability. In this sense sales, must be engaged in protecting and selling the value the company is creating. This chapter is based on literature, interviews and on my experience as a sales producer and as a sales manager.

5.1 Sales as Relationship

Selling is the art of getting deals. Different from retailing, where consumers can actually buy with no salesperson interaction, in business to business and especially in capital goods, the sales force is of the essence. The way to obtain deals is through relationships. Relationships are needed to enhance communication, generate trust and ultimately align the goals of seller and buyer.

There are different levels of relationships to be established between people within a sales environment. In general, the importance of relationships increases with the growth in complexity of the object of the sales process. Simpler products and services tend to be sold over transactional relationships characterized mainly by the deal itself. With complexity, comes uncertainty, and all the details cannot be written anymore. In these cases, non-written agreements influenced by social, ethical and political rules play an important role in shaping the relationship between the parts. These non-written agreements are relational contracts.

According to Fiske (1992), people are fundamentally sociable creatures and they organize their lives in terms of their relations with other people. For Fiske, there are four types of social relationships:

- **Communal Sharing (CS):** Relationships are based on a conception of some bounded group of people as equivalent and undifferentiated. In this kind of relationship, the members of a group treat each other as all the same, focusing on commonalities and disregarding distinct individual entities.

- **Authority Ranking (AR):** Relationships that are based on a model of asymmetry among people who are linearly ordered along some hierarchical social dimension.

- **Equality Matching (EM):** Relationship of giving equal contributions and extracting equal shares. People are concerned about balance. Any imbalance will generate dissatisfaction.
Market Pricing (MP): People reduce all relevant components of a relation to a single value or utility metric that allows the comparison of many qualitatively and quantitatively diverse factors.

These four types of interactions are mixed in society, and usually relationships among groups of people have components of all of them. For example, a ship crew shares the use of the spaces of the boat and their mission goals (Communal Sharing), works on a task in which a commander directs others (Authority Ranking), shares the guard positions in shifts (Equality Matching), and gets compensation for the work done (Market Pricing).

In a sales process, buyer and seller organizations have these four types of relationships interacting. For a sales process to happen, the organizations have to connect and create a third relationship set, the deal relationship. The image below illustrates how these relationships coexist and the fact that the four types of relationship will also exist on the interaction between companies. This has to exist to allow for the existence of the trust and alignment of goals and shared sense of timing.

In capital goods sales (business to business scopes from hundreds of thousands to hundreds of millions of dollars), the deal can only be achieved if there is a relationship in place. The question is what the intensity of each type of relationship forming the deal relation will be.

In general, a deal is the beginning of a Market Pricing relation between two organizations. There is a defined price and a service, a product or a system to be provided. The contract negotiation is an Equity Matching relation in the attempt to define certain amount of Authority Ranking to settle the lack of clarity of the Market Pricing relation that was defined in the deal. In tender processes, the buyer's attempt is to limit the decision to this dimension, producing a
specification that tries to make all competitors equal so that they can be compared on a price/utility basis. However, except for tender processes, in general the decision process to achieve the relationship should not be confused with the deal itself.

The decision process is influenced a lot by the type of relationship that is created before the deal, and this is typically of three types: Communal Sharing, Equality Matching, and Market Pricing. Interestingly, prior to the deal, Authority Ranking is extremely important and influential on the context of each organization. The buyer has to explain to its superiors why a particular deal is recommended, and usually this is translated on a Market Pricing standard. In case two or more competitors are found tied, it is fair to decide based on the other aspects of the relationship (Communal Sharing and Equality Matching), which might also include not only the history of past relationships, but also the influence of brand. Nevertheless, it is ultimately a “choice of preference” or an emotional choice. In this context, the idea that a deal can be achieved just by delivering a competitive proposal (low price) regardless of the relationship is just wrong, since a competitor who enjoys any kind of relationship will get clues from the buyer to revise or adjust their offer to get to an acceptable Market Pricing rationale that allows that competitor to be chosen. In this sense, there is actually a fifth type of relationship, known as No Relation (NR) or the absence of relationship.

**Market Pricing (MP)** relation prior to the deal itself is the system of facilitation fees where sellers pay for buyers so that they to buy from them. This is not acceptable and actually a crime in several countries including the U.S., but it is worth mentioning for the sake of maintaining complete the analysis. The intention of the payer is to create a relation of power (Authority Ranking), but it ends up being a relation of utility and the one who pays the most ends up having the deal. In some sense, more than one competitor pays facilitation fees and, in exchange, the winner gets the benefit of selling cheaper. Looking from this perspective, it is hard to understand why a seller would pay facilitation fees to a buyer. There are two explanations among others: (i) The seller hope that he or she is the only one doing this and therefore he or she has an advantage. (ii) The seller believes everybody does it and therefore this is a qualifying criterion to participate in the game. There are some problems with these approaches: First, for many people (including me), it is ethically not acceptable. Second, in most countries it is illegal. And, third, in most situations, the buyer who is willing to accept facilitation fees sets the Market Pricing relationship with several sellers, eliminating the “advantage” of a particular supplier. In this case, the second alternative described above is correct and the seller will have to decide what to do according to his ethics, willingness to respect the law of the country in which he is operating and the regulations of the firm to which he or she works for.
Equality Matching (ME) relation is the classic relational model of sales based on perks and personal relationship. The idea is to take customers to dinners, social programs and also to distribute many types of collateral (gifts and others) to create a situation where the buyer feels obliged to "give" something in return. This could be a piece of information that is fundamental to the solution that is being offered, or a clue for pricing, or even the award itself. This type of strategy has been and still is very effective for the sales of "smaller" value goods. Equality Matching relationships rely on an "accounting system" for fairness by the members of the relationship. Imagine a babysitting community: if I babysit two times for a friend, I expect him to babysit two times for me. The problem is that to assume that the buyer will award a multi-million dollar contract in an Equality Matching relationship for dinners and show tickets is naive and wrong. From the perspective of the buyer, it does not really matter whether the seller is delivering services and goods for the payments he or she will receive. In the sales world, an award of a ten million-dollar contract generates a "credit" of ten million-dollar on an Equality Matching relationship and, therefore, customers willing to accept Equality Matching approaches will usually also do this to more than one supplier, and "distribute" decision awards to preserve a sense of "fairness". Today, companies are more and more aware of the limitations of Equality Matching relations and the underlying risks related to compliance and are limiting more and more the budget for such expenses. Nevertheless, although the Equality Matching model does not guarantee awards, it can be quite effective within its limitations for the sake of getting information.

Communal Sharing (CS) relation is the underlying principle of a customer-centric relationship. Buyer and seller set up an environment where members of the relationship do not measure the individual contributions of extraction from the community, but actually focus on the improvement of the goal. Let's assume a seller visits the buyer and focus on its problems and needs and brings back options to solve the problems and needs and lets the customer decide. The seller will have given to the customer ownership of the solution and both have the underlying satisfaction of shared goal achievement that is the basis of a construction of a Communal Sharing relation. The delivery of several intermediate proposals or studies will also create a sense of Equality Matching that will help to obtain information. Meals can also be used in Communal Sharing, but its application is different. It does not have to be a fancy super-expensive restaurant, because it does not matter. The simple sharing of a meal contributes to the creation of a Communal Sharing relation. As the process evolves, if the buyer engages in a Communal Sharing relation, it will share more and more about the project issues with the seller, including problems and needs that are not specifically related to the deal that is under discussion. In these conversations, the buyer will
provide information to the seller as needed to help them position their offering on the right place for winning (or to justify the Market Pricing relationship that will be explained to his or her superiors). Most importantly, at the time of the deal both parties have the sensation of long-term value creation.

When the buyer has to build the rational to explain the choice of a seller, a relationship is totally acceptable to justify a choice between two suppliers who are tied or even the choice of a seller who is slightly behind the other on the utility based calculation. However, the relational contract will be established under the influence of the combination of the four types of relationship. In this thesis, we refer to this combination as the emotional tie. The hypothesis is that the higher the emotional tie, the greater the chance to be awarded.

5.2 Sales as Process

From the point of view of the customer, the deal is the conclusion of the pursuit of a goal. The process of goal achievement follows the dynamics of the chart in picture 11.

![Picture 11: The sales process and the pursuit of a goal.](INSERT_IMAGE)

From the beginning of the search for information until the definition of the short list, the overall speed of the process is slow; the exchange of information is done on a slower pace. It is common to have information flowing back and forth with lag times of weeks. Brand awareness is important to bring players to the game. If a supplier has a good past relationship with the customer, it will be called by the customer to participate. The quality of the interaction will define the quality
of the emotional tie that is being created. In this period, not having the best efficiency, the best scope, the best fit or even the best price is forgiven, since what governs the choice is the construction of the relationship. In this phase, it is extremely important to meet the customer face-to-face. These encounters should include not only the salesperson and the buyer, but actually engineers, planers and others from both parties to get together and discuss the project issues. In general, I used a rule with my sales team: at least seven meetings with the customer prior to the submission of the comprehensive offer. This was the minimum requirement to provoke the creation of a Communal Sharing relationship with customers on the hydropower industry.

From the short list to the choice of a supplier, week after week, the process will accelerate and become more formal. Customers expect to get answers faster, and the response speed has two consequences. On one hand, response agility is perceived as quality, on the other hand, if the information of a particular competitor is not available on that specific moment, it will not be used. The rational process of choice (governed by Market Pricing and reported through Authority Ranking) goes through stage gates where an individual aspect of the project is discussed and a winner of that particular category is chosen. The most important is that this is the moment when the emotional tie will be measured. If an emotional tie has been successfully created, the buyer and seller will openly discuss how to improve the offer.

At the time of decision, if the buyer was successful, there will be two or three competitors in equivalence and a calculated utility to justify the choice of the preferred supplier. In many cases, the preferred is the one with the best emotional tie. And this is not a coincidence. The buyer will help the one with the best emotional tie to win the “rational race” in a case of emotional bias for rational choice. Some people could claim this to be an “unfair” process. Indeed it might be, from the perspective of the looser, but it is actually a consequence of his failure in developing the emotional tie. Note that the emotional tie refers mainly to Equality Matching and Communal Sharing relations, the choice between them is discretion of the seller, but everything else being equal, the Communal Sharing-based incumbent will most probably succeed over the Equality Matching based incumbent, because the customer is truly committed to him as opposed to an utility based relationship.

5.3 Bid Processes

One could argue that there is a caveat to this reasoning when dealing with competitive bidding processes, typical of state-owned companies or utilities. In principle, a technical specification is made and the winner (lowest price) among qualified bidders (compliant with the SPECs) will be awarded. In this sense, one could choose to be a NR (No Relationship) and rather
focus on coping with SPECs with the lowest possible cost. In theory, it does make sense and it is actually the underlying philosophical principle for the public contracting laws and procurement regulations that impose competitive bidding processes: Mitigating the effect or influence of relationship on the award of a particular business.

However, there is another principle that is extremely relevant: A specification is a written description of a set of wishes. The more complex the wish, the harder it is to make a precise description. As a description is an interpretation of a wish, firms that choose to bid have to understand what the customer effectively wants with the description. When a consulting firm specifies the thickness of the insulation of a generator winding, it is translating several concerns such as the insulation itself, its lifetime, temperature raise and cooling requirements, risk of corona effect and partial discharges, among others. However, insulation is an expensive portion of a machine and technology varies among suppliers. The first implication is that the specification already implies a choice from the customer on a specific technology or a group of them. Second, if a supplier understands the real wish of the customer and has a technology that allows it to implement a finer insulation, it can change its offer knowing that the customer will accept it (last minute clarifications are often used for that purpose). It does not necessarily mean that it will affect price as we saw in chapter 4, but the same relationship based knowhow can be used to offer something that is not clear in the SPEC, making sure that it is exactly what the customer wants and giving the customer the chance to disqualify a competitor. Finally, the relationship can also lead to a seller knowing the preliminary offers received by the customer, having a better sense of the price positioning and aspects of the offer of the competition. All of this exposes the shades of grey actually present in a bid process that actually reinforce the need to have a relationship and emotional tie in place to enhance the odds of the firm being awarded in a bid process.

The exceptions to this are cases where the buyer divides the process into two parts: On the first, it qualifies and equalizes sellers; on the second, all sellers are aware that they were equalized, and then they are called to present their prices. That is why most of those processes have few bidders; it is a lot of work to get the right to play a self-destructive game on pricing.

5.4 Killer Buyers and Bargain

It is the nature of the professional procurement process to keep track of prices and put pressure on suppliers every time they buy a new product to have price reductions, but some of them are special. They are called killer buyers, and no one but salespeople can identify them.
Imagine you are a seller of automation systems. You sent a proposal for one million dollars and got the following reaction from the buyer to your offer:

- I do not care who is selling to me; the first one to accept to sell for five hundred thousand dollars will get the deal.
- Look, I really like this state-of-the-art human-machine-interface you are selling. I want to buy it, but the truth is that our budget of six hundred thousand dollars considered just the push buttons. I know I might be asking you too much, but would you accept the deal for six hundred?
- Ok, I will buy one system for one million dollars, but I want you to train my engineering team to design and commission the other nine systems we will have to implement in our factory so that we can do it by ourselves.
- The buyer calls your competition in front of you to ask whether they would accept the deal for six hundred thousand dollars.

The list could continue, but the point is clear. It is not hard to face a similar situation when trying to sell capital goods. Salespeople should map these buyers, understand and manage them. This usually includes finding in the same organization other stakeholders who can support a more effective relationship. Beware that killer buyers are not present in all organizations, but in most of the cases when they exist they are regarded as heroes for the apparent cost savings that they generate. Since their added value is on the cost reduction of the face value of the deal, a possible technique is to discuss total cost of ownership. The perspective of quantity of deals to be done between seller and buyer companies also influences the existence of a killer buyer. Traditional negotiation theory states that in a one-time deal, the parts should be focused on extracting the maximum possible value from the other part regardless of the damage it may cause to the relationship. In this sense the existence of a killer buyer in a specific customer is circumstantial.

In my career, I had to deal with some killer buyers and ended up being successful in selling in some cases, in spite of them being in the process. In some cases, this included bypassing them, taking information directly to shareholders or other stakeholders.

However, this is not to create the expectation that there is a combination of strategy, marketing and sales method that will eliminate bargaining. In many capital goods industries, bargaining is part of the reality of that industry and, therefore, it has to be considered on the pricing as well as on the sales tactics of the organization (see dynamic pricing in chapter 4).
5.5 The Sales Job

Sales job configuration, performance and compensation are among the most discussed topics in the literature. Not all effective salespeople are driven by commission, but some of them are in fact motivated by bonuses - some people call them the coin-operated ones. However, these people have a special personality that is not necessarily compatible with the customers. The manager should consider this when putting together the compensation scheme. The other aspect to be considered is that the effective salesperson is not necessarily the most sociable. In fact, the ability to generate trust and rapport are more important than sociability. Although this is not a thesis on human resources, chapter 7 brings some considerations on job configuration. Sales training is also widely available, but the manager has to take into consideration what kind of relationship is targeted (EM, Communal Sharing or NR), and then choose the training to be applied. Should a customer-centric approach be chosen, Bosworth, Holland and Visgatis (2010) is an excellent reference. Their method has been used successfully in Rockwell Automation for more than a decade.

In any case, in good sales organizations for capital goods, salespeople understand that different people in the customer, consultants and other stakeholders will have individual roles on the sales process. Fundamentally, it is the job of the salesperson to identify the advocate of the firm, the advocate of the competitor, the coach, the informer, the influencer, the technical buyer, the commercial buyer and the decision maker, among others. Are these individual or shared roles? What are the interests and motivations of these people? How to engage with the ones that can help? How to bypass or isolate those who can cause problems? Can you use the competitor advocate to send misleading messages to the competition? The sales person is responsible for putting together and executing the tactics to win the deal following the general sales and relationship approach chosen by the company. In some cases, it will include helping the buying organization to come to a consensus because there is no single decision maker. With the right strategy and marketing, the salesperson will still have to put a lot of effort to effectively sell and get the business. Sales is where the action happens prior to getting the deal.

5.6 Insights on Behavior

Based on the discussion on the brains started in chapter 4, it is worth discussing the behavioral aspects of the decision process of customers, and whether or not they are applicable to B2B and capital goods. The reason for this is that the purchasing process for Capital Goods is usually dominated by system 2 (rational) thinking and should be designed primarily for that, but on
the other hand system 1 (intuitive) with all its heuristics might kick in on the early stages of the process, due to the excess of information related to the excess of options, or in the end when there is a close tie among two or three comparable competitors. In this chapter, authors will not be mentioned one by one, but Kahneman (2011), Goleman (2005), Shull (2012), Lehrer (2010) and Ariely (2009) are relevant references for the explanations offered.

A purchase is always a goal pursuit and, therefore, it will always follow the standard of acceleration of speeds of decision-making and action towards the achievement of the goal. The other important aspect is that, once decided, people commit to their decision and are not willing to change it.

Although people like having options, having too many options is also a problem since it can lead to choice deferral. To allow decisions to happen, customers reduce the set of choices to a consideration set. If you are out, you are out. If you are in, relative importance is fundamental. The insight for B2B here is to present several binomial choices for the customer one at a time at the development of an opportunity. You understand the decision process, and are perceived as an easier partner to work with, because you do not overwhelm the customer. The issue with options is also the reason why customers of capital goods do technical and commercial pre-qualifications. On top of qualifying, they are attempting to reduce the number of choices to a set size they can manage and effectively decide. For the decisions, in general non compensatory will work better with more complex multivariable decisions, meaning customers will apply the criteria each time to choose who is in and who is out.

Below, there is a description of the most common heuristics applied to purchasing processes. The issue here is that as good heuristics, they operate at the system 1 level. This means that they are less important when consumers are highly involved and/or motivated in the decision.

- **Scarcity**: This can only work if demand cannot be postponed. It limits freedom of choice and, as consequence, increases value perception due to a sense of loss aversion. It increases the desire for a product, but not the experience itself. In fact, the unexpected consequence of scarcity is a reduction of the overall satisfaction after consumption, which can hinder future purchase repetition.

- **Commitment and consistency**: People do not like to be perceived as having inconsistent behavior, because this is related to having a personality flaw. They want to feel stable, look consistent and reduce cognitive dissonance for themselves. Commitment works better if done publically. It can be used on a B2B sales setting for example by asking the customer for information on a small piece at a time and
increasing the relevance and importance of the information requested. Each time the buyer gives information; he or she is increasing his or her level of commitment with the seller.

- **Reciprocity:** People feel compelled to give back what they receive. Topic 5.1 of this chapter has a discussion on this heuristic and its effectiveness.

- **Authority:** People's decisions tend to follow the authority. In a technical sales environment, it can be strategic to bring a super expert to a meeting to settle a technical decision in favor of the recommendation or offer made by the seller.

- **Liking:** People use familiarity, ingratiation, similarity and attractiveness to decide. The importance of this should not be overpowered on a B2B capital goods setting highly dominated by engineers, but liking is an indirect clue for quality that can generate preference for a supplier.

- **Halo effect:** People interpret information towards the conclusion they want to reach, not necessarily being correct. This can be combined with mere measurement (conclusion reached with insufficient data), correlation with no causality or confusion between luck and causality. Not everybody uses and understands the scientific method. In capital goods, it is good to beware of the halo effect from the perspective of the seller, who might overestimate its competitive position or underestimate threat from competitors, and from the customers. Bringing to the table new stakeholders who have a deeper understanding of the issues that are being discussed can change the halo effect on the customer side.

- **Social proof:** People tend to do what others do. It works well in case of perceived similarity, uncertainty and competition between groups. It is influenced by list achievements. This works both ways: People gravitate towards other people, regardless of being good or bad. This is used by companies in capital goods when they provide lists of references of past project experiences. These lists also work well on collaterals and promotional material to associate social proof with the brand. Another good tactic is the use of customer testimonials on the performance of the company.

A phenomenon that is derived from these heuristics is the word-of-mouth (WOM). It is motivated by social proof and desire for uniqueness. Although there is lot of noise around the Internet, ninety three percent of it happens face to face, especially in B2B settings where this percentage is even higher. The components of word-of-mouth are social currency, triggers,
emotion, public observation, practical value and stories. It is extremely powerful for products that are new, risky and distinctive, demand high-involvement and are self-image related. Capital goods can fit almost all these criteria, including self-image when the customer is a new investor who has to attract trust to his venture and can use a supplier who is present in the word-of-mouth with a strong brand associated to quality of reliability for that. Voith, GE, ABB and Rockwell are all completely aware of the importance of word-of-mouth and rely on it as an important component of their promotion strategies. Interestingly, the channels of capital goods do not necessarily leverage on the word-of-mouth as B2C (business to customer) firms do.

The heuristics and word-of-mouth described in this chapter have influence on the decision process, but for capital goods the main focus is on understanding the implications of relationships in the customer decision process and, on a tactical level, understanding, customer by customer, how each particular sales process will work, and adjusting the approach to the needs of the situation. Usually relationships and system 2 thinking (rational) dominate sales in capital goods. Heuristics will help, but without sound understanding of relationships and customer rational, deals are left to luck. It is good to be lucky, but no firm should be managed expecting luck.
6 Companies

I have evaluated leading companies in their field of business:

- **ABB**: Player in the electric power generation, transmission and distribution as well as industrial process automation. Low voltage products have been evaluated.
- **GE**: Involved in energy, medical systems and propulsion. GE Motors and its adaptation on the small motors market have been the focus of the analysis.
- **Voith**: Has divisions on the paper, energy, mobility and services business. The Hydro Power division and its sales, innovation and product development as well as small hydro activities were the case in study.
- **Rockwell Automation**: Platforms and product provider for industrial automation and small power business. Its sales organization and product development processes were explored.

They have been chosen for being leaders on their respective segments and for the fact that all of them claim not to follow a low cost strategy, meaning that they are able to obtain deals with their customers for more than the lowest price.

6.1 Method

The companies were evaluated based on three sources of information:

- Corporate and non-official websites
- Interviews with executives involved in the decision process of the company whenever possible both on the sales and the research and development side.
- My tacit knowledge from interacting with the four companies as worker, intern or customer in different periods of his career.

The interviews were made using four generic questions that were sent before the effective meeting to each interviewee (see Attachment 1). In average each interview lasted for two hours. The interviews were not recorded, but notes were made. Interviews were made both face to face and via phone conference. This thesis does not bring the source material from the interviews just the effective end-result described in below.

On the specific case of Rockwell no official interview has been made since the company did not feel comfortable to provide an "authorized input". This way, this material is restricted to what I could access and learn through indirect search.
6.2 ABB

ABB is one of the world’s leading power and automation technology companies. Its portfolio ranges from light switches to robots, having also large transformers, motors, and control systems among others. They provide solutions for electric power generation, transmission and distribution as well as for energy supply and automation of different types of industries.

ABB is the result of the 1988 merger of the Swedish corporation Allmänna Svenska Elektriska Aktiebolaget (ASEA) and the Swiss company Brown, Boveri & Cie (BBC). The history of both companies as well as the history of ABB alone has several mergers, acquisitions and spinoffs that are not the focus of this thesis. ABB experienced some important structural changes in its organization as largely discussed in Harvard Business School cases6. The effects of the matrix organization in ABB are also not the focus of this thesis.

In the fiscal year 2011 the company received forty billion dollars in new orders and produced thirty-eight billion dollars in revenues. The company pays regularly dividends maintaining a balance also for reinvestment in new growth opportunities. It has more than 133,000 employees world-wide7.

ABB divides the market into eight regions (North America, South America, Mediterranean, Northern Europe, Central Europe, India Middle East and Africa, North Asia and South Asia) and from two technological perspectives (Power and Automation). Each market is divided into a product and a system division. In power, products are divided into smaller and larger. This way, ABB has five business divisions8:

- **Power products**: 31,100 employees, 10.9 billion dollars in revenues. Provides switchgears circuit breakers and transformers among others from low to extra-high voltage applications of generation, transmission and distribution of energy. Customers include utilities, industrial and commercial customers.
- **Power systems**: 19,400 employees, 8.1 billion dollars in revenues. It serves utilities as well as industrial and commercial customers with systems and services for the generation, transmission and distribution of electricity.

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7 The difference between the total number of employees and the sum of the divisions is usually the account for headquarters and other corporate functions.
- **Discrete automation and motion**: 27,600 employees, 8.8 billion dollars in revenues. It supplies drives, motors, generators, power electronic systems, rectifiers, power quality products, photovoltaic inverters, programmable logic controllers (PLC’s) and robots. The majority of the applications are for industrial environments and in some cases for buildings, transportation and utilities.

- **Low voltage products**: 21,100 employees, 5.3 billion dollars in revenues. It provides products and systems for protection, control and measurement for electrical installations, enclosures, switchboards, electronics and electromechanical devices for industrial machines and plants.

- **Process automation**: 28,400 employees, 8.3 billion dollars in revenues. It provides automation and electrification systems for paper, metals, mining, oil, gas, petrochemicals and marine industries.

### 6.2.1 Strategy

ABB Strategy is defined on a five-year scenario. For the period 2011-2015 it is focused on:

- Drive competitiveness and stay relevant in its markets.
- Capitalize on megatrends such as growing need for energy supply and efficiency, urbanization, digitalization and growth in emerging economies.
- Expand core business to secure the next level of growth, for example: service and building software business for power and automation customers.
- Value creation acquisitions to close gaps in specific products and market coverage.
- Find and explore disruptive opportunities.

In this thesis we focus on the “discrete automation and motion” as well as on the “process automation” divisions. Along its history ABB migrated from being a manufacturer of products to being a provider of systems and services for the equipment and services it provides. Overall the strategy to staying power of ABB has been vertical and horizontal expansion and change in value proposition. For example: changing from a product to a system provider is a vertical expansion, from digital supervision and control systems to “one stop shop” electrical and/or automation systems supplier is a horizontal expansion, value proposition stands for traction instead of motor and drive solution.

In the Brazilian Market ABB faces competition from five main players: Alstom, Siemens, Schneider, Rockwell and WEG. All of them are global players; the latest is a Brazilian company that also sells globally. Under the eyes of its customers, all six players are comparable. Interestingly they
do not offer the same products but their functionalities are very similar, since they follow all international standards such as IEEE. They offer more functionalities than what is needed by the customer. This generates a scenario of commoditization described by Christensen (1997). When differentiation (or complexity) is beyond the needs, customer's capacity of interpretation is limited and competitors are compared solely on price.

To protect itself, ABB has a large focus on execution and cost control. This is evidenced not only by its first strategic statement (see above) but also by the role that project managers have in the company, making sure that costs and schedule are under control. This control is key since, due to competition, net margins are extremely tight. In general ABB will do the project to establish an installed base that will generate business opportunities for other streams of more profitable revenues such as services, changes and expansions. This is a common strategy in other industries.

The relation with the customer is made in five levels:

- **Front line**: Account managers and sales channels.
- **Application**: Technical and commercial teams that define the products, system or service that will be offered to the customer. This team is usually composed of several product managers, one for each group of products.
- **Design and engineering**: If a project becomes more complicated in the sales phase, engineers who design the product and systems get involved.
- **Operations**: Project manager and lead engineer. They are responsible for the project. The first is responsible for managing costs, commercial conditions, schedule and relationship with the customer. The second also does relationship but is ultimately responsible for the technical consistency and safety of the solution.
- **Service**: They do field installation and commissioning on the customer site as well as provide services such as warranty, maintenance and even operate the equipment and systems in some cases.

Service itself is a business in each division and there are disputes between divisions on who should service what. So far the owner of the service is the division who did the product, creating interesting situations where the customer has to talk to three or more teams to get its system serviced. The service can be made as a full service when ABB takes care of all aspects of the maintenance of the equipment, doing ordinary work like cleaning, to the most sophisticated maintenances such as exchange of a circuit breaker chamber or even changes on the software of a system. In the ideal world, the field engineer would also be chasing new business opportunities, but
it is very rare that such event occurs mostly because of the profile of the people who are performing the job. They are not sales people by nature.

ABB has a plan under way to have the services that it provides for Industrial automation available on a catalog to make it easier to communicate with its customers. This type of catalog has the advantage of defining a common ground of communication but, on the other hand, creates a template that can be used by customers to equalize suppliers and to provoke pure price competition.

In general ABB understands the changing nature of markets as economies of countries evolve on the development ladder. In a country like Brazil, oil and gas as well as mining industries will remain strong as long as there are resources to be extracted, clearly as the infrastructure gets installed projects will turn into services, but it is also clear that some industries that once were strong will become weaker as the vocation of the country changes. For example, once Brazil had a strong shoe industry but as the country developed and wages increased, Brazil is no longer competitive in this field and migrates to other industries. ABB is aware of the need to prepare for those structural changes and to adapt its product and services lines. Nevertheless it is not clear how exactly to understand the next trends and also what are the products and solutions that have to be developed to cope with these new needs.

6.2.2 Sales

The sales force in ABB is organized in the following way:

- Thirty-five key account directors: These are people that have a director level and exist to manage the relationship with a single company on a global perspective. These people are nominated in agreement with the served company. In Brazil there are two of these accounts: Vale and Petrobras. These producers relate to the "C" levels and vice-presidents of the customer and they master the agenda of new projects, problems, needs and priorities of the customer orchestrating the different divisions to serve the customer.

- Five strategic account managers per region (eight regions). The strategic account manager does the same job as the key account director but on a regional level with companies that act on a single region.

- Account managers on the business units: Each account manager manages one or more accounts according to the size of the organization he is dealing with. The job is the same as the key account director but interacting with a company on a local level.
• Local Sales teams: Each division has producers that are responsible for selling the products of each business unit.

• Other local channels: ABB also does work with distributors and integrators who serve the more disperse demand for its products and services. It is quite common to have conflicts between integrators and ABB itself on some specific projects. To minimize the chance of happening, ABB segments the automation products and integrators can only sell the simpler PLC's family while ABB has a monopoly over the most complex PLC's.

When it comes to the sales approach, ABB follows the reactive model, handling ninety percent of its orders according to a technical specification prepared by the customer or by a consultant. In eight percent of the cases, ABB producers or application engineers succeed in convincing the customers to change the SPECs to allow ABB to fulfill it and in two percent of the cases ABB succeed in inserting its own recommendations and suggestions in the solution and the customer reviews the spec for all suppliers.

The sales teams invest in relationship not only with customers but also with engineering consulting companies that have high influence on the SPECs.

Training for sales teams is made depending on the type of knowledge needed as it can be seen in the table below.

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Table 02: ABB sales training methods

6.2.3 Innovation

ABB is divided into twenty-five business units (BU) worldwide. The process automation division has eight BU's. Each technology within a BU has a global center of excellence (CE) that does research and development as well as application of research on new products and systems or improvements of existing systems.
Each year, the regions in ABB will send their requests to the center of excellence that then will define an agenda of development. There is no structured form for capturing the ideas. In general it is a combined effort of engineers, sales teams lead by the local product manager in the application team. The criteria for the choice of priorities of the CE is at the discretion of the CE itself and regions are allowed to act politically to advocate for their priorities. Once the agenda is defined, the CE can choose to perform the work centrally or to assign part of the job to local offices of ABB where the product will ultimately be used. As a general rule, the CEs do not outsource core activities of R&D to the other locations; the assignments are usually focused on regionalization of solutions or development of satellite functions.

Once products and systems are defined, they are exposed to the customers. In Brazil, ABB organizes every year an event called “Automation World” targeting customers, integrators and consultants. An advisory board formed by market agents from key customers and consultants defines the agenda. The event usually lasts for three days and holds more than eighty seminars were several aspects of the automation are discussed. The event is the main channel used by ABB in Brazil to capture the market trends, needs and problems to define its agenda of priorities to place requests to the CEs. From time to time, the CE can also be used to present and test some innovations with key customers before they are released to the market.

6.2.4 Customer Satisfaction

ABB uses the net promoter score (NPS) a method sold largely by Bain (consulting) where customers give a grade to the company to assess to what extend they would recommend ABB to a colleague from a different company. The NPS became a very strong tool in the company since it affects directly the bonus of all the executives in the organization. The criterion is simple and very effective. The NPS score has to improve in three dimensions: total score; each country individually or half of them; region or country that the executive oversees.

6.2.5 Tactics

One of the strategies used by ABB in Brazil is to define with a customer a price list of products and logic to assemble systems in this way the customer can price in an autonomous way its solutions. This agreement was made possible after more than five years of continuous improvement of relationship.

9 More information on the NPS can be found at www.netpromoter.com
On the view of ABB, the model of success based on a product compliant to SPECs and focus on tactics for sales is exhausted because the reputation and relationship are no longer worth more than the preference of the customer and a premium of two to three percent on price if so. Practically speaking, without differentiation on the offerings, price comparison will rule, margins will shrink and more and more products, services and systems will become commodities.

6.3 GE

GE’s history blends with the history of the power industry itself. In 1879, Thomas Edison not only invented the light-bulb but also the dynamo and a model of commercialization of electricity under the Edison Electric Light Co., based on distributed generation in the neighborhoods of New York. In 1892, the merger between the Edison General Electric Company and the Thomson-Houston Company, another prominent manufacturer of dynamos and electric lights, form the General Electric Company. The first decades were dedicated to expanding the use of electricity either by traction application in locomotives and other electrical transportation systems as well as in the development of home appliances. GE was also involved in medical devices starting with X rays and later developing the MRI and other important imaging devices. In 1905, recognizing that an essential element to doing business is capitalization and cash flow, GE organized the Electric Bond and Share Co. to provide financing to small utilities; this was the precursor to GE’s commercial finance division. Today, GE generates 147 billion dollars in revenues that yields 26.6 billion dollars in profits. GE has seven business divisions:

- **Power & Water**: 28.3 billion dollars in revenue and 5.4 billion dollars in profits. This is the division that deals with products for aero-derivative gas turbines, gas engines, gasification, generators, heavy-duty gas turbines, nuclear energy, renewable energy, steam turbines and water & process technologies.
- **Oil & Gas**: 15.2 billion dollars in revenue and 1.9 billion dollars in profits; Responsible for products from extraction to transportation of oil, gas, and its sub-products.
- **Energy Management**: 7.4 billion dollars in revenue and 0.1 billion dollars in profits; Responsible for Industrial Applications and Power conversion.
- **Aviation**: 20.0 billion dollars in revenue and 3.7 billion dollars in profits. Manufacture jet engines for commercial and military application.
- **Health Care:** 18.2 billion dollars in revenue and 2.9 billion dollars in profits; Responsible for wide range of medical equipment from imaging (ultrasound, X ray, MRI and CTs) to drug dosage systems among others.

- **Transportation:** 5.6 billion dollars in revenue and 1.0 billion dollars in profits. This division works with rail, marine, mining, drilling, stationary power, and energy storage.

- **Home & business solutions:** 8.0 billion dollars in revenue and 0.3 billion dollars in profits; This division focuses on home appliances, lighting and electrical distribution products.

Another business unit is GE Capital, which generates forty-six billion dollars in revenues and yields 7.4 billion dollars in profits. GE Capital provides commercial lending and leasing, as well as a range of financial services for health care, media, communications, entertainment, consumers, real estate, and aviation. GE Capital focuses primarily on loans and leases that it underwrites and holds on its own balance sheet, making the bridge from short-term borrowing to long-term lending. Most of GE Capital's commercial loans are made to small and mid-sized companies, spread across multiple industries and geographies and are secured by tangible assets. GE Capital not only provides financing for the purchase of its products but also allows GE to get customers to commit to its services of operation and maintenance, creating new source of revenues.

There is a lot to be said about GE's strategy along the years but in this thesis we will discuss two specific strategies: Operation & maintenance of equipment and GE energy management power conversion case on small motors.

### 6.3.1 Services Strategy

First, recall the explanation of the services based strategy from chapter 3: "When the technology in a certain industry matures and there is no sign of disruption, usually the number of players has grown and there is not much effective differentiation. Firms focus on efficiency innovation on the pursuit to reduce costs and capital employed and incremental innovation. Except for the cases of an effective breakthrough innovation, sooner or later price competition starts and if no action is taken, commoditization will start. A common strategy in these cases is to incorporate post sales services (operation and maintenance – O&M) contracts on the deal, reducing the upfront capital expenditure for the customer (CAPEX) and extracting the margins from the operation and maintenance (OPEX). The principle behind is that being the original equipment manufacturer (OEM), the company should be able to leverage its own knowledge of the product and therefore be more competitive on these services at
the same time providing a better service for the customer. This strategy has been seen in industries like elevators, where OTIS makes almost all its profits from the O&M contracts and not from the sale of equipment. However, in some industries where customers have a long tradition of making their own O&M or are small enough to feel comfortable to buy O&M from smaller low cost providers, the sale of the OEM O&M is more difficult. When GE leases a steam turbine to a local paper mill in Canada, the GE Sales person is able to input in the offer the O&M proposal. From the eyes of the customer, it all becomes a single cash flow that includes both CAPEX and OPEX and it does make sense to have GE as the service provider since, during the lease period, the equipment actually belongs to GE. By doing so, GE is able to put itself in a very special position where the combination of its equipment technology, Financial and services makes a unique strategic resource that differentiates GE from its competitors and allow them to run away from pure price competition. Its knowledge of the product allows for a better evaluation of the risk on the financing and to also be more efficient on the maintenance. Interestingly, GE also gets to collect an amazing amount of data on the performance of its equipment, something hard to do when one just sells the equipment to an end customer.

As of 2008, GE Capital had grown enormously, not only doing financing of its own equipment and services contracts but also providing consumer financing and other services. In that year, GE Capital was responsible for fifty percent of the income of GE. The financial crisis was a wake-up call for the need to maintain diversification in the business. Since then, actions have been taken to reduce by one third the amount of assets managed by GE Capital. Nevertheless the combination of technology, financing and services will remain fundamental to GE’s Strategy.

6.3.2 Energy Management and Small Motors

Energy management was created after the split of the former energy business into three new divisions: power & water, oil & gas, and energy management.

The objective of the division was the reduction of headquarters structure and gains in efficiency estimated in three hundred million dollars. Energy management includes industrial applications and power conversion, automation, and instrumentation. The objective is to serve industrial applications in general. Power conversion does all the conversion from mechanical to electrical and electrical to mechanical, including generators and motors. Verticals within power conversion represent the markets: energy (including oil and gas), marine (merchant and navy propulsion), industry, and services. Industry is divided by sectors such as mining, metals and others. These verticals are focused on selling complete solutions. The company has also product

10 2012 GE Annual Report
segments. One of these products is rotating machines. Rotating machines has six factories worldwide but proposal support and risk management is centralized in US.

6.3.2.1 Sales

Rotating machines are a highly customized products for specific applications. Sales for rotating machines is managed by a dedicated sales force focused on selling to integrators and manufactures of equipment OEM that will buy GE products and apply them in solutions for end users. There is a separate sales force that works for the end user. The industry-focused sectors such as marine also have their dedicated sales force.

The sales force has technical knowledge of the products. There is no segmentation of functions (technical and commercial). In any case, if there are too detailed technical questions, the sales person will involve the specialists to solve the issue.

GE has one account manager for each customer and product segment. In case another opportunity appears during contact with the customer, the sales person will bring in support from the specific area. The qualification of the sales force is provided from the US either in-person or on-line. GE has a rotating machines academy to qualify its sales team. The vision is that the effectiveness of the sales person is directly correlated to the knowledge of the product and its applications.

The sales force is reactive and active depending on the relationship with the OEMs, but the general work principle of the company is to be active. The OEMs have a shorter-term horizon and the sales force that deals with end users have a longer horizon.

6.3.3 Strategy for Small Motors

In specialty motors for industrial applications where customization is part of the process, GE is able to maintain its pricing point in the market. The small motors segment is highly susceptible to commoditization and GE took a strategic decision to change its positioning from mass production to niche player, manufacturing products with state-of-the-art efficiencies, reliability, and long life-time. The process was gradual and started in 1998 with the creation of the product line Ultra to command a price premium leaving the market space for its competitors that sell less efficient machines to fight for a cost leadership position. The decision has been taken from the self-awareness that cost leadership is not a strategic resource of GE. The number of factories has also been reduced. Today the focus is to sell in markets where efficiency is stimulated by standards and regulations. GE had completed the transition in fifteen years. The process was planned from inside the company overseeing the hyper-competition that would happen in the market. A new product was developed.
When Ultra was released to the market, there was an overshoot. The product was five years beyond the market needs (in cost and features) and had to be "downgraded" to fit the market needs in a typical case of over-offering as described by Christensen (1997).

An important issue was that the value of the new product was perceived by the end user and not by the OEM since the cost of energy and maintenance is paid by the end-user and not by the OEM who is looking for lowest cost. This was a typical "Disneyland Effect" (made to the end user and paid by somebody else). In this sense, GE made a campaign to explain the advantages of the product to the end user. Pricing was made following the value pricing method.

6.3.4 New Product Introduction

The process in GE to create a new product is called new product introduction (NPI). In this particular case, GE identified a key aspect in the market, the cost of energy and reliability and safety in industrial environments. Another market trend was the use of variable frequency AC drives. Based on these needs, attributes were defined and investment and payback calculations were made to decide whether to continue.

A NPI lasts for one to two years. During the NPI process, there are three tollgates. Until gate three, all money is seed money and the NPI can be halted. Once gate three is achieved a contract is signed with the engineering company in GE to develop the product, manufacturing capabilities and collaterals. The gates are:

- **Tollgate 1**: Business idea and overall analysis of the business case.
- **Tollgate 2**: Technical viability of the product. Does it involve R&D or is it just engineering?
- **Tollgate 3**: Final decision to invest. In the case of small motors, it was a twenty-five million-dollar project that also included a new factory.

A multi-functional team evaluates each tollgate. The team is formed with people from wherever resources are available. However, this team is not necessarily collocated. The team often uses videoconferences and a few face-to-face meeting. The NPI team is composed of:

- Project manager
- Subject matter experts (SME) from engineering teams
- GE global resource center (GRC) representative
- Manufacturing representative
- Marketing representative
Interestingly, even though there is a generic market-check of the products from competition and some contacts with customers in this process, there is no direct-check with customers of the product prior to its launch. In the case of NPIs in segments where GE has an established presence, GE focuses on the information already available inside the company. Clearly in this case, the use of classical marketing research tools such as strategic marketing measurement could have prevented the overshoot of the product and given GE a leap on space available for future launches similar to Apple. There was no engagement of the OEMs and sales channels. GE went straight to develop the best product its Engineers could make. The ideal strategy would be to release the product that was needed (or what the OEM or end customer is ready to use). In one situation, there was no OEM of compressors that could use the high speed the motors provided. A case could be made to show that GE actually created the opportunity for the OEMs to innovate over a new product, but in this case, the value was captured by the OEMs and not by GE.

Back then the vision was that a new product was an engineering problem. Today, GE has a higher sensibility about the importance of marketing and the relationships between the tollgates one, two and three. They have introduced checks with customers, but yet the method is not totally structured and some details still escape the NPI teams.

### 6.3.5 Mapping Disruption

GE has an annual process composed of a one-week meeting at a GRC (global research centers located in Brazil, China, Germany, US and India). Specialists on each part of the technology involved in a specific product, both from R&D and application engineering get together and discuss possible scenarios of new technology development and the impact for each product. This is the moment for scientists to bring the most out-of-the-box ideas such as new materials, innovation in design, and also principles of product functionality and manufacturing. In this forum, ideas such as magnetic bearings are discussed. Having one year between meetings, everybody who participates has time to collect new ideas and ensure productive meetings. Most of the ideas have no immediate application but foster innovation.

### 6.3.6 Mapping Commoditization

In the rotating machines sector, there is no general monitoring of pricing behavior focused on commoditization. Monitoring is made to ensure margins and identify the needs for cost reduction efforts and, if it is the case, shift production from one plant to another that is more competitive. The focus is on the margin levels and not on the price level or differentiation. Nevertheless for the products where there was an NPI, an effort of mapping of premium prices is
made. In fact, GE observes that as time goes by the price premium is consumed as competition reacts and copies the innovations.

6.3.7  Pricing Intelligence

There is currently an effort to build up a market pricing analysis to increase GE's capacity to capture the value of its technology differentiation. The practice so far is:

- Low voltage products are priced to market. GE even publishes price lists for its products.
- For medium machines, there is a price list based on a WBS (work break down structure). Each part of the product comes from a list and margins are adjusted to the specific situation.
- For customized products, pricing is cost plus.

6.3.8  Services for Rotating Machines

In rotating machines, there is no combined sales of services and GE financing or leases through GE Capital for 2 reasons: (i) volumes are usually too small (ii) OEMs and end customers already have the financing in place for the applications and the O&M is provided by OEMs or customers. It is different from the airline industry where Airbus and Boeing do not do maintenance of jet engines but GE has the space in the market to interact directly with the airlines.

Although Services are a great opportunity, the sale of this service is not common. There are some sales of monitoring systems in different timing of the sale of the small motors. The machine is sold stand-alone.

6.4  Voith Hydro

Voith is a six and a half billion-dollar revenue group of companies that is involved in paper, energy, mobility and services. Voith Hydro is positioned to serve exclusively the hydropower market. It has thirty-seven locations, and owns six manufacturing plants, located in the Americas, Europe, India and China.

Voith Hydro is a global supplier of hydropower generation systems that generates more than 1.3 billion dollars in revenue. It is a leading player that boasts in its history the creation of most of the technology that is currently used in the industry. Its list of products comprises turbines, generators, automation systems and all ancillary and auxiliary equipment needed to operate a hydropower plant as a “factory of energy” from water. Turbines, generators, large valves and automation systems, as well as the know-how for the integration of the several pieces of equipment
into a complete system are considered core and, therefore, the company designs and manufactures them in-house. All non-core equipment, such as transformers, panels, pumps, smaller valves, pipe systems, hydraulic steel structures, cables and others are outsourced.

Voith Hydro was born from the merger of the hydro-focused division of Siemens and Voith. Each company had bought several other companies during the wave of mergers and acquisitions of the 1980s and 1990s motivated by energy market shrinkage and reengineering. However, by the end of the 1990s there was a new market trend with the consolidation of major suppliers of equipment into systems suppliers. The two companies were German. Having shared values and a long history of cooperation in projects, the association sounded natural. Neither company had a strong profitability due to the fact that standalone product supply was getting commoditized. Together, they could create a new source of value by providing complete systems to customers following a trend of delivering turnkey projects. Under engineering, procurement and construction (EPC) contracts, customers were now transferring all the risk associated to scope variability to the contractor. This risk could be priced and this was the way of mitigating the risk of commoditization.

6.4.1 Voith Hydro Strategy

- **Perspective:** "Voith Hydro is the preferred partner for the hydroelectric generation industry with clear leadership in new equipment and in modernization through superior technical solutions and flawless execution of its projects. Operations in all major hydro markets execute the work with identical, best in class processes and tools for engineering, manufacturing services and combine close understanding of the specific clients' needs with the strength of a global network of resources.”

- **Position:** Voith Hydro acts solely in the hydropower market. There is no activity with other renewables such as wind and solar. Seeking price premiums by leveraging the Voith brand. "Voith Hydro is a solution provider for complete supply of electric and mechanical scope for hydro power stations, modernization and specific services as well as individual mechanical and electrical components and automation. Project management is a core competence in which we want to excel.”

- **Plan:** Focusing on return over capital employed. Maintaining solid number two position in market-share worldwide.

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11 Vision statement from a company's white paper posted on its intranet.
12 Scope statement from a company's white paper posted on its intranet.
• **Patterns**: Focusing on long-term company existence on decisions. Integrity: Business activities are governed by moral standards, decency and honesty. Reliability: Promising only what it can deliver. Never let a customer down. Colleagueship: Never let a colleague down. Professionalism, respect for the individual and openness.

### 6.4.2 Small Hydro

Voith was a leading player in small turbines. It gradually focused on larger machines. The idea was to escape the competition and price war coming from smaller providers. These players had worse technology, but they were accepted by the customer due to their simpler manufacturing techniques and lower indirect costs that allowed them to be more competitive. This was a typical process of disruption as described by Christensen (1997). The same process had occurred in Siemens with smaller generators for hydro. Aware of the opportunity in this market, in the 1990s Siemens made an effort to develop a small standard machine that was terminated for lack of effective demand in a still market perturbed by several economic crises at the end of that decade. In 2005, after some years of focusing on the effective integration of the two companies (Voith and Siemens) into Voith Siemens\(^\text{13}\), the company commissioned a new effort to develop a small hydro division to both explore the market potential and block the growth of lower tier competitors.

The effort had three main lines of action:

- Forming a strong small hydro network comprising the different small hydro operations worldwide. Managers from each operation met every other month to discuss the market and to share best practices.
- Growing and learning through the acquisition of a relevant low cost player. Koessler from Austria was chosen and incorporated into the group.
- Investing in a new product and tools development, as well as manufacturing capabilities to be able to produce machines that were at the same time customized for the specific power and water head of the particular power plant, but also standard in terms of mechanical construction and manufacturing processes. A large investment in a technology development center, as well as a factory was made in India, in combination with a partnership for the manufacture and development of small hydro generators with an Indian manufacturer.

The processes touched on strategy, operations and product development, but did not touch on sales. The reason was twofold: (i) The market was favorably buying machines; and (ii) sales

\(^{13}\) Later the name was changed to Voith Hydro (preserving the Siemens share in the company).
teams knew in general how to sell the Voith differentiation. Nevertheless, the product development did not involve a structured marketing research, and the final product ended up needing additions to be sellable. One example was the regulating ring of a distributor. A link chain solution had been chosen, and in the end no customer would accept a premium product without a proper regulating ring. The other issue was that, since sales was not trained on the capabilities of the Indian shop, it took too much time to get market acceptance in some regions for a product manufactured in India, even though the costs were very attractive.

6.4.3 The Hydropower Market

The hydropower market is typically composed of three types of customers:

- **Independent power producers (IPPs):** These are venture investors, entrepreneurs whose primary customer are their shareholders, and they usually build up power plants with a planned exit. Their objective is to make profit from the risk exposure of the construction period, and to sell the power plant for the present value of the cash flow of the generated electricity as soon as the plants are in operation. This type of customer does not see value in long-term quality or reliability, and is specially focused on reduction of capital expenditure. Once the plant is ready, the OPEX will be an issue for the buyer of the power plant. Interestingly, these customers praise the brand of the providers not for the need of effective reliability, but for the association of quality generated on the eventual buyers of power plants, decreasing risk perceptions and increasing valuations.

- **Utilities:** Utilities are providers of energy or water to their end customers. They can be private or government-owned. For the government-owned ones, the primary customer is the population served and, therefore, their commitment is to provide good quality energy with the lowest rates of occurrence and duration of failures. For the private-owned ones, the primary customer can be the end customer or their shareholders, but in general they have the same interest of having a quality supply of energy. Both have thoughts toward long-term ownership of assets, since their model of business is based on a typical framework of infrastructure projects, where the certainty of future cash flow is fundamental for their business model. This type of customer will be concerned with price, but it will never compromise quality for price. They have typically large bodies of engineers who have a precise idea of what they want in terms of specification, which is not necessarily the state-of-the-art in
technology available. They want the best efficiency, but they will not necessarily accept a new insulation technology that can provide thinner insulation in the windings of a generator and, therefore, a lighter and less expensive solution.

- **Self-producers:** These are companies whose main business is not energy, but who want to secure the supply and/or control their energy costs for business-related reasons, and, therefore, decide to own assets. Their primary customer might be their shareholders, employees or end customers. They usually do not have large engineering boards, and they act in the market using two typical strategies: (i) Association with a large established utility company from whom they can leverage legal and environmental approvals, as well as engineering resources; or (ii) Hiring a professional engineering firm for the preparation of specifications and procurement of equipment and construction.

Engineering companies are a constant presence in the market, acting also for IPPs and utilities. They are one of the main drivers of commoditization in the market. They sell their services for seven-figure prices in exchange for three promises:

- **The best specification:** They claim to have up-to-date know-how of solutions and the capacity to specify what is best for the particular solution to the customer. However, by nature their capacity of creation is limited and, in general, there is a good round of input from suppliers on the process of specification of a power plant. Usually, these consultants will get the solution from one supplier and ask the other suppliers to offer the same, should that be considered the best one.

- **Price comparison:** The objective is to eliminate all sources of differentiation and allow the customer to make a final decision based solely on price. This way, consultants will typically promote qualifying rounds to select “qualified suppliers” and make all efforts to have them offer exactly the same scope, and then price the expected differences, such as efficiencies and lead time. At the end, in case of a tied dispute, the customer might choose based on brand and reputation, but just among those that equivalent.

- **Neutrality:** They claim to have no ties to suppliers and, therefore, that they are able to choose independently, which is not necessarily true, since companies are made of people and people have biases.

A typical project development in hydro takes from two to ten years from the first idea to start of construction. This lead-time is related to feasibility studies, concessions, legal approvals and
environmental studies and authorizations. Within this process, the procurement of equipment will last typically from six months to two years, depending on how expedite the project development is, and how much technical and financial complexity the project includes.

6.4.4 Sales

Sales within Voith Hydro is a very local activity. Voith has sales people in the markets it actuates, and occasionally agents under commission are assigned for countries with spot opportunities. There is no central coordination of sales functions or training. Each operating unit does development of sales people locally. Headquarters does a compilation of market data through a database called Go2Hydro that is fed by each operating unit to report on project opportunities. Project opportunities are followed up in a concept of funnel called "opportunity development.

Since there is no centralized definition of the profile of the sales person, and how market coverage should happen, the profile of sales people varies a lot. Those who come from engineering, project management or field services areas will have a strong technical background and varied levels of sales skills. Those who come from sales typically do not have a strong technical background, and have to rely a lot on support from engineering and other experts in the pursuit of an opportunity. A key skill is the ability to strike a deal when the customer is ready. In general, a deal is set and later a contract is written and signed to honor the deal that has been closed. This standard might change if the process is a tender where the customer states the commercial conditions in the tender documents and asks proponents to opt-in the conditions prior to the bid. In any case, the ability to identify risks (technical and commercial) is of essence to maintain the long-term existence of the company. Voith has a set of ten commandments for risk management and any non-compliance with those commitments has to be approved by the board of directors of the Voith Corporation.

Sales teams can be reactive or active, but in general they are responsive to customers specifications prepared by engineering companies, or to put it in different way, they are reactive.

6.4.5 Marketing, Product Development and Innovation

Because of the nature of mature technologies in the hydropower industry, Voith Hydro has a relatively small amount of R&D activities, and maintains some contracts with universities for specific development of software for the simulation of fluid dynamics, hydraulic and electrical circuit stability. However, since every project is a "new project" derived from a particular condition of head, flow and variations of those, there is the need to optimize both hydraulic and electrical design in each opportunity. For this purpose, Voith Hydro has a specific engineering company that
provides services of hydraulic, electrical and basic mechanical design for its operating units (OUs). In addition to making specific projects under request of the OUs, the engineering company also does have an agenda of development to cover parts of the portfolio where the company is not so good, and there is an emergent market need for a group of future projects. The cost of these developments is shared among the OUs and the corporate budget derived from the royalties paid by all the OUs on a project by project basis.

Although there are no marketing activities at the local level, the decisions on offerings and products are done in technical committees (one per product line - generators, turbines, Automation) who meet yearly and decide on the allocation of the R&D budget. Local technical experts and other experts from the headquarters form these committees. Each expert should take the concerns of his or her Operating Unit and the outcome should reflect the needs of the market. These technical committees are an extremely important piece of the political environment of the company. Being a company of engineers managed by engineers and selling to engineers, technical expertise influences and persuades decisions. It is the political blood that circulates on the organization system. Weeks before a technical committee, these experts may or may not ask sales people what they would like to have for the meeting. The risk is that decisions are taken without a clear view of what is really needed.

The agenda of innovation is typically populated by incremental improvements with very rare breakthroughs. There is a small operating unit in the UK that does development of wave and tidal current power units and this is the sole source of breakthrough innovation in the company. On the automation and generator insulation sides, the company depends primarily on Siemens who is the provider of the automation platform (SIMATIC) and insulation system technology.

6.4.6 Managing Strategy Execution

Voith Hydro São Paulo (VHP) introduced in 2006 the use of balanced scorecards (BSC) to manage the execution of the company's strategy, with significant success. In six years, the company doubled its revenues and increased return over capital employed. In addition to the regular use of the BSC, two important details deserve attention: strategy and project portfolio.

On the strategic cycle, Osvaldo San Martin, the CEO of Voith Hydro São Paulo (VHP) realized that the corporate strategy had to be complemented to ensure success in the Latin American market:

- **Perspective:** Efficiency, electrical and mechanical design were no longer resources that would command sustainable differentiation to VHP in the context of Latin America competing with Alstom (from France) and Andritz (from Austria). At a time
when most market players were struggling to deliver complete power plants and having delays and quality problems, he decided to target the VHP strategy on impeccability and shorter lead times.

• **Position:** Make a vertical expansion to do assembly work, replacing contractors and partners by a Voith company. Up to that moment, partners or customers had done assembly, and it drained resources from the projects, consuming time from the project managers to mediate conflicts and money to fix eventual delays of delivery of components at construction sites.

• **Plan:** Voith is a company management targets a specific ROCE and operating profit (OP). Aware of the market potential and based on macroeconomic prospects, the CEO set a stretch goal of revenues to be achieved not in one year, but as a medium-term goal. This goal set the tone every time organization issues were discussed among managers, since everybody knew the size of the organization they were building. The balanced scorecard (BSC) was made to achieve the revenue reach goal, maintain the ROCE and OP.

• **Patterns:** Voith values were reinforced and management was changed in several departments to ensure compliance to these values and to the defined plan.

Having a clear strategy and a BSC, the gaps in the organization started to emerge. Action was needed to fill those gaps but, as usual, resources were limited. To avoid political influence on the choice of projects to be executed, the analytic hierarchy process (AHP) was implemented. AHP is a method created by Thomas L. Saaty that combines psychology and math to help large organizations to make complex decisions (instead of providing the right choice, it provides the choices that best suit the preferences of the people involved given a set of criteria and their relative importance). The AHP showed the projects that should be prioritized. In the end, the projects that were implemented were in fact the ones that had a combination of people wanting to be involved and management sponsorship.

Eventually, the results were achieved and VHP overcame the reach goal. A new and more aggressive reach goal is now in place to keep the momentum.

On the sales and marketing side, it is important to mention that there was an effective lever from the market pumping order intake with a sequence of three megaprojects that were sold. The sales team was not completely customer-centric as a consequence of the organization not being customer-centric. It is important not to confuse the motto of the “never letting a customer down” with being customer-centric. The motto stands for the relationship with a customer with whom the
company already has an active contractual relationship with, and not with prospective customers. Currently, the transition is ongoing, but it is much more a local effort, since corporate does not influence the development of the local sales force.

6.5 Rockwell Automation

According to its 2011 Annual Report, Rockwell Automation is a leading provider of industrial automation power, control and information solutions. The Company was formed by the purchase of the privately-owned Allen-Bradley Company (founded in 1903) by Rockwell International Corporation (RIC, founded in 1928) in 1985. As of a result of the merger process, in 1996, the company divested the aerospace and defense businesses (the A&D Business) to Boeing. In 2007, Dodge mechanical and Reliance Electric motors and motor repair services businesses were divested. These were the principal businesses of the former Power Systems operating segment. The divestment on motors is most probably rooted on the same reasons why GE motors refocused their motor business as we saw earlier in this chapter.

Rockwell has twenty-one plus thousand people (eight thousand in the U.S.), divided in two main divisions:

- **Architecture & Software:** Represents forty-three percent of sales, with 2.6 billion dollars in 2011. Responsible for all hardware, software and communication components of integrated control and information architecture capable of controlling the customer's industrial processes and connecting with their manufacturing enterprise. Architecture & Software has a broad portfolio of products, including: (i) Control platforms that perform multiple control disciplines and monitoring of applications, including discrete, batch and continuous process, drives control, motion control and machine safety control. Products include controllers, electronic operator interface devices, electronic input/output devices, communication and networking products and industrial computers. The information-enabled Logix controllers provide integrated multi-discipline control that is modular and scalable. (ii) Software products that include configuration and visualization software used to operate and supervise control platforms, advanced

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14 Significant portions of this text, specially the factual parts were derived from the 2011 Annual Report and Form 10K. The remaining information is based on the experience of the author, who did an internship in the company and on informal conversations with people who know the company. No formal interviews were done for the specific purpose of this thesis, and the thesis does express any authorized information or opinion from the company.
process control software and manufacturing execution software (MES) that enable customers to improve manufacturing productivity and meet regulatory requirements. (iii) Other products, including rotary and linear motion control products, sensors and machine safety components.

- **Control Products & Solutions:** Represents fifty-seven percent of sales, with 3.4 billion dollars in 2011. The Control Products & Solutions segment combines a comprehensive portfolio of intelligent motor control and industrial control products, application expertise and project management capabilities. The portfolio includes: (i) Low and medium voltage electro-mechanical and electronic motor starters, motor and circuit protection devices, AC/DC variable frequency drives, push buttons, signaling devices, termination and protection devices, relays, timers and condition sensors. (ii) Value-added solutions ranging from packaged solutions such as configured drives and motor control centers, to automation and information solutions where they provide design, integration and start-up services for custom-engineered hardware and software systems primarily for manufacturing applications. (iii) Services designed to help maximize a customer's automation investment and provide total life-cycle support, including multi-vendor customer technical support and repair, asset management, training and predictive and preventative maintenance.

### 6.5.1 Strategy

#### 6.5.1.1 The Market Context

In 2011, the United States accounted for forty-nine percent of sales. Even though the company is present through its distribution networks virtually everywhere, Canada, China, Italy, the United Kingdom and Brazil are the main international sources of revenue. Competition ranges from large diversified corporations with business interests outside of industrial automation, to smaller companies that specialize in niche industrial automation products and services, depending on the product or service involved. In fact, there is a recurrent risk of competition between the integrators of Rockwell products and platforms and the business of Rockwell that sell integrated systems. Factors that influence the competitive position include the breadth of the product portfolio and scope of solutions, technology leadership, knowledge of customer applications, installed base, distribution network, quality of products and services, global presence and price.
The major competitors in both segments include Siemens AG, ABB Ltd, Honeywell International Inc., Schneider Electric SA and Emerson Electric Co.

6.5.1.2 Perspective

Its primary customers are distributors and consumers. Shareholder value is obtained as a long term result of solving customers' needs and problems. To help manufacturers achieve a competitive advantage in their businesses, products and services are designed to meet customers’ needs to reduce total cost of ownership, maximize asset utilization, improve time to market and reduce manufacturing business risk. The company controls growth speed to preserve margins. It offers the lower total cost of ownership (TCO) and highest service level (SL).

6.5.1.3 Position

Provide industrial automation power, control and information hardware, software and solutions. Focus on products and not on systems. The company will get involved in systems if they are complex to ensure their reliability and prevent damage to the brand. Sell what the customer needs. Not sacrificing margin to push something the customers does not want. Offer high quality products. Provide “Free” consulting through product managers to sell products of the highest possible quality. Maximizing installed based to maximize sales of products (network externality effect). Provide quality, security and stability of platforms. The system will operate, and support and spare parts will be available for decades. Ease of integration with process equipment and sensors. Open source of programming tools to create network externalities.

Although the positioning of a company to offer systems is a common strategy to avoid commoditization, in a market were systems engineering is a mature industry like industrial automation, the effect is reverse. Since there are uncountable players in the market who can do systems, offering a system usually drives percentage profit down, although absolute cash generation does go up. The choice of being a system provider in this case is consistent with a listed company since securities prices go up as expected future cash flows go up.

6.5.2 Marketing

6.5.2.1 Channels

Rockwell sells its products, solutions and services through both independent distributors that typically do not carry products that compete with Allen-Bradley products, and through a direct sales force. In the United States, Canada and certain other countries, Rockwell sells primarily through the independent distributors in conjunction with its direct sales force. In the remaining countries, it sells through a combination of direct sales force and, to a lesser extent, through
independent distributors. Approximately seventy percent of the global sales are through independent distributors. Sales to the largest distributor in 2011, 2010 and 2009 were approximately ten percent of its total sales.

6.5.2.2 Offerings

In addition to selling products, software and platforms, Rockwell has also some creative commercial solutions such as service agreements to provide systems with O&M to make profit not only profit on the O&M per se but also to leverage sales of upgrades and new hardware as the customer's process grow. This is an extremely interesting strategy based on the understanding that in the modern operations strategy, manufacturing processes are no longer static. They actually evolve as companies implement "kaizens" and other methodologies, generating the need for new hardware from automation suppliers. In this sense, the role of product managers as consultants is also fundamental, since they see all sorts of industrial processes and carry the information from one industry and customer to another “for free”.

6.5.2.3 Product Development

Rockwell has as structured system for product development that includes two important activities: Customer voice and customer feedback. Because of its focus on the use of a customer-centric sales methodology, Rockwell is able to identify recurrent needs or problems that its products are not able to fulfill. Upon this identification and prioritization, corporate marketing will send out surveys based on open ended questions to the product managers in the sales teams to interview key users and customers to get input on more details of their needs and uses. They compile all this information centrally in Milwaukee, WI, produce an ideation and work on the development of candidate products based on the technologies available and on the novelties developed by R&D. When prototypes are available, tradeshows and fairs are chosen, and Rockwell actually sets up a reserved space on these events where guests selected by the sales force are granted access to be introduced to new products and functionalities. On a “healthy exchange” of exclusivity, customers provide feedback on the products that is actually used to change and adjust the product prior to its final launch into the market.

The method used by Rockwell is not only efficient, but it actually generates commitment from customers to the solutions that the company offers, because they can “fell and touch” their contribution to the genesis of the product. It is also important to note that the process described

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15 Research and development spending for the years ended September 30, 2011, 2010 and 2009 was 254.4, 198.9, and 170.0 million-dollars, respectively.
above is characteristic of the fact that Rockwell focuses on breakthrough and not on incremental innovations. They do not place emphasis on self-disruption. In practical terms, the focus is on miniaturization; increase of power intensity and lately on the change of interfaces to cope with a new tendency of self-programmable automation to increase user experience in the pursuit to do for automation users what Apple did for gadget users.

6.5.3 Sales

Rockwell sales are divided into two main teams: Product and Market. Product managers are the reference and advocates of a product line (power products, automation and others). They are responsible not only for generating the demand for Rockwell products with key customers, but also for providing technical and many times commercial support for the sales teams on the configuration of solutions and for dealing with customers. Product managers also conduct lots of training sessions on products for customers and integrators. Market stands for key account managers that serve key customers like Petrobras or Vale in Brazil, or managers who handle the relationship with distributors and integrators as well as with the integrators. They are responsible for understanding customer needs and problems and delivering the most appropriate proposal to fulfill their needs. A back-office will prepare proposals. Pricing policies are defined centrally in Milwaukee and applied locally by each country manager. A branch manager manages the complete sales force in each region. Product managers also report in matrix system to a global product Management structure. This direct link exists with two purposes: On one hand it exists to ensure that product managers are up to date with all the offerings of the company, and on the other hand it allows corporate marketing and product management to have direct feedback on the product from the people who are closest to the customers.

Sales People (product managers, key accounts and others) usually start their job in the company with a period of training in the headquarters, to make a deep dive on the offerings of the company and to know the people with whom they will interact to solve questions that will arise when working with customers back in their markets. Later, sales teams will usually meet in a retreat once a year in the U.S., when everybody gets a refresher on the company strategy, marketing and sales pitch, as well as new offerings.

Rockwell invests heavily on the application of the customer-centric sales methodology. Bosworth, Holland and Visgatis (2010) is mandatory literature and the whole sales force goes through specific training on the techniques associated. The orientation to the sales teams and
distributors is to sell what will serve the needs and problems of the customer. Margin sacrifice to sell something that is not the right fit for the customer is not accepted.

Part of the reason why Rockwell focuses heavily on customer centricity is that it recognizes that, in many markets, industrial automation is a mature industry. This means that even investing heavily on product innovation, competition catches up pretty fast. This way, a better fit for customer needs combined with state-of-the-art products is a resource that can command a certain amount of differentiation and, consequently, value to be captured.
7 Execution

Assume a company whose strategy passes the stress test, there is consistency among its strategy, marketing and sales. The three cycles are well designed and understood by the organization and yet the company struggles to achieve the desired results. Most probably it is an issue of execution. Execution can be improved by a number of different practices. In this chapter, some of them will be discussed.

Kotter (1996) offers a framework to assess the odds of success of changes in organizations: It is called the eight steps process for leading change:

- **Step 1 – Establishing a Sense of Urgency:** Help others see the need for change and they will be convinced of the importance of acting immediately.
- **Step 2 – Creating the Guiding Coalition:** Assemble a group with enough power to lead the change effort, and encourage the group to work as a team.
- **Step 3 – Developing a Change Vision:** Create a vision to help direct the change effort, and develop strategies for achieving that vision.
- **Step 4 – Communicating the Vision for Buy-in:** Make sure as many as possible understand and accept the vision and the strategy.
- **Step 5 – Empowering Broad-based Action:** Remove obstacles to change, change systems or structures that seriously undermine the vision, and encourage risk-taking and nontraditional ideas, activities, and actions.
- **Step 6 – Generating Short-term Wins:** Plan for achievements that can easily be made visible, follow-through with those achievements and recognize and reward employees who were involved.
- **Step 7 – Never Letting Up:** Use increased credibility to change systems, structures, and policies that do not fit the vision, also hire, promote, and develop employees who can implement the vision, and finally reinvigorate the process with new projects, themes, and change agents.
- **Step 8 – Incorporating Changes into the Culture:** Articulate the connections between the new behaviors and organizational success, and develop the means to ensure leadership development and succession.

Kotter’s framework has been the handbook for many implementation efforts since it was published. However, it is necessary and appropriate to go beyond these recommendations. The
purpose of this chapter is to address seven important recommendations for successful execution of changes in strategy, marketing and sales:

- The importance of consistent behavior.
- The importance of putting things to work and the hard work that is necessary to go beyond bold statements.
- The need to have method to adapt to changes in the boundary conditions while execution is performed.
- Managing changes through projects, the convenience to have a method for choosing the projects that will be implemented and some insights on project management methodology.
- Being ready to make mistakes and to learn from them.
- Adjustments of cycle times for the cycles of strategy, marketing and sales.
- People to do the changes and the importance of job definition and communication.

7.1 Patterns of Action

On the chapter of this thesis dedicated to strategy we have discussed the concept of choice of primary customer. For the strategy itself the concept might seem overvalued but when we think about action this is extremely important. Likewise, "walking the talk" is extremely important.

In having a formal hierarchical structure like most organizations or an informal like Sun Hydraulics16 (that claims not to have job titles, hierarchy, formal job descriptions, organizational charts or departments), people will follow examples from the others, especially the more senior or empowered in the organization. In this sense, it is extremely important that the people who are the reference for the others do and effectively behave according to what they say. Earlier in my career I have been faced with a senior manager in my team that verbally offended a proposal engineer in the middle of the office. No matter the reason, in Voith, respect for the individual is core value. Had I not made a formal warning to the manager and made him apologize publically to the rest of the team, the core value of the company "respect for the individual" would not have been enforced and people would not behave accordingly, thus creating a problem to the team behavior. The same applies for pricing policy, for example. If the marketing decision of the organization is to do value pricing but managers consistently price by simply considering the pure competition price and do

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16 Sun Hydraulics is a Florida based supplier of high performance screw-in hydraulic cartridge valves and manifolds which are used to control force, speed and motion as integral components in fluid power systems.

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not use the value information provided by the sales team, the sales people will rapidly realize that the value information is not needed and stop collecting it.

Back to the choice of primary customer, this together with the consistency in behavior (or walk the talk) described above is what will empower the organization to move faster than the managers on the sense that oversight of each and every decision is not needed. When a company decides what are the priorities among consumers, customers, shareholders, stakeholders and employees, the people performing the job will have a clear idea of how to make decisions when daily challenges appear. When GE motors did the NPI (new product introduction) of the high efficiency small motors, if they were clear that the primary customer was the OEM (Original Equipment Manufacturer) and not the consumer who will ultimately buy the equipment, they would have realized right from the beginning that they either had to change the value proposition to achieve a better fit to the needs of the OEMs or they would have to create a marketing campaign to build the brand of the new product with the end customers. They did the later at the end, but there was a cost of opportunity involved related to the time it took for the team to realize this. Also they had to spend to decrease product features that were not needed by the OEMs to bring the cost level to the appropriate sellable level.

7.2 Beyond the Strategy Statement

Developing the strategy statement is an energy intense task and there is a high temptation to "stop to breathe" after the strategic statement is achieved. Indeed the break is important to settle the ideas but it is a break, not a halt in the process. The strategy has to be implemented through actions that will produce change in the firm.

According to Grove (1999), it is not about strategic statements that are abstract, it is about strategic actions and decisions that managers take on the effort to shape an organization in the direction it is intended to follow. However, this is not enough. Companies do not live on strategies alone. Companies live on revenues that come from products and services sales. According to Jobs (1995), it is all about the capacity for delivering excellent products, and doing so is not just envisioning and making a statement. A great product or service does not happen just because the CEO made a powerful statement. It demands excellent people devoting time and effort to it. It is about the work that derives from the decision that is composed of multiple interactions, learning and adjustment of the achievements, problems and new ideas that come on the process of developing a new product or service. In this process new offerings are incorporated, others are excluded and ultimately there is an exciting new product to be released. In Jobs (1995) words, what
made Apple struggle in the decade from 1986 to 1995 was that its CEO John Sculley and many of the leaders in the company did not understand this concept and thought that the vision and statements would be enough to make great products happen.

When the strategy of the small hydro division was under implementation in Voith Hydro Sao Paulo, the managers were exhausted after 2 days of deep discussions on strategy, but an enormous amount of hours from managers and employees were devoted to developing the marketing and sales actions as well as the product development and operations related. Such actions, not only allowed the division reach the planned results but also the engagement of the team was obtained.

7.3 Adjusting Within the Cycles

No matter the consistency of the strategy, marketing and sales approaches when they are implemented, adjustments will be needed due to endogenous and exogenous factors. When changes happen the managers have to be alert to understand them. This need for attention is stressed by Grove (1999), Christensen (1997), D’Avegni (1995) and especially by Kotler and Caslione (2009). Kotler and Caslione advocate that in times when turbulence seems to be the normal state of things, managers should develop a system of identification of disturbances and shorten the cycles of revision of strategy to be able to react in time.

At ABB the division manager has a network of managers around the world with whom he meets regularly. A mandatory item in the agenda is “What is changing? Do we see threats or signs of disruption?” This question sounds simple, but truth is that it is broad enough to open the conversation about the issues and build a shared vision. Based on this vision, he can make small adjustments on the strategy and marketing as he manages the business. Locally each manager will make the adjustments of their local marketing setup as well as of their sales force effort. The upside of this practice is that, should a disruptive innovation or another need for radical change be identified, the team will be used to changes and prepared to act fast.

On picture 12 we start from a hypothetical status called today. The desired future according to a consistent strategy, marketing and sales is the future status “dotted-line”. On the erratic situation of implementation with no method there is a larger consumption of resources, represented by the longer path to reach the future. On the top of that, there is the risk of going nowhere and destroying the organization, represented by the diversion of the “unlucky” one. A team aware of the strategy, marketing and sales choices will most probably perform better. Note that none achieves the target, denoting the concept that awareness of objectives alone is not enough.
On picture 13 we target the same future and apply all the best practices: Balanced scorecards (BSC), project portfolio, analytic hierarchy process (AHP) and project management to try and guarantee the achievement of the intended future. However, there is a problem: the future that was envisioned at the beginning is not exactly the best fit for the organization. Doing revisions consistent with the specific clock speed of the industry in question, and to the time horizon of their strategy, marketing and sales, the organization will be able to realign efforts, ensuring a better fit for the future status.

The convenience of the realignment by design is to create room to accommodate serendipity and emerging trends from the practical implementation of the strategy, marketing and sales models.

When I was the manager of the small hydro division for Latin America with Voith Hydro we implemented a strategic program using project portfolio and BSC. During the six months of the action plan implementation, we understood that in addition to cost reduction and reduction of time of response to market (make proposals faster), we had to develop a new product for automation.
There were three problems with the product we had: First, it was too complex for the customers' needs in the simpler plants; second, having just one product forced customers to compare our product to the competition, putting us in a difficult situation. In spite of the fact that the competition product was simpler than ours, the price difference was too big and customers ended up ignoring the difference in value and focusing only on the price. Third, for very small hydro plants, the product was in fact too expensive for the possible CAPEX of the plant. We decided to rebrand our normal solution as "Advanced Solution" and created a new product called "Basic Solution" with a price-point closer to the competition but yet with increased value to the customer and a slightly higher price-point. With this move customers were able to understand that Voith was not more expensive, it was better and the discussion with customers was not any more focused on being expensive or not, but whether they could afford the Advanced System. This whole concept was developed after the strategic plan was made. An output of the marketing action triggered an adjustment on the strategy recognizing the value of the emerging need for a differentiated position in the automation market.

7.4 Project Based Execution

There are several forms to organize and foster action in an organization, but in general they include some form of collaboration and work in teams. From IDEO (the Palo Alto based innovation company) to Voith, actions are organized in teams with tasks. When the number of teams and tasks grows, the need for interaction increases and the need for coordination also increases. In addition, managing the deliverables and lead times of the actions is also challenging. In the previous chapter we saw Voith using analytic hierarchy process (AHP) to choose projects and project portfolio techniques to manage them. Below these two techniques are explained as a hint to the practitioner manager for how to manage those initiatives.

7.4.1 Analytic Hierarchy Process

Once strategy, marketing and sales are defined in an organization and gaps are mapped, management will come up with a list of initiatives to close the gaps between the present stage and the future state. The way to come up with the list is up to the manager. Brainstorming is a highly recommended technique but it depends on the organization's culture and management style. Having the list of projects and the strategic goals to be achieved by the organization, the prioritization will be made in three steps: (i) Prioritize goals, defining a percentage weight among all goals to rank them. Note that this is not a forced rank therefore some goals can have the same weight. If the process described below is well done, the probability of having projects with equal
ranking positions is very low. (ii) Classify projects according to their impact to the goals. Each project will be assessed according to its capacity of influencing each goal. (iii) Having in mind the total amount of resources that the organization can devote to the actions, the combination of (i) and (ii) can be used to have an indication of the absolute ranking of initiatives that, according to the judgment of the people involved, will generate the most effective results on the direction of the desired goals.

The analytic hierarchy process (AHP) was created by Tomas L. Saaty in 1970 and since then has evolved a lot. It uses principles of math and psychology to organize people's preferences. The big insight of the technique is the realization that people's judgment works better when comparing between two options instead of among several options at the same time. The whole technique is based on the combination of a series of preferences between pairs to come up with a ranking of multiple choices. The preference between two choices is expressed on a slide scale, so the person can say for example that project A will have more influence on outcome X than in outcome Y. It sounds complex but when applied the method is simple powerful and prevents political discussions over preferences since choices are grounded on clear objectives.

Kahneman (2011) describes the two types of cognitive systems in the human thinking process, the fast and the slow or intuitive versus rational. One could question whether the fast thinking could be influencing the quality of the binomial choices of the AHP method. Saaty (2001) claims to have incorporated in this method the nuances coming from the two types of cognitive systems.

The objective of this thesis is not to evaluate the AHP as a method or to explain it in depth. Saaty (2001) provides a comprehensive explanation of the method underlying theoretical principles behind it. There are several software packages in the market that use the AHP method to assist decision making (Expert Choice for example) and also consulting companies who can assist on the use of the method.

Beware of overkill. For example, if (i) the decisions on the specific situation are of a number that is not manageable, (ii) or if the management believes they need to decide on the priorities right away, (iii) or if there is consensus on the team on what should be done first, then deciding and moving on is most probably the best option. If the cost of deciding is higher than doing, it is best just to do it and learn with the outcome.
7.4.2 Project Portfolio Management

Two practices from project portfolio management theory can increase dramatically the quality of the outcome of the actions: project charter and project progress report.

Common wisdom says that a project charter should be assigned by a manager to the team. However, if the team prepares a charter to describe what is that they have to produce, this document becomes a fundamental tool to access the understanding of the team to what is expected from them. The charter should be simple and used as a template every time the team meets and also when discussing with its sponsor the progress of the project. This focus on the task produces great results. According to Senge et al. (2001), one of the most valuable assets of a person is her attention. When managers meet with a team they must dedicate its complete attention to what is being discussed. At that very moment, the project is the sole focus of attention. The team perceives this attention and understands that the project is important and the level of commitment increases dramatically. The project charter is the tool to help keep this attention. Attachment 3 brings a template of a project charter that was used by the small hydro division of Voith Hydro when working on these projects. In this case the template was derived from the “six sigma” practices that were under implementation in the company. In preparation for the meetings to discuss the evolution or the project, the charter should be complemented with control metrics (to track the progress and effectiveness of the project), risk analysis, as well as corrective actions. This increased document is also called project progress report.

Should the company have a large amount of the projects to be executed, it might consider the option of establishing a project management office (PMO) to manage the practices to be used by all projects and also to provide services to the teams such as scheduling and collection of metrics.

7.5 Speed, Mistakes and Method

Every business reinvention, being product, strategy or sales, involves experimentations and, as a consequence, failure and success. The question is not whether a company will fail. The question is whether or not the company will learn from the experience.

Spear (2009) defines the speed of an organization that over-performs in its context as a proxy of its learning and improvement speeds. After doing a study at Toyota and applying the principles he had learned at Toyota in Alcoa and in town hospitals he transformed his learning into one of the most celebrated doctoral thesis from Harvard Business School. The four capabilities that make high-speed organizations are:
1. Specifying design to capture existing knowledge and building in tests to reveal the problems. Ensure the use of the best knowledge the organization has when solving a problem and build up systems to identify whether something goes wrong. The specification involves:
   a. Which outcomes are expected.
   b. Who is responsible for what work in what order.
   c. How products, services and information flow from the person performing one step to the person performing the next step.
   d. What methods will be used to accomplish each piece of work.

2. Swarming and solving problems to build new knowledge. Do not let problems spread throughout the organization, diagnose root causes as soon as possible and treat them. Insist on the use of the scientific method. No "I think..." look for data and evidences to support assertions.

3. Sharing new knowledge throughout the organization.

4. Leading by developing capabilities 1, 2 and 3.

   This is not about telling people what to do and relying on command control this is about teaching people how to experiment, and learn at work to be able to day after day accelerate the organization. The methods presented in the topic 7.4 of this chapter are tools to support the increase in speed.

7.6 Setting-Up the Cycles Times – The Clock Speed

   Fine (1998) defines the concept of clock speed as a parallel to the generations in evolution theory. Fruit flies have shorter life while sea turtles have long lives. It does not make sense to plan something that will last ninety years for a fruit fly, likewise, a change plan made for one day to a turtle will not have the desired effect on it. It does not adapt so fast. The important insight applied to capital gods industries is that the lengths of each cycle of strategy, marketing and sales have to be adjusted industry by industry. A good hint is to look at the industry from two perspectives: exogenous factors and sales cycle. A study of the sales cycle should have an output in the form of a distribution (not necessarily normal) representing a certain range of lead times with an average. The marketing cycle should be compatible with the product and service development cycle seen in chapter 1 and long enough to include some sales cycles, so that what has been defined in the marketing cycle can be exercised and lessons can be learned. Likewise the strategy cycle should allow for two or more cycles of marketing so that the strategy can be tested and lessons can be learned. The length of the cycle is
the time it takes for a major change in your strategy, marketing or sales. As we saw in this chapter, adjustments are not only possible but also desirable. Once the bottom up cycle time estimation has been made it is wise to check whether this lead-time is compatible to the speed of change of exogenous factors that change the industry context. It is good to have this consistency check to prevent the company strategy from getting outdated.

7.7 People to Do the Job and the Job Design

Jobs (1994) tells a story from his childhood about an old man who lived in his neighborhood that once showed him a mill. He put some rocks into the mill and let them roll a hole day and night inside it. On the next morning when they open it they saw a lot of dust, sand and beautiful polished rocks that had been shaped through the multiple shocks between the rocks. In his opinion a great team was composed of some hard rocks, brilliant people with deep technical knowledge and good taste to develop a new product. However, the end result was not achieved without friction and conflict and the role of management was to actually manage the conflicts that arise in a productive way. The dilemma of a manager looking for talent to develop the next generation of offerings for a company, is that the people that are best suited for the job are also the worst to manage: they are intelligent, smart, driven, passionate, knowledgeable, have good taste but very often they come with some extra characteristics such as stubbornness, irony and others that can trigger more conflict in a working environment. The good news is that this is not the single type of people an organization needs to excel. Actually there is a need for balance including the types of personality. Even suffering from a certain amount of halo effect, Collins (2001) provides a valuable insight on the importance of selecting the right people to do the job prior to actually defining what to do. In large organizations, one does not even have to look outside, the talent is in the ranks of the organization and they have what it takes to excel. Former IBM’s CEO Lou Gerstner repeatedly says that part of the secret of the turnaround in IBM was the ability to find these people in the organization. This was done through the creation of a system where people could express themselves and offer suggestions. People who like to think and contribute will shine when given the chance. It is a matter of paying attention when they do shine and putting them in the right place with challenges that put them in flow\textsuperscript{17} so that they can outperform. On the selection process as well as performance

\textsuperscript{17} Flow is defined as the situation of work where the challenges and workload are slightly higher than the assessed capacity of the individual. This is known to create a small amount of stress that foster motivation. The easiest thermometer of flow is the loss of sense of time when performing a job. Buckingham and Coffaman (1999) and Buckingham and Clifton (2001) explore the concept of flow and hiring and development based on strengths.
appraisal it is highly recommended to use the methods described by Buckingham and Clifton (1999) for hiring and managing people based on strengths. When Voith Hydro developed the new automation system in the small hydro division as described in chapter 6 we did not tell the team how to do and what to do. We told them what we would like to accomplish with the system in terms of “what is the problem we want to solve for the customer”, “what is the approximate cap of costs we can afford in such a system” and “what is the kind of gap we want to have between the two products in our portfolio”. The team came up with a list of functionalities and, not only suggested a split between the product lines but also presented the management teams trade-offs, that indeed were complex and where they needed support to take decisions on where to place those offerings.

Upon having the right people, jobs should be designed to create the desired amount of creative tension, interaction and support among the associates. Simons (2005) proposes an extremely useful framework called levers of organization design. A job is evaluated under four perspectives: span, of control, accountability, influence and support. Control, stands for the resources one has direct access to and control. Accountability stands for what the person is responsible for. The more tradeoffs the person can make the larger the span of accountability. Influence stands for the amount of dependence from the work of other people or departments. Support stands for the support effectively received from other people and departments. Control and Support are the resources the person has access to and accountability and influence are the demand of resources. A person can successfully perform a job as long as the supply of resources is compatible to the demand. In general, when the span of accountability is greater than the span of control, an entrepreneurial gap is generated and the person or team is challenged to innovate. It is extremely important to devote time to design the jobs to ensure performance.

When the right people are in the right place and jobs are being designed, attention must be given to proper communication, especially in times of change. When change is needed and the decision is taken, Grove (1999) and Rezende (2010) advocate for direct communication with employees through a medium that allows dialog and clarifications for the people. This way, either face-to-face conversations or e-mail messages are welcome but videoconference and journals are not desired since they do not allow the clarification loop. This loop is extremely important for two reasons: first, the ideas will be challenged and as a consequence they will improve. It is better to find problems while you are implementing the solution not later in front of the customers. Second, people always interpret what they read, listen and see. The only way to ensure that they got the right message is by letting them make questions and clarifications. In any case, beware that
interpretation is contextual and therefore different people will have different understanding of the same message.

Going back to Kotter (1996), his framework for change stresses the importance of shared vision and acceptance of the strategy. I believe managers have to understand not only the strategy and vision, but also the fit and purpose of their team's effort within the defined strategy, marketing and sales choices. This understating by the manager and his team increases the odds of people achieving flow. In this sense, Chapter 8 will offer an overview of the concepts and ideas presented in this thesis to helping managers to understand the complete process. The manager can use this overview as a framework to tell a history to explain to his team how projects and actions fit within the firm's plan.
8 Conclusion

In this thesis, dynamic cycles of strategy, marketing and sales were proposed as a framework to check consistency among these three different areas of business theory to understand and influence a company's performance.

Strategy refers to long-term choices that influence an organization culture, values, perspectives and position. Changes in strategy demand time to be implemented. Organizations learn as they implement their strategies and, likewise, the strategy itself can go through adjustments to make it fit into the reality. A strategy cycle will usually happen once or twice in the tenure of a CEO or a leader of the organization.

Marketing cycles will happen from two to a dozen times within a strategy cycle, to make sure that the company has offerings that match its positioning, and that these offerings will be appreciated by customers and priced accordingly to allow the company to capture value from the segments it chose to serve. Channels have to be dully chosen, and sales teams prepared to obtain the deals the company needs.

Sales cycles will happen at the speed of the business. If the strategy is good and marketing efforts consistent, sales teams will have the elements that, combined with their competence, will allow them to define the most applicable tactics and get the deals.

Companies can be motivated to change for several reasons. These can come from positive or negative situations. In the context of this thesis, it is worth mentioning:

- Reduction or stagnation of sales and/or margin deterioration.
- Good performance and how to increase sales and/or margins.
- Changes in factors around the company that will change the company's future.

A specific focus has been given to commoditization, since it is a common problem faced by many managers. It is a proposition of this thesis that commoditization is an effect and not a cause of problems. In this sense, managers would do better by focusing on understanding the causes than by blaming deteriorating prices, competition and bargaining customers.

No matter the motivation, either positive or negative, it is worth having a method to approach it. The method proposed here does not intend to be a silver bullet of best-practice that can be claimed to be applicable everywhere. It is a compilation of valuable insights to help managers to reflect about strategy, marketing and sales. The possible solutions depend on the industry and segment. Choices have to be made by the managers who are accountable for that business.
Strategies are fundamental for the success of a business. Well-designed strategies will increase the odds of success while poorly designed ones can be clearly wrong, causing the company to waste valuable resources in the wrong direction. However, there are no secret recipes for success that can be untapped and generate long-term sustainable profits for a company. What exists and is worth searching for are consistent strategies. Managers have to understand the context, the firm, its resources and its capability to acquire new ones and produce a strategy that does make sense.

Scenarios are important to understand where the company stands in relation to the possible changes in exogenous factors (changes that might happen that cannot be influenced by the firm). The firm cannot be all things to all customers, but before making tough choices it is important to know what the potential consequences of the choices made are. Understand which resources the firm has and the profit model it intends to use. Are they consistent? If not, can the firm acquire or develop the necessary resources or is it better to choose a different profit model?

Once the strategy is clear, is it understandable by the organization? If not, than a revision is necessary until the people who will perform it understand it.

A strategic statement will not make great products and services, define prices to maximize value, make offerings available to customers and make customer aware offerings and value. Ensure marketing functions are covered and performed to guarantee that the company is attractive and available to its customers.

Beware of identifying customers and consumers. The first decide and pay, the second use what the firm offers. They can be the same person, but in capital goods quite often they are not. This is fundamental when defining the marketing dialog. The marketing dialog is important not only for the definition of marketing related issues (product, price, place and promotion), but also for providing input for the strategy process and for the definition of the sales approaches and tactics that will be used by the firm.

Sales effort is also a choice to be made. Companies can have reactive or proactive sales approaches. On the proactive, it can be transactional or relational. If the choice is relational, it can have different elements that shape the type of relationship (authority ranking, market pricing, equality matching and communal sharing). Should the company choose to be relational, the adjustments and balance of these types will determine how customer-centric it can be. There is no right or wrong choice for the sales force setup and instruction, but it has to be consistent with the company's strategy.
On the whole process of defining sales and marketing tactics, it is worth understanding aspects of human behavior, since people in many situations do not behave like "economic beings" in the sense that they do not make purely rational choices. Under severe stress or data overwhelming situations, people use some shortcuts that still allow some foreseeability. The firm should not ground its marketing efforts and sales tactics on heuristics. However, the company can actually plant elements in marketing and sales that will influence the customer in case they find themselves under influence of heuristics.

None of the companies that have been evaluated in this thesis has all the elements of strategy, marketing and sales proposed in this thesis. However, combined, these companies have most of them. It is important to experiment trying to implement these ideas and evaluating which one of them best fits the specific organization.

Experimentation is really important and having a method helps. Once the decision is made on what to do, actions and projects will most likely be executed successfully if there are clear charters to ensure that goals are understood and progress reports where progress and risks are measured and managed to measure proper execution. The managers have to know what keeps them awake at night, and use regular reviews not only to track progress towards the goal but also to adjust goals and targets to the relevant changes in the surrounding environment.

That said, there is a basic framework:

- Do scenario based strategic planning and choices.
- Check strategy consistency (perspective, position and capabilities among others), resource allocation and performance metrics.
- Check marketing practices. If necessary, fix them and align their efforts to the defined strategy.
- Make sure to talk to customers and understand them.
- Check sales practices. If necessary, fix them and educate the team on what the company sells. Sales people are the ones who will protect the value generated by the firm.
- Set the action plan, experiment and keep track of evolution and necessary changes.

Having the framework, it is worth reflecting on alternatives to prevent commoditization and to leverage firm resources to foster future growth. The more mature the industry, the less "stand-alone products and services" will be sufficient to maintain value creation. With no innovation, it is hard to survive, but product innovation alone is not enough to survive. In this sense, there are some interesting alternatives to consider:
• **Customer Centricity**: Focus on customers and tailor each product application to their needs and problems. Sell what addresses the job and what the customer wants to have done.

• **Disperse and Open Innovation**: Listen to customers in a broader sense. Customers are smart and some of them have an incredible understanding of what the company does and, therefore, they can actually provide great insights of how the company can improve or even disrupt its offerings.

• **Platforms**: Design your products and services so that partners and suppliers can design and deliver theirs based on your products and standards and, therefore, support your offerings.

• **Services**: Expand the scope and value capture of your own products. Instead of just selling the equipment or service, the firm can specify equipment and services, provide and do maintenance. In some cases, it can even operate the asset to the customer.

• **Integrated Services**: Go beyond service and change the value proposition. Why selling man-hours, consumables and spare parts to a customer, if the firm can sell asset availability and performance? Get as far away as possible from any cost related price discussion creating a price space where value can be effectively captured.

Strategy, marketing and sales are not the sole drivers of a company’s performance. Looking at the companies evaluated in this thesis (ABB, GE, Voith and Rockwell), searching for perfection would be frustrating for two reasons: (i) First, perfection does not exist. Right and wrong are adjectives applicable for actions under the lenses of law, regulations and social norms. In firms, it is about contributing to the existence and profitability of the organization. Consistency on sales, marketing and strategy will help, but this will not be enough. (ii) The companies studied might not only have consistency, they also have made choices that other managers could have done differently. Voith is not customer-centric; ABB has a reactive sales force for some segments; Rockwell does not play a strong role on the systems business, focusing much more on developing products and protecting its platform; and GE overshot on the development and release of Ultra. Yet, these four companies are profitable and have existed for a long period of time. Elements like product quality, timing of operations, brand history, committed employees and several others interact in the composition of customer experience and company performance.

What is self-evident in the examples analyzed is that strategy, marketing and sales are not sufficient per se to extend the life and to enhance the performance of accompany, but they are
actually important parts of the organizational puzzle that will be relevant on instrumenting the company to achieve its goals. Once defined, if all the other pieces of the puzzle understand and buy in what is being pursued (and not only support, but also walk the same talk) then the odds of success might increase.

8.1 Next Steps

The work done in this thesis is a comprehensive collection of knowledge in the fields of strategy, marketing and sales. The evolution of this work has some possibilities: (i) Putting this framework into practice in an organization, making and implementing choices related to the timing of the framework, and seeking for consistency and following up on the results. (ii) Deepening the research in some specific areas:

- **Pricing:** Pricing for capital goods and specifically for large projects is a challenging field. All the examples I have seen in my career and also while preparing this thesis do not consider elasticity and control variables in prices. Instead, they are based on physical features that are much more related to cost drivers than value for the customer. It could be that this is the industry practice for the examples considered, but the truth is that there is room for improvement on pricing.

- **Relational contracts on sales:** Collecting and analyzing data on actual deals to understand the role of each type of relationship and its influence in getting the deal. The content presented in this thesis related to emotional tie was based on four types of human relations (authority ranking, market pricing, equality matching and communal sharing) and it is worth studying deeper their influence on sales relationships.

- **Collective decision applied to sales:** Group decision-making is a large field of psychology and sociology. There is a large opportunity of research to understand how groups of people interact for the definition of a need, search for information, evaluation and decision. The sales theory and practice existing nowadays assumes that there is a group to be influenced or persuaded inside a customer, but there is not much study on how exactly the people interact in the group to make decisions. Good sales people train themselves for that, but there is no theoretical background. As of today, it is much more transfer of tacit knowledge.

- **Project and program execution:** There is a lot of research and knowledge developed for project management. A possible study is collecting and analyzing data of
practical implementation of strategic, marketing and sales agendas and comparing data on the use of project management techniques and the degree of success of these projects.
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10.3 Videos

11 Attachments

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Attachment 1: Interview Briefing Sent to Interviewee

Several capital goods industries live the challenge of commoditization of its products. This is a known phenomenon and some solutions are usually implemented:

- System integration
- Platforms
- Services
- Lead time reduction
- Impeccable performance
- Migration to greater value added solutions

Nevertheless the risk remains and the companies see day after day raising pressure from its customers seeking pure price comparison among competitors. The objective of my research is to understand the phenomenon of commoditization, the alternatives to avoid it and how the market leaders in its industries deal with it to ensure its leadership position in the medium and long term. In this sense, our conversation will be structured on the following way:

- How does the company organize its business and what is its strategy for products, systems and services?
- How are the sales teams oriented? Active or passive? Do they sell what the company has to sell or are they skilled in identifying the needs and problems of the customer and to fit it products and services into value added propositions?
- In relation to products, systems and services, how does the company capture the needs of the customers and turn this information into direction and priorities for the R&D teams?
- How does the company identify the people with talent and competences needed to produce the desired innovation? Is this done internally or externally?
Attachment 2: Strategy Checklist

Note: Beware that there is no magic answer for what to do with the strategy with the Organization. The purpose of this checklist is to provide a framework to help the manager reason about the company strategy.

Step 1: Scenarios

Most companies exist in macro contexts where high uncertainty is the norm. As a result everyone has an opinion on how the future may unfold. Scenarios help understand the future (5-10 years) in a way that accommodates variable outcomes and align expectations. Is the firm positioned to capture upsides and mitigate risk of downside?

- What are the exogenous drivers? What are the main changes and what impact would they have in our business?
  - Society (demographics, social trends, etc.)
  - Technology
  - Economics (macro) institutions
  - Politics
  - Environment
  - Legislation / Legal
  - Ethics

- What are the endogenous drivers?
  - Consumers (and their consumption of the related products we make)
  - Customers and channels (evolution, buying behavior)
  - Competitors
  - Regulations

Step 2: What is the firm’s context?

- Geographical: world, regional and national
- Industry context
- Competition context
- Customer context, problems and needs
Step 3: Where to play?

- Which locations
- Which consumers
- Which segments

Step 4: How to win?

- To whom do you do? Who is your primary customer (customer, consumer, employee, shareholder?) and what are your priorities?
- What is the profit model of your business? How do you generate and capture your value proposition?
- What products, services?

Step 5: What resources does the firm have?

- What are the resources you have? Are these resources sufficient to deliver your value proposition?
- What are the resources you have to develop? How long do you need to develop these resources? (If the firm cannot develop the necessary resources, go back to Step 3)

Step 6: How do you make your strategy explicit to your team?

- Perspective
- Position
- Plan
- Patterns
Initial Situation:
Describe starting point, what does generate the need for this action.

Problems/Needs of the Customer: List problems and needs.
Problems/Needs of VOITH: List problems and needs.

Objectives:
 Declare objectives and goals to be achieved with this work.

Quantitate Benefit: Qualitative Benefit:
List benefits that can be measured with numbers. List benefits that cannot be evaluated numerically. A benefit that could have been numerically measured but has been decided to measure in a qualitative way, can also be in this list.

Existing projects or actions that interfere with this action:
Declare projects, briefly explains why.

Project Team:
Name | Role | Department | Time Commitment | Committed by Manager
--- | --- | --- | --- | ---

| | | | | |
Project XYZ – Action WZT
Scope Statement

Describe what is in the scope of work

**OUT**
State what is NOT in the scope of work of this group.

**IN**
State what is in the scope of work of this group.

Achievements:
List

Critical Issues:
List

Next Steps:
List

Corrective Actions:
List

Achievements:
List